XL13E MKIII /XL15E MKIII /XL15-4E MKIII

OFFROAD HYBRID CARAVANS MANUAL 2024

OWNER'S MANUAL

*2024 Models Shown

Phone: 1300 494494

www.marketdirect.com.au

Table of Contents

DISCLAIMER: ***This manual is provided in good faith and Market Direct Group Pty Ltd. may amend or update this owner manual from time to time.***

Use of Product
The intent and purpose of this manual is to assist owners in the correct use and operation of the product and outline the servicing schedule to be followed, ensuring the correct maintenance of the product.

Servicing
Servicing information contained in this owner manual is provided for those who have appropriate technical skills and relevant to the subject matter the publication deals with regarding maintenance and repairs. The servicing content of this manual assumes a satisfactory technical knowledge and mechanical skills and experience. It is not suitable for people who are not trained or qualified in the subject matter it deals with. If you do not have the appropriate skills and experience, or if you do not have access to appropriate tools and equipment, you may injure yourself or others around you and/or you may cause damage to the Caravan you are working on, including making it unsafe. Users of this owner manual must:

- Read all content thoroughly. It is especially important to have a good understanding of all the contents shown in the INTRODUCTION and SAFETY Sections of this publication.
- Use only the correct tools and equipment for all repairs and servicing.
- If part replacement is necessary, replace the part with the same part number or equivalent part. DO NOT replace it with a part of inferior quality.
- Observe all 'Cautions' and 'Notices' to reduce the risk of personal injury during service or repair, or improper service or repair that may damage the Caravan or render it unsafe.
- Understand that the 'Cautions' and 'Notices' in this publication are not exhaustive because it is impossible to warn of all possible hazardous consequences that might result from failure to follow the instructions in this publication. You must carry out your own risk assessments as you work.

Market Direct Group Pty Ltd. does not accept any and all liability which may arise because a user of this publication fails to follow directions in the publication or safe work methods associated with use and maintenance of the product.

Those without the required skills, knowledge, tools, and experience to work on and maintain this product should seek the
services of a suitably qualified person or business. This publication is based on the latest product information at the time of release. However, specifications and procedures are subject to change without notice.

Immediate hazards that WILL result in severe injury or death if the warning is ignored.

Hazards or unsafe practices that COULD result in severe personal injury or death if the warning is ignored

Hazards or unsafe practices which could result in minor or moderate injury if the warning is ignored.

Practices that could result in damage to the trailer or other property

Helpful information and important points.

More information can be found in a separate document.

My AUSRV Offroad Hybrid Caravan

NAME:	
ADDRESS:	
MODEL:	
VIN:	
SERIAL NUMBER:	
BUILD DATE:	
ATM:	
TYRE SIZE:	
DEALER:	

DISCLAIMER: by receiving this handbook, you confirm there you have read and agree to all the terms and conditions and understood the use and maintenance care of AUSRV®

Introduction

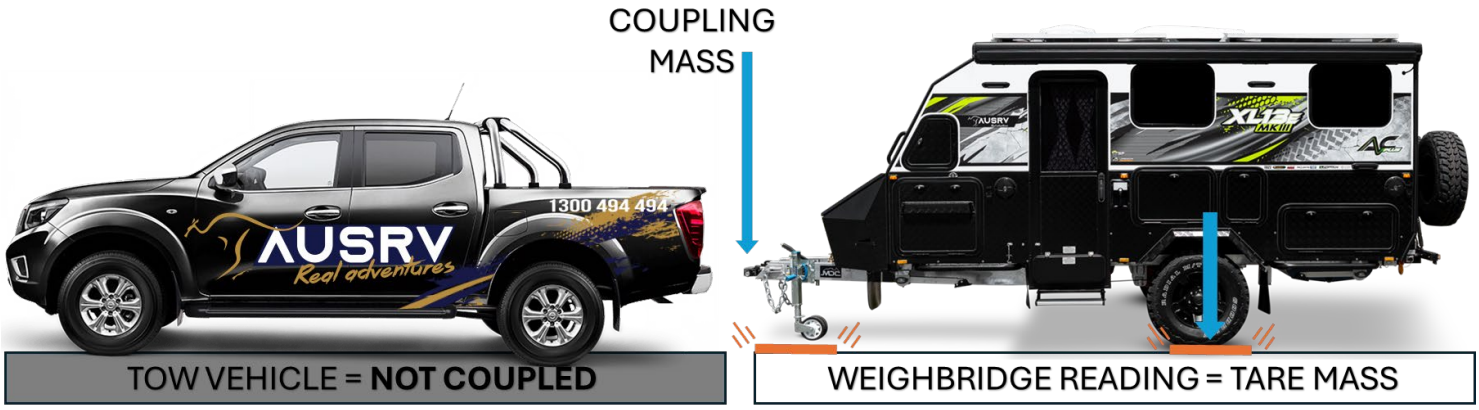
WELCOME TO AUSRV

Offroad caravanning is a rewarding way to travel and see our great country. Owning an AUSRV Caravan will afford you the opportunity to travel to remote places and stay in comfort. It is the intention of AUSRV for you to have the best possible owner experience and enjoy the great outdoors.

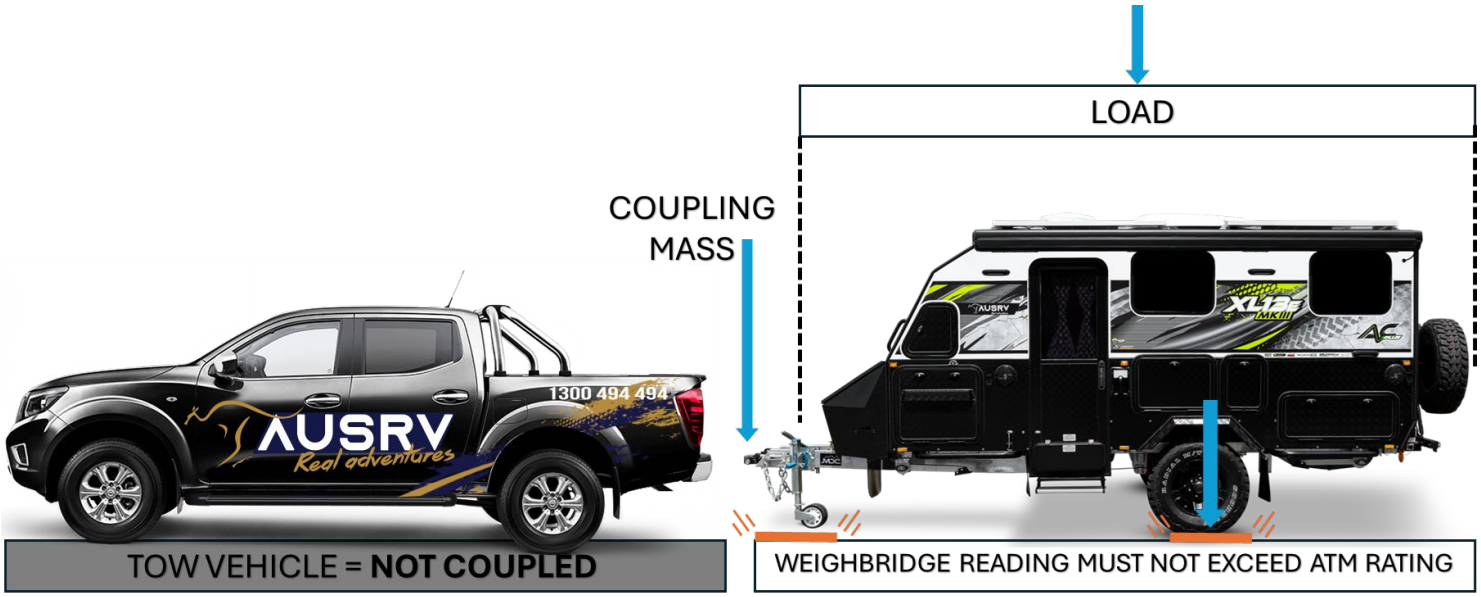
Terminology & Abbreviations

Ball Weight/Coupling Mass: The downward load exerted on the tow point of the vehicle by the trailer.

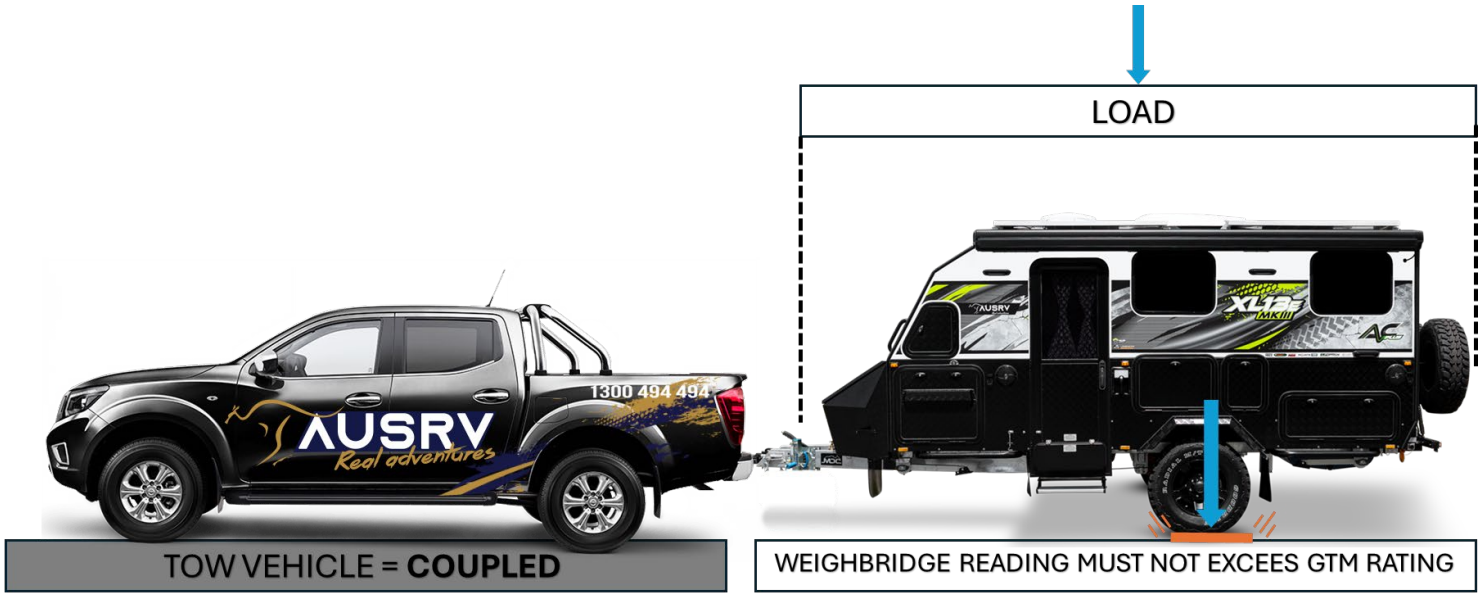
Tare Weight: The total weight of the trailer (load on tyres plus coupling load) with all options and fittings as supplied by the manufacturer, with empty water tanks, excluding fluids not essential for operation on public roads, and without luggage or personal effects.



ATM (Aggregate Trailer Mass) Rating: The total permissible mass of the Trailer. This includes the coupling mass and whatever you add as payload (e.g. water, gas, luggage) up to the specified rating. The ATM Rating must not be exceeded.



GTM (Gross Trailer Mass) Rating: The total permissible mass that can be supported by the wheels/ tyres of the Trailer. This includes whatever you add as payload (e.g. water, gas, equipment, and luggage), but does not include the mass supported by the tow vehicle. The GTM Rating must not be exceeded.



GCM: (Gross Combination Mass): This is the total allowable combined mass of a tow vehicle and trailer combination as determined by the tow vehicle manufacturer.

Camber: Camber angle is the measure in degrees of the difference between the wheel's vertical alignment perpendicular to the surface. If a wheel is perfectly perpendicular to the surface, its camber would be 0 degrees. Camber is described as negative when the top of the tyre begins to tilt inward towards the chassis rail.

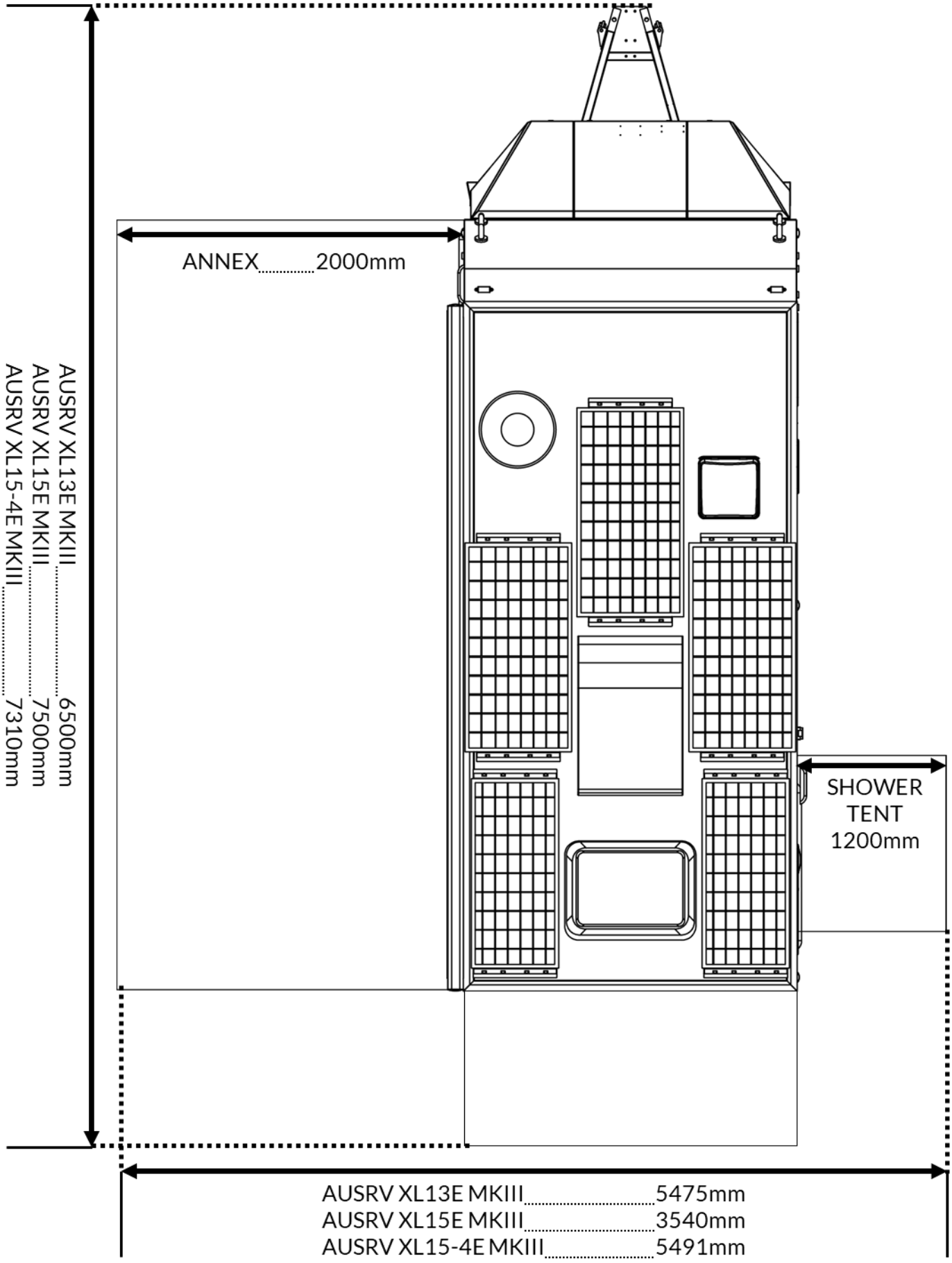
Toe In/out: Negative toe, or toe out, is the front of the wheel pointing away from the centerline of the vehicle. Positive toe, or toe in, is the front of the wheel pointing towards the centerline of the vehicle.
Toe can be measured in linear units, at the front or rear of the tyre, or as an angular deflection. In the case of AUSRV products, the "toe in" is measured in millimeters at the front of the tyre from the chassis rail.

Tow vehicle and Trailer Compatibility
Your tow vehicle manufacturers have applied a maximum towing capacity to the vehicle which is the Aggregate Trailer Mass (ATM) and a maximum Gross Combination Mass (GCM). These specifications MUST NOT be exceeded. It is your responsibility to know, understand and follow these specifications. Vehicle manufacturers may also specify or recommend "Weight Distribution Bars" when towing under certain conditions. You MUST ensure this is compatible with the vehicle and trailer combination.

⚠DANGER

DANGER – Exceeding manufacturer weight and combination limits can result in loss of control leading to death or serious injury. Your tow vehicle and hitchmust be rated for the Gross Vehicle Weight of the trailer.

Dimensions


ANNEX 2000mm
AUSRV XL13E MKIII 6500mm
AUSRV XL15E MKIII 7500mm
AUSRV XL15-4E MKIII 7310mm
SHOWER TENT 1200mm
AUSRV XL13E MKIII 5475mm
AUSRV XL15E MKIII 3540mm
AUSRV XL15-4E MKIII 5491mm

Contact Details

QUEENSLAND	
Brisbane 3/711 Beaudesert Rd Rocklea QLD 4107	**Caboolture** 4 Boeing Place Caboolture QLD 4510
NEW SOUTH WALES	
Sydney 111 Newbridge Rd Chipping Norton NSW 2170	**Newcastle** Unit 1, 2364 Pacific Hwy Heatherbrae NSW 2324
VICTORIA	
Melbourne 3/124 Canterbury Rd Kilsyth South VIC 3137	**Campbellfield** 1551 Sydney RD Campbellfield VIC 3061
WESTERN AUSTRALIA	
Perth 238 Great Eastern Hwy Ascot WA 6104	
SOUTH AUSTRALIA	
Adelaide Units 2,3 & 4/32-50 Weaver St Edwardstown SA 5042	
NATIONAL TOLL-FREE	
1300 4X4 4X4 **1300 494 494**	

Safety Information

Before using this product, you should read this manual, and those manuals supplied by component manufacturers applicable to this product.

This manual is supplied as a reference to required maintenance of the product. Failure to use and maintain the product in accordance with what is outlined in this manual may affect your warranty.

Incorrect and/or insufficient maintenance may cause product failure resulting in property loss, damage, injury, or death. Maintenance intervals are critical for normal use, extreme use may require shorter or additional maintenance intervals.

Manual content does not imply, express or other any warranty, the owner should read the limited warranty terms included in this booklet.

AUSRV does not cover damage due to unauthorised modifications, misuse, abuse, incorrect assembly, improper and irregular maintenance or accident or collision.

Before using this product, you should be certain your tow vehicle is suitably rated and equipped to tow the product safely and legally. The trailer and vehicle pairing must be within the safe **"Maximum Towing Capacity," "Ball Weight Capacity" and "Gross Combination Mass"** as stated by the vehicle manufacturer.

This caravan is fitted with electric brakes and a "Breakaway System." Requirements for breakaway systems can vary from state to state. It is mandatory to supply a maintenance charge to the breakaway battery source while driving. You MUST ensure this capability is fitted to your vehicle. The maintenance charge is supplied to the caravan via the Anderson plug on the drawbar.

WARNING: BALL LOADING (DOWNWARD LOAD ON TOW HITCH) MUST NOT EXCEED 350KG OR THE MAXIMUM ALLOWABLE LOAD BY THE VEHICLE MANUFACTURER OR TOW BAR RATING, WHICH EVER IS THE LOWEST. Exceeding these limits may result in an accident, causing severe injury or death and/or property damage.

It is important to load your caravan correctly to distribute weight evenly and achieve a suitable ball weight load and prevent loading in a manner that can cause a Caravan to sway and/or roll excessively left and right. The industry optimum ball weight on a caravan is between 9 and 11% of the total Caravan weight. AUSRV Caravans fit into this category and 10% should be used as the starting point.

Modifications to The Product

Gas Systems

The installed gas system on this product is an approved and certified installation. Any changes, modifications or adjustment may render the system non-compliant and dangerous. Market Direct Group Pty Ltd does not condone, recommend, or otherwise consent to any modifications, adjustment, addition or tampering in any way with the installed gas system on all products.

Chassis

All AUSRV chassis are fully engineered and verified using Finite Element Analysis (FEA) software. This ensures that the chassis for each model passes the relevant regulations and design rules as originally provided to the customer. Any modification to the chassis or drawbar whatsoever (no matter how minor) will inevitably change this – whether it impacts the towing dynamics, expected loads and stress points, safety chain attachment points, overall trailer length etc.
Market Direct Group Pty Ltd does not condone, recommend, or otherwise consent to any modifications, adjustment, addition or tampering in any way with the drawbar, safety chains or safety chain attachment points.

Fire

Ventilation

Do not obstruct any permanent ventilation in this camper/caravan including annex attachments.

Precautions

Do not leave children or pets alone in the camper/caravan.

Combustible Materials

Keep all combustible materials away from:

- Ovens and cooktops
- Hot water heater
- Diesel heater and outlet

Fire Extinguisher

Ensure fire extinguisher is free of obstruction and in operable condition. Ensure you are familiar with its location and operation.

In Case of Fire

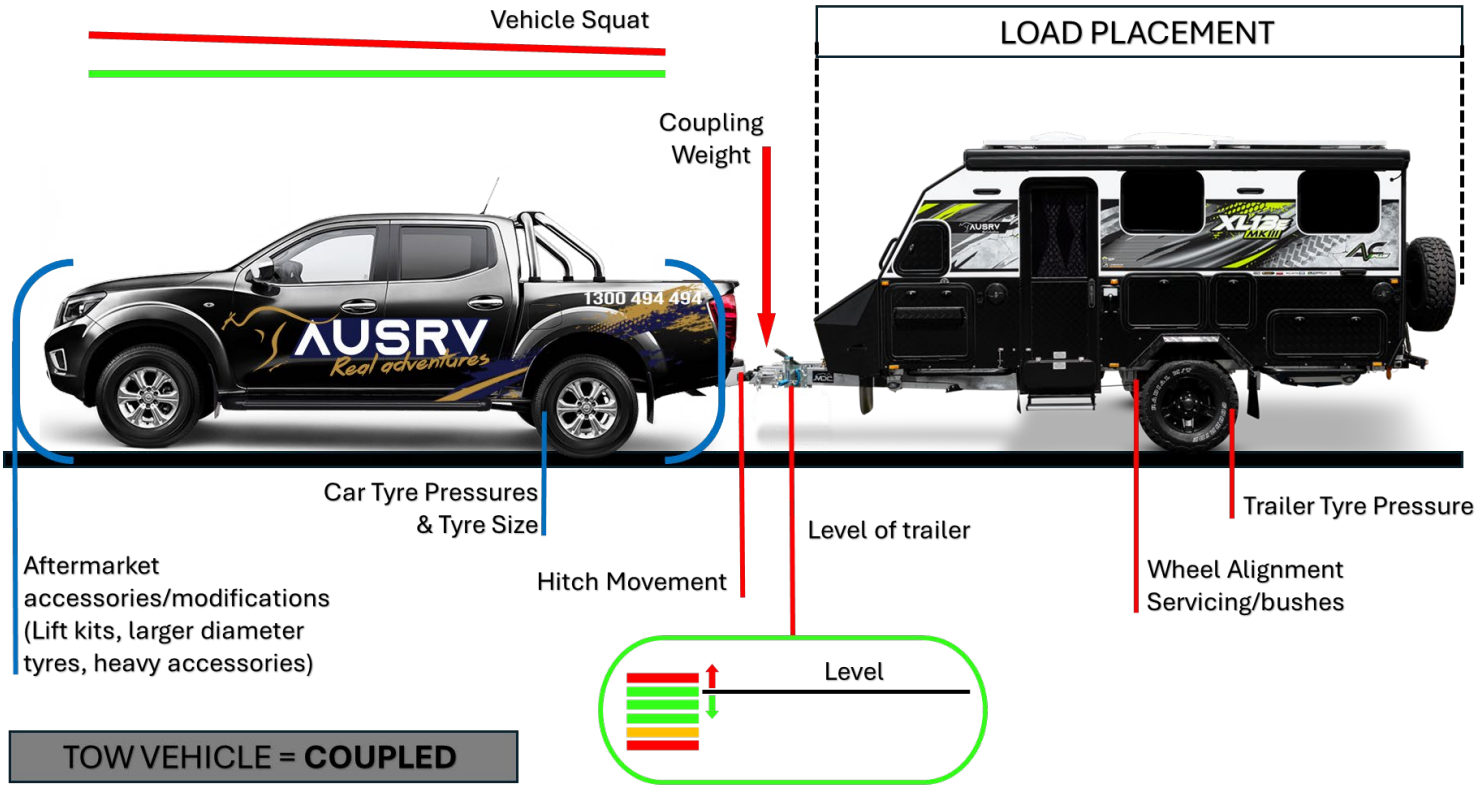
- Evacuate everyone from the trailer and clear the immediate area.
- Turn off gas valve at the gas cylinder if safe to do so.
- Disconnect mains power supply.
- Call fire brigade on 000.
- Only try and extinguish the fire if safe to do so.

Button/Coin Batteries

Some AUSRV models are fitted with remote wireless switches for lighting. These switches contain “Button/Coin Batteries” that are harmful or fatal when swallowed. DO NOT allow children to play with these switches or leave unattended in the vicinity of these switches. These switches will be marked with the warning label below.

Achieving a Safe Towing Combination

Ensuring a camper or caravan is safe and easy to tow is an easy thing to achieve, this does not mean it is always the case and sometimes, a vehicle and trailer combination may need some tweaking to make it ideal. There are several aspects that need to be correct to maximise towing safety and handling. It is important to use this information in conjunction with the maximum weight limits applied by your tow vehicle's manufacturer as well as ensuring you stay within the maximum specified ratings of your caravan or camper. These can be found in the vehicle's owner manual. This summary will address the main aspects, these aspects include, but may not be limited to the items listed in the following diagram:



Trailer Tyre Pressures

Tyre pressures have a large effect on the handling and performance of any vehicle, be it a towed vehicle or motorized. The tyre pressure on your camper or caravan will indeed be a major contribution to how well it tows and resists instability. Due to how much a camper or caravan may vary in weight depending on the cargo (as much as 1600kg to 3000kg in the AUSRV range) it is important to have your tyres at the pressure recommended by the trailer manufacturer, for the actual weight of the trailer when loaded. You should follow the tyre pressure guide in this manual for on road/highway tyre pressures.

Tow Vehicle Tyre Pressures

Equally as important as trailer tyre pressure is the tyre pressures in your tow vehicle. The added weight of the trailer ball weight should be factored into calculating the tyre pressures in the rear of the car. What should also be factored in is the effect the distance of the hitch from the axles plays in leverage. A load on the tow bar of 250kg may well have the effect of 300kg or more on the vehicles rear tyres meaning additional pressure must be applied. This will limit sidewall flex and sideways movement of the rear of the vehicle, limiting unwanted movement that can cause instability in the trailer.

Load Placement

Where you place the items in your trailer will affect how it behaves. Loading too much weight in the extremities of the trailer can have an unbelievably adverse effect. AUSRV owner manuals have a loading guide to assist in this

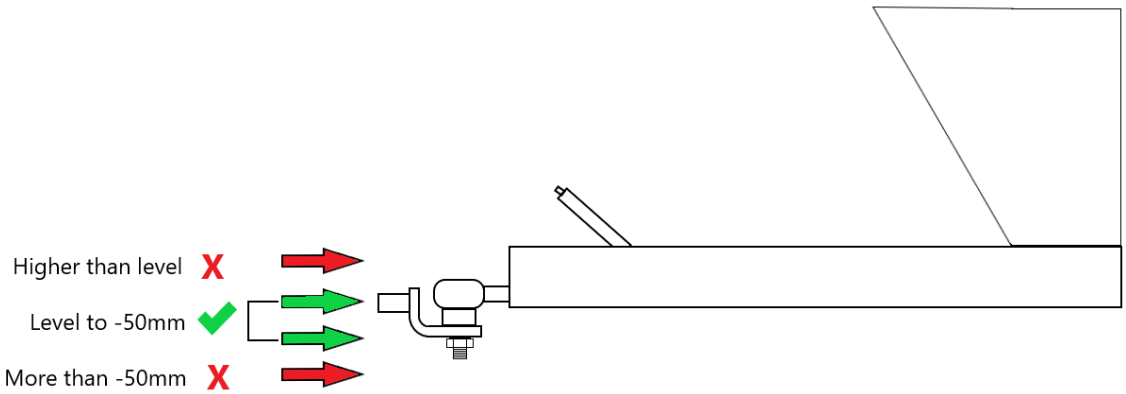
area. By following the guide and ball weight recommendations you will achieve the best possible result. Use the load placement guide in this manual as a reference for packing your caravan.

Ball (Coupling) Weight

The ratio of overall weight of the trailer to the weight exhibited on the tow ball or coupling is an extremely important aspect of making a trailer handle correctly when towed. The ball or tongue weight allowed by most vehicle manufacturers is 10% of the maximum towing capacity. Given this ratio, the caravan industry builds campers and caravans with this in mind. When loading your AUSRV caravan, you should have a target ball or coupling weight of 10% or slightly higher to ensure the weight balance is at an ideal starting point. This figure should not be a guess, you should weigh your caravan with its normal load when travelling and use a ball weight scale to achieve the desires ball weight. These are an inexpensive item that will help you get the weight balance right when you load up for your trip.

Trailer Level

The height of your hitch in respect to the level of the trailer will change the handling while being towed. The best practice with your AUSRV trailer is when loaded and hitched to the vehicle, the drawbar is NO higher than level. Ideally you should look to have the drawbar slightly lower than level between 0 and 50mm. Higher than level or too low will have an adverse effect on how the trailer tows.



Hitch Movement

Most modern tow bars have an adjustable screw fitted to the hitch receiver that can be used to stop the hitch insert from rattling. Unfortunately, this is not a sure-fire way to limit sideways movement that can affect how well your trailer tows. Hitch movement from side to side can cause sway and when combined with a tow vehicle that has a greater distance between the rear axle centre and the hitch point, this affect can cause serious sway issues. Combine this with poor tyre pressures on the tow vehicle and you have a recipe for disaster.

If there is excess play in the hitch and hitch receiver, you may need to place shims either side of the insert to limit the movement. Shims are commercially available such as the pack below.

Vehicle Squat

When the back of a vehicle squats due to cargo and/or ball weight of the trailer, the handling of the tow vehicle can be changed to its detriment. Vagueness in steering, poor toe, camber, and caster settings due to reduced front suspension load, reduced brake and tyre grip are often the result. All this in turn can result in a poorly handling towing combination. The best way to rectify this is upgrading the tow vehicle suspension to be suitable for the weights being experienced. Some vehicle manufacturers recommend Weight Distribution Hitches (WDH), this will be outlined in the vehicle owner manual and should be considered. You should also consult with the trailer

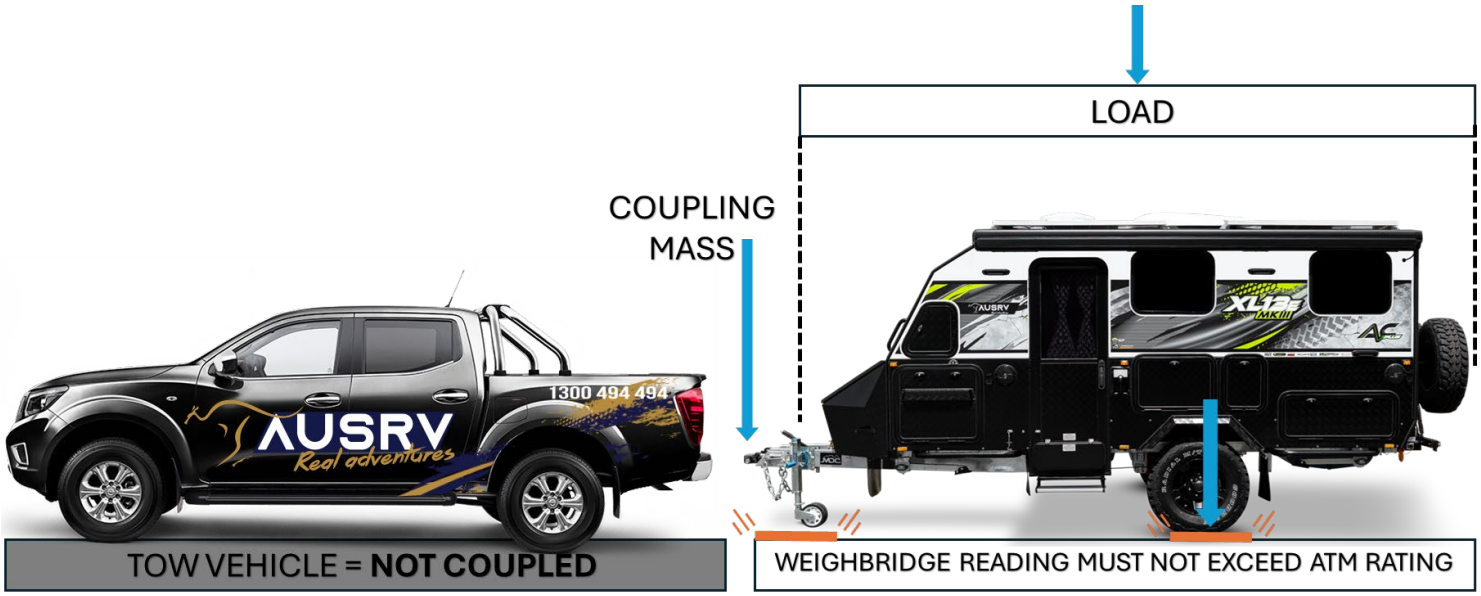
manufacturer if this is an appropriate fitment to the trailer. The WDH should NOT be used in offroad operation as it will NOT meet the required articulation that will be experienced. To better setup your tow vehicle suspension, it is best to consult a suspension expert experienced with towing requirements.

Maximum Weight Limits

The following is an outline of the ratings that will be specified by the manufacturer of your vehicle and the camper/caravan manufacturer. These MUST be followed in conjunction with previously mentioned criteria for safe handling. None of the maximum ratings may be exceeded.

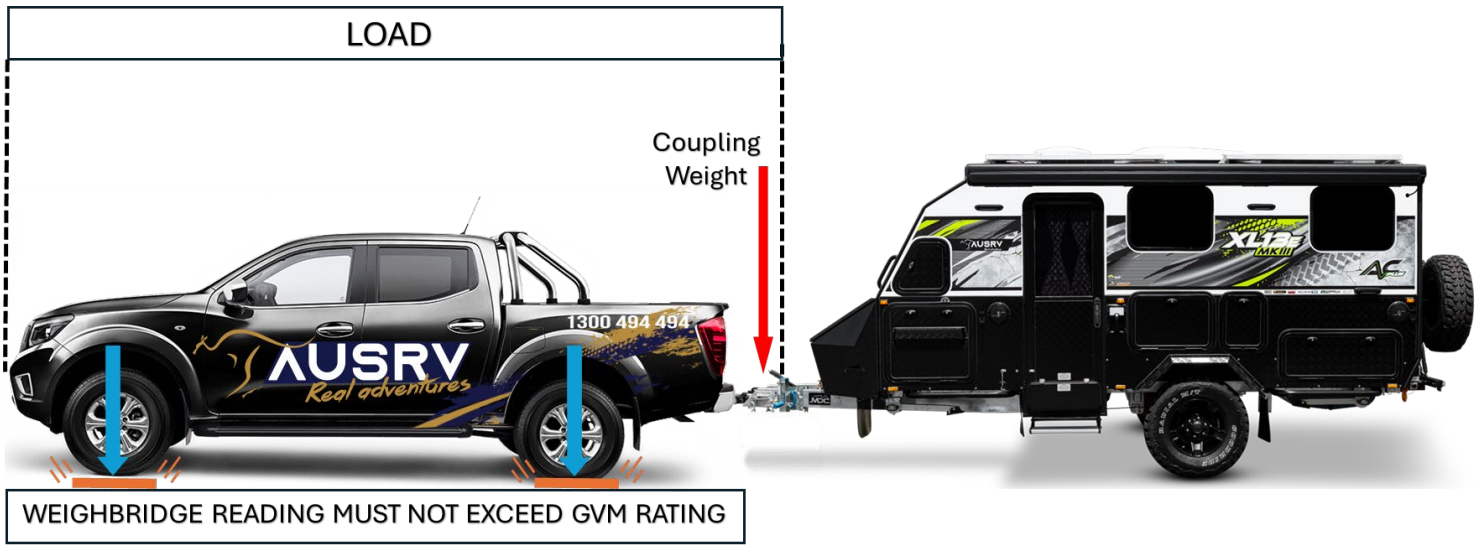
ATM (Aggregate Trailer Mass)

This limit is specified by the trailer manufacturer and must NOT be exceeded under any circumstances. The ATM is the full weight of the loaded trailer including ball (coupling) mass.



Vehicle GVM (Gross Vehicle Mass)

This is the loaded weight including fuel, passengers, cargo, and ball (coupling) mass of the attached trailer on the tow vehicle.

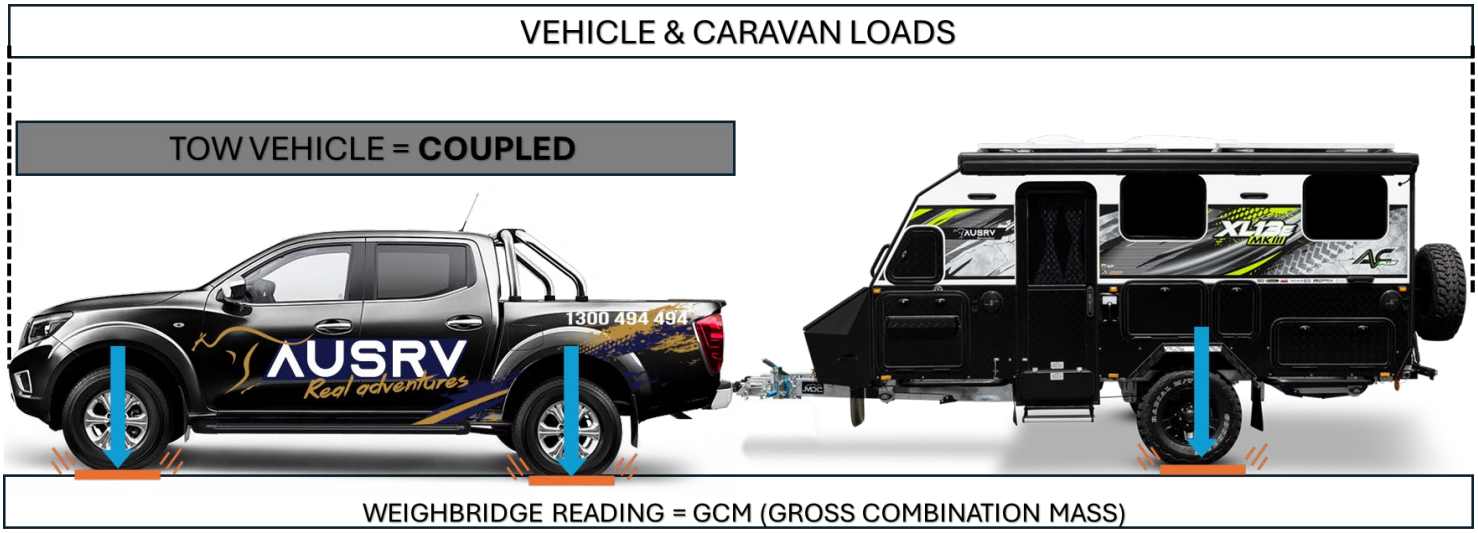


Axle Load

This is the maximum load on an axle specified by the tow vehicle manufacturer. It is possible to have your vehicle and trailer within ATM, GVM and GCM load limits but above the axle load limit specified. Be sure that this is not exceeded.

GCM (Gross Combination Mass)

GCM is the maximum combined load of the tow vehicle and trailer, as specified by the tow vehicle manufacturer. Never exceed this maximum weight limit.



Summary

The above will assist in tuning or troubleshooting handling problems with your towing combination but are not the sole influences. Other items for consideration are:

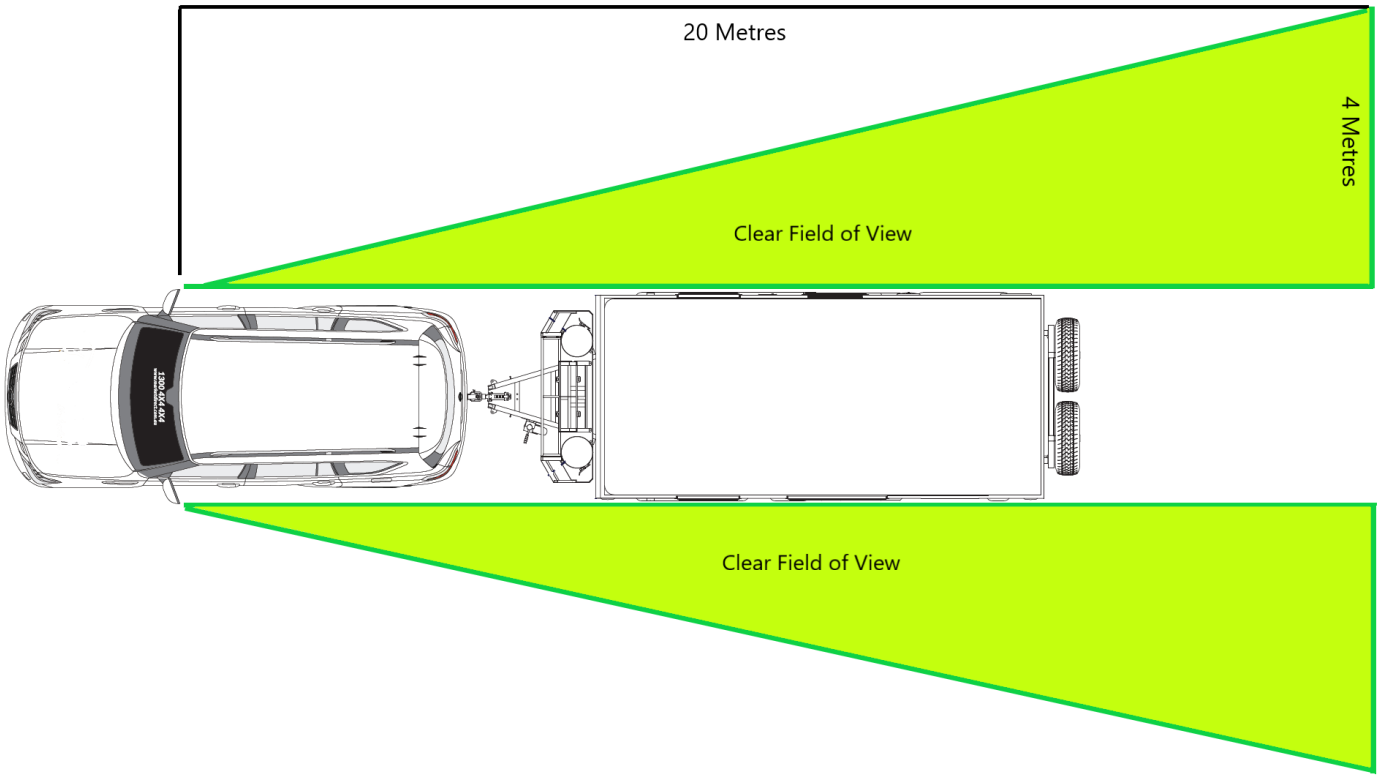
- Wheel alignment on both vehicle and trailer.
- Wear and tear on:
  - Suspension bushes
  - Shock absorbers.
  - Springs
  - Tyres
- Tow vehicle tyre size (Oversize tyres)
- Extended hitches
- Distance between axle centre and hitch point.
- Tow vehicle accessories (Weight distribution)
- Real life tow vehicle capability (Not all vehicles are created equal)

The purpose of this information is to help you to do a self-assessment and achieve a sound towing combination. If you are not confident you can achieve this, you should consult an expert to assist.

If you require assistance from AUSRV, call 1300 494494 option 3 and speak to our customer service department.

Towing Mirrors

Depending on the width of your car mirrors versus the overall width of your camper or caravan, you may be required to fit extended mirrors to your vehicle when towing. The illustration below shows the minimum required field of vision through your vehicle's mirrors.



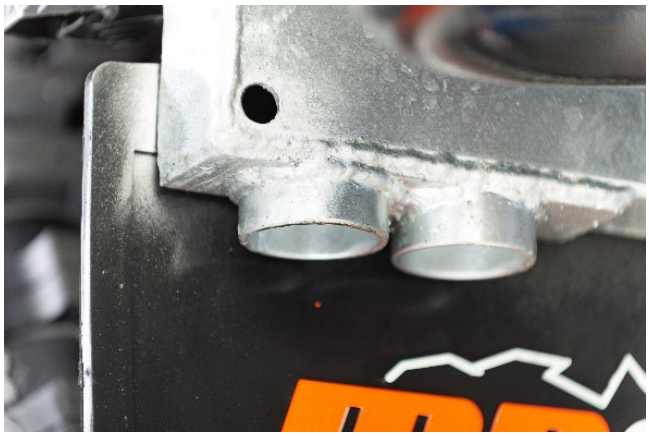
Note: Mirror extension attachments must be removed when not towing, fitted mirrors that extend must also be retracted when not towing.

Jacking Your Caravan or Camper

Your trailer is fitted with purpose built jacking points and from January 2021 supplied with a suitable jack. An appropriately rated bottle jack is an acceptable alternative, however when using the jacking point beneath the trailing arm ensure the jack is of a retracted height that will fit under the jacking point when the tyre is deflated. A suitably rated "High Lift" jack may be used on the jacking points on the side of the body behind the wheels provided it has the correct positive engagement fitting to match the trailer. To ensure safe usage the following must be followed:

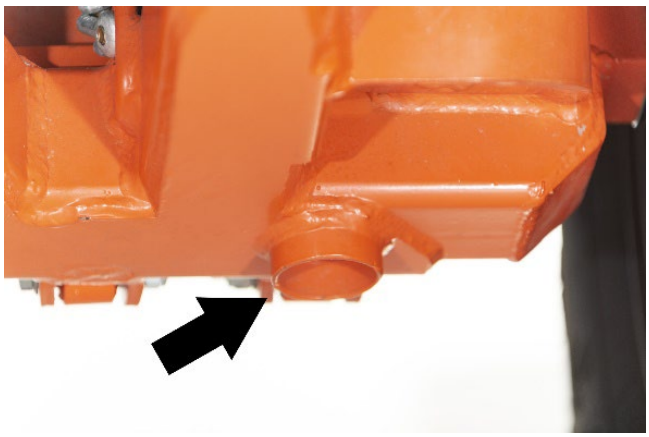
- The jack is to be used on level firm ground wherever possible.
- The wheels of the trailer should be chocked, and no person should remain inside the trailer whilst it is being jacked.
- No person should place any portion of their body under a trailer that is supported by a jack.
- The trailer should be attached to the towing vehicle whilst being jacked.
- When performing maintenance ensure suitably rated jack stands are used – do not rely on the trailer being supported by the jack.

Behind the wheels



Along the chassis

Under the trailing arm



Electrical Safety

WARNING

Failure To Follow These Instructions May Result in Death or Serious Injury!

- ⚠ When working with electrical equipment or lithium batteries, have someone nearby in case of an emergency.
- ⚠ Study and follow all the manufacturer's specific precautions when using and servicing the battery and connected appliances.
- ⚠ Wear eye protection and gloves.
- ⚠ Keep the unit away from moist or damp areas.
- ⚠ Avoid dropping any metal tool or object on the battery. Doing so could create a spark or short circuit which goes through the battery or another electrical tool that may create an explosion.

WARNING

Shock Hazard! Keep Away from Children

- ⚠ Avoid moisture. Never expose the unit to snow, water, etc.
- ⚠ The inverter Unit provides 230Vac, treating the AC output socket the same as regular wall AC sockets at home.
- ⚠ Read and understand the information in the appliance manuals before operating this equipment

The 240V electrical system in your caravan has been certified by a trade qualified person. Under no circumstances should an unqualified person interfere with, modify, or repair this system. An RCD safety device is fitted to this caravan for your safety.

- Always use a 15A lead to connect to mains power.
- Do not modify the earth pin to accommodate a lesser lead.
- When connecting to 10A mains, always use an approved adapter.
- Never coil power leads when in use. Lay the lead out in lengths in a safe manner that prevents creating a trip hazard.

Vehicle Electrical Requirements

Brake Controller

All AUSRV campers and caravans require an electric brake controller to be fitted to the tow vehicle by law. There is a wide range of controllers available that are suitable.

Correct Vehicle Wiring for AUSRV Caravans

To comply with national laws on breakaway systems, you must supply a maintenance charge to the battery/batteries that power the system should it be activated. In all AUSRV products, the breakaway is powered by the house batteries in the caravan. For this purpose, an Anderson plug connection is fitted to all AUSRV caravans on the drawbar. Your vehicle will need to be fitted with a power supply to a 50-amp Anderson plug near the towbar so the trailer can be connected. The vehicle only needs to supply power while it is running so a voltage sensitive relay or switching device may be used to protect the start battery when the car engine is stopped.

Trailer Lights

Plug Type – 12 Pin Flat (Not Negotiable)

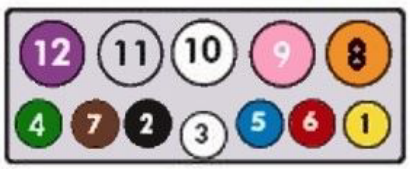
Charging Camper/Caravan While Driving

Plug Type – 50A Anderson Plug.

Vehicle with or without smart alternator:

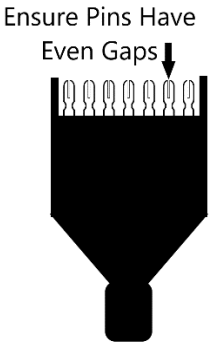
The Anderson plug can be connected to the start battery on the vehicle and should include the following to protect the start battery.

1. 50-amp relay to stop power supply when vehicle is not running.
2. 50-amp fuse or circuit breaker at the battery



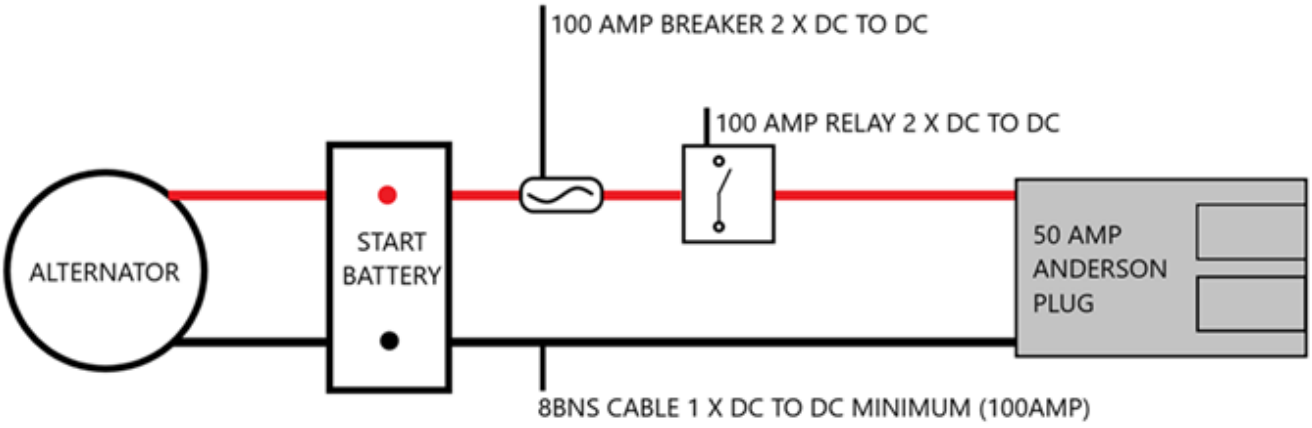
12 Pin Flat Socket

1. Left Indicator
2. Reverse lights
3. Earth
4. Right Indicator
5. Electric Brakes
6. Stop Lights
7. Taillights, clearance lights, side lights
8. N/A
9. N/A
10. N/A
11. N/A
12. Accessory power for DC to DC trigger wire



INFORMATION

The Projecta IDC25X DC to DC controller fitted in your AUSRV trailer is programmed to favour the solar panel input exclusively until it drops below a threshold voltage input. By providing accessory power to the number 12 pin, the trigger for the IDC25X will be set off to take power from both the Anderson plug and the solar panels. It will also trigger the IDC25X to activate the vehicle's ECU to make the alternator provide power to fully charge the multiple batteries in your Caravan.



Trail-Assure™ Electronic Stability Control System

Locked to the Road

FITTED WITH

TRAIL-ASSURE™

ASYMMETRIC SWAY CONTROL

AUS PAT.NO.2014204434 ▌ US PAT.NO.9,026,311

As an added safety feature, your AUSRV caravan is fitted with a Trail-Assure™ BG-5000 electronic stability control system. This is an asymmetric braking system that uses onboard measuring instruments to determine which wheel brakes to apply, and how often, to increase the stability of your caravan while driving. The BG-5000 has been factory fitted precisely with the controller module mounted in the front underneath section of your caravan so that it can make reliable and precise measurements during a trip. It also features a factory pre-set algorithm to sense offroad conditions and automatically disables the stability braking to avoid nuisance brake applications in offroad conditions, minimizing unnecessary brake wear. The system will automatically re-engage once you are back on the road.

There is a status light indicator used to determine the functionality and modes of the unit. It is located on the drawbar for ease of access.
When inactive the system will enter sleep mode to conserve power. To wake the system and check operation, connect the tow plug to your vehicle and turn on your vehicle.
After a moment, the status light indicator will light up solid green to indicate normal operation.

Troubleshooting the BG-5000

The BG-5000 is self-diagnosing and in the unlikely event that you need to troubleshoot your unit, identify this module, and determine the series of lights displayed. Refer to the below, *Table 1*, to identify the status of the unit.

LIGHT ACTION	CONDITION	CORRECTIVE ACTION
Solid GREEN pulsing	Normal operation - no system faults	No action - system OK
GREEN flash 2 times per second	Sway control braking is active	No action - system OK
1 GREEN flash every 2 seconds	Firmware checksum error. Keep The trailer sits still for a minimum of 60seconds, then drive normally.	If the module does not return to normal solid GREEN pulsing light, have the unit checked at a service centre.
1 GREEN flash every 4 seconds	Module reset to mfg. default values. Keep the trailer sitting still for a minimum of 60 seconds, then drive normally.	If the module does not return to normal solid GREEN pulsing light after 3 system restarts, have the unit checked at a service centre.
RED, GREEN, RED, GREEN, continuing…	Sway control automatically disabled due to rough terrain	The unit will return to normal green light when not on rough terrain
No light	Unit in "sleep" mode	Activate manual override on the brake controller to "wake up" unit
	No power after "wake up" from brake controller	Verify the unit has good quality power, ground, and brake controller wire connections. Check for any blown fuses on the truck and trailer.
	Overvoltage - over +20 volts	Check that the power source is not exceeding 20 volts – correct voltage to 12-15 volts
	Low voltage - under 3 volts	Check that the power source is 12-15 volts. Verify good power and ground connections
5 RED flashes	Ground wire intermittent or disconnected	Check ground wire connections to the trailer battery and tow vehicle
4 RED flashes	Brake short (right side)	Correct the short on the right-side brake wiring
3 RED flashes	Brake short (left side)	Correct the short on the left side brake wiring
2 RED flashes	Sensor malfunction - no sway control	Service centre repair required
1 RED flash	Blue Wire Short – System malfunction	Correct the blue wire short, Service centre repair may be required.
Fast RED flashing	Low voltage - between 3 to 6 volts	Check the power and ground connections

Table 1

The control module has been strenuously evaluated against the various amount of integrated and aftermarket trailer brake controllers in use today. Compatible controllers include but are not limited to:

Integrated Vehicle Brake Controllers	Aftermarket in-vehicle Brake Controllers
Fiat/Chrysler: 2014, 2015, 2016, 2017 Dodge RAM 2500	Redarc
Ford Motor Company: 2013 F-150	Tekonsha
Ford Motor Company: 2017 F-250	Curt
General Motors: 2016 Chevy Tahoe	Draw-Tite
Toyota: 2017, 2018 Tundra	Hayes
	Hopkins
	DirecLink

If for any reason you become aware of a compatibility issue with a particular trailer brake controller, please refer to the provided manual for contact details.

Disclaimer: Electronic stability control systems are NOT substitutes for safe driving or towing practices. In no event shall AUSRV be liable for loss or damage caused by misuse, modifications, or unsafe driving/towing practices.

For more information on how the system works, wiring information and support, please refer to the Trail-Assure™ BG-5000 user manual provided.

Gas & Appliance Safety

Gas Certification

Your caravan has been supplied gas tested and certified. Any additions or alterations to the gas system must be performed by an authorized person and will require re-certification and testing. Also note any alterations may affect your warranty on both the system and appliances.

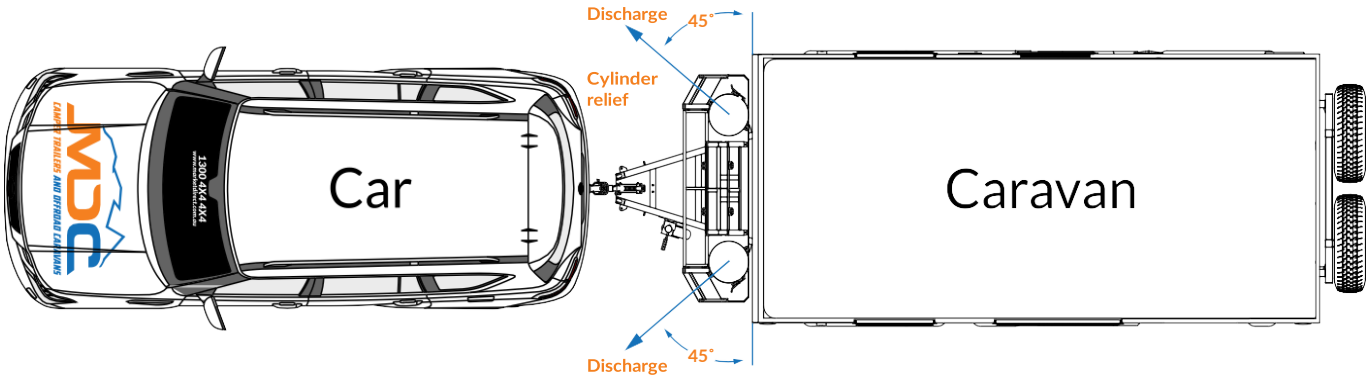
General Safety

- Your caravan may have several gas safety labels affixed throughout containing essential information. All instructions are to be followed and the labels shall not be removed for any reason.
- Make sure to close appliance valves before opening the cylinder valves.
- Where readily accessible, check connections at the appliances, regulator, hoses, and cylinders periodically forleaks with soapy water (or an equivalent) – this should be done every time a cylinder is changed or at least annually.
  CAUTION – *the ammonia present in some soaps and detergents can react with brass fittings and cause such fittingsto crack after a short period of time. Therefore, caution should be exercised when using soap solutions on brass fittings and all connections should be rinsed thoroughly with fresh water as soon as possible after the application of the soap solution.*
- Never use a match or flame when checking leaks.
- Never use cooking appliances for comfort heating.
- In the event of a fire, immediately close the cylinder valve if safe to do so.
- Appliances must not be altered without the authorisation of the manufacturer.
- In the event of an accidental gas leak, close cylinder valve and ventilate the area using a safe method until the air is clear.
- Flexible hoses are used between the LP Gas Cylinder and regulator as well as between your slide-out kitchen cooker (if fitted) and the gas bayonet. These flexible hoses are easily accessible and shall be inspected regularlyby a competent person.

Gas Cylinder Safety

- LP Gas cylinders have a 10-year lifespan between inspection and re-certification. Always use gas cylinders that

  are within their compliance date.
- For drawbar mounted cylinders (if applicable), orient the cylinder relief valves of both cylinders discharge awayfrom both the trailer and towing vehicle as shown.
- For gas cylinders stored in a dedicated LP Gas Locker ensure the locker is kept always closed unlesschanging or operating the cylinders.
- Close cylinder valves when appliances are not in use or while refueling is in progress.
- Ensure cylinder valves are closed to prevent the unintended release of gas from a cylinder.



Gas Appliance Safety

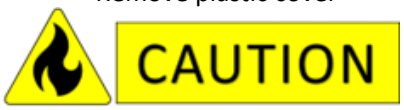
- Gas appliances are certified and have a flame safeguard feature to stop gas flow in the event of the flame goingout. Never interfere with this function or replace appliances with a non-certified type.
- Slide-out kitchens with cookers should only be operated with an annex fully erected. Failing to do so may affectthe safety and operation of the gas appliance.
- Slide-out kitchens with cookers must only be used with a flexible connecting hose that is disconnected from thegas bayonet fitting when in its stored position. Under no circumstances permanently connect this appliance.
- Only approved and suitable gas appliances with flame safeguard systems shall be connected to the gas bayonet(if fitted).

Removing the Flue Cover

Caution! To use your inbuilt Truma hot water system, the external flue covers must be removed prior to starting the unit.

Remove plastic cover

Ready for use.



To use your inbuilt Truma hot water system, the external flue covers must be removed prior to starting the unit.

Ventilation and Flues

- Check all permanent ventilators, flues (if applicable) and vents to ensure they are clear, open, and unrestricted.
- Any supplied or 3rd party vent cover(s) (e.g., low level door vent) should only be used for covering the vents during storage between use with all LP gas system valves closed. All vents (e.g., low level door vent) shall always be uncovered when the Caravan is in use.

Isolating Appliances

Internal gas appliances have an isolation valve fitted in the gas line. During travel these should be turned to the off position where practical and always turn the valve on the active gas bottle off when towing or refueling.

Diesel Heater Safety

Important information before operating the diesel heater.

- The diesel heater is designed for use in your caravan.
- The heater is designed to heat the main living area of your caravan. Attempting to warm the additional annex area may be beyond the performance of the diesel heater unit.

The diesel heater is not to be used for the following.

- Directing air onto people or animals.
- Long term use in large areas.
- Drying clothes and other items.

- Never pack items around the diesel heater unit. Always ensure all items are clear of the heater unit and all hoses and exhaust.
- Ensure intake and output vents are always clear and free of obstruction.
- Always allow the heater unit to cool under ventilation mode before turning off the unit.
- Never use the diesel heater in a confined area e.g., Garage, shed, workshop, non-ventilated area.
- Consider the comfort of nearby caravans and the effect of exhaust fumes.

Risks of injury and burns.

- The motor unit and exhaust operate at elevated temperatures. Do not attempt to work on the unit while hot.
- Do not allow children to operate the heater.
- ****Allow the heater to fully cool, turn off power before refueling.
- Do not smoke near the diesel fuel tank.
- Do not modify the diesel heater unit in any way.
- Do not inhale exhaust fumes.
- The heater exhaust is extremely hot. Do not use the diesel heater where contact with long grass and vegetation is possible. Always use in a cleaned area.
- Never use the heater while the trailer is in motion.

Using the Caravan

Weights and Payload Capacities

The information plate attached to the drawbar of your caravan displays the relevant weights and weight capacities of the van.

How to Load Your Caravan

It is important to load your caravan correctly to distribute weight evenly and achieve a suitable ball weight load and prevent loading in a manner that can cause a Caravan to sway and/or roll excessively left and right. The industry optimum ball weight on a caravan is between 9 and 11% of the total Caravan weight. AUSRV Caravans fit into this category and 10% should be used as the starting point.

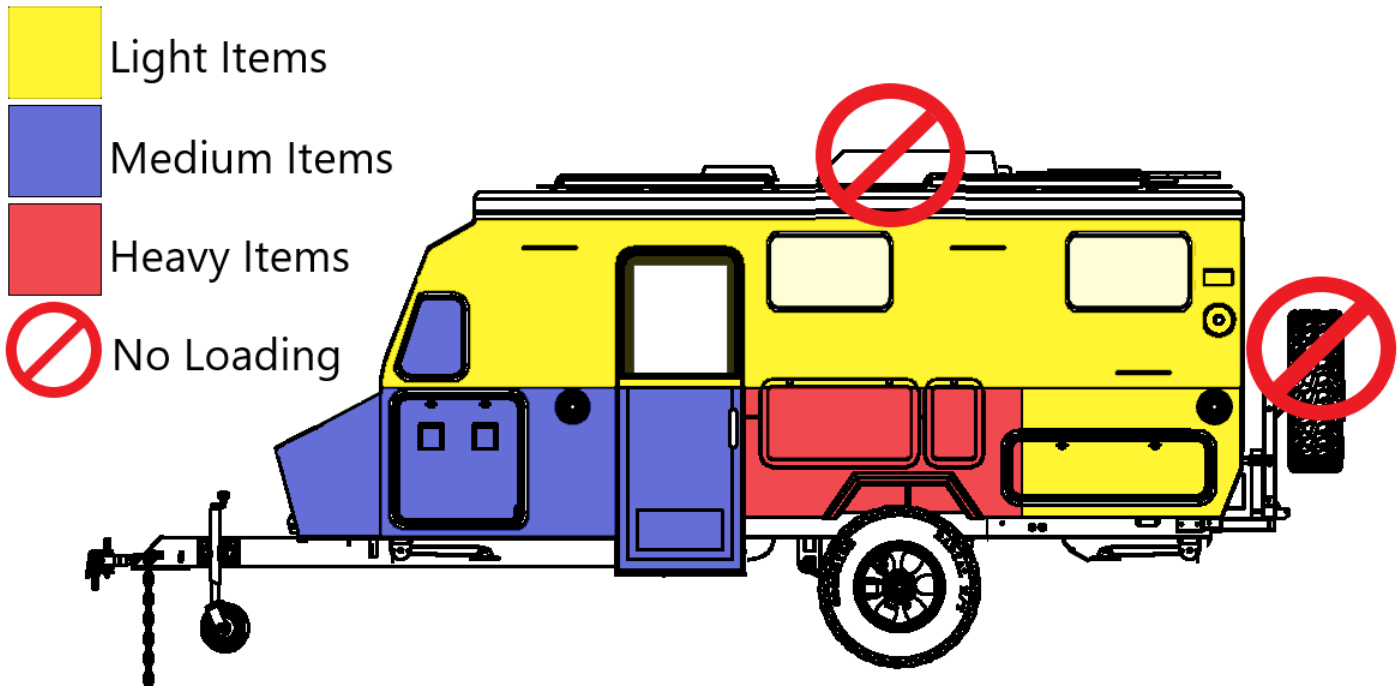
WARNING

BALL LOADING (DOWNWARD LOAD ON TOW HITCH) MUST NOT EXCEED 350KG OR THE MAXIMUM ALLOWABLE LOAD BY THE VEHICLE MANUFACTURER OR TOW BAR RATING, WHICH EVER IS THE LOWEST. Exceeding these limits may result in an accident, causing severe injury or death and/or property damage.

- Always load evenly to both sides of the caravan.
- Load heavy weight over or as close to over the axle as possible and as low as possible.
- Overhead cupboards should only be used for lightweight items such as clothes, personal items, bedding etc.
- Heavy cooking equipment should be stored in lower cupboards.
- Tinned food, bottled goods for cooking, etc, should be stored in the pantry cupboard.
- Never load in a manner that causes the ball weight to exceed the limit of the tow vehicle.
- Ensure no items can move during travel. Secure all items to prevent damage to the caravan.
- Consider water tank levels and how they may affect the balance front and back and the percentage of ball weight.
- Never store heavy items in overhead cupboards.

Load Distribution Guide

The diagram below illustrates best placements of items based on weight.



Ball Weight

When loading your camper, the accepted tow ball weight once loaded is around 10% of the total weight of the caravan. Use a ball weight scale to identify the ball weight and load the camper in a manner that achieves the desired weight. Ideally, once loaded the first time, take the caravan to a weighbridge, and measure the total weight loaded including the weight on the jockey wheel. When the total weight is known, adjust the load locations to meet the desired balance considering 10% is the accepted benchmark.

Effects of Weight Distribution

The distribution of weight in a camper can influence the handling and performance. Overloading the front or rear may cause adverse handling and sway. Additionally, overloading the front or back can induce a pendulum effect that can cause dangerous sway and cause an accident.

Tyre Pressures

Tyre pressures have a large effect on the handling of your caravan. Tyres that are under the recommended pressure for the caravans' actual weight can cause a dangerous sway. It is important to follow the correct pressure guide. The guide below indicates pressure for the ATM which includes ball weight of 10%. Pressures are cold inflation applicable to the standard Goodride 265/75R16 tyres fitted.

Actual Weight	Pressure PSI Single Axle	Pressure Kpa Single Axle
2400kg	62psi	427Kpa
2500kg	65psi	445Kpa
2600kg	67psi	463Kpa
2700kg	70psi	480Kpa
2800kg	72psi	498Kpa
2900kg	75psi	516Kpa
3000kg	77psi	534Kpa

It is recommended that you take your loaded caravan and vehicle to a professional or public weighbridge with your usual items for your trip to ensure you are within all load limits on your vehicle and trailer.

Pre-Trip Inspection

Before any trip check the following

Tyres

- ☐ Correct tyre pressures.
- ☐ Tyres in good condition free from damage and uneven wear.
- ☐ Tread is of legal and acceptable depth.

Wheel Nuts

- ☐ Ensure wheel nuts are tensioned to the correct torque using a torque wrench.
- ☐ All wheel nuts are in place.

Hitch and Chains

- ☐ Ensure hitch and chains are free of damage.
- ☐ The hitch locking mechanism functions correctly.
- ☐ The hitch is properly lubricated.
- ☐ Hitch articulates correctly.

Fire Extinguisher

- ☐ The extinguisher is properly mounted and within date.
- ☐ The extinguisher charge gauge is green.

Brakes, Breakaway and Stability Control Systems

- ☐ Brakes operate correctly when both operated by manual control and via pedal.
- ☐ The electronic stability control system is awake and in normal operation.
- ☐ Caravan battery is charged & breakaway pin is fully engaged.

Lights/Lamps & Reflectors

- ☐ Ensure all trailer end marker/clearance lamps are functioning.
- ☐ Ensure all indicator lights are functioning.
- ☐ Ensure all stop/brake lights (and reversing lights, if fitted) are functioning.
- ☐ Ensure all forward, rear, and side reflectors are present.

Setting Up the Caravan

Finding a Suitable Spot

When choosing a spot to set up your caravan, start with a flat area with no overhanging trees. Birds and bats occupying trees can defecate leaving droppings on your caravan that can damage paint and leaves and sap can also stain the coating. Ensure you are not camping in an area prone to flooding or with bad drainage in the event of rain. Even the slightest hollow in the ground can put you in a mini lake. In hot weather, if possible, set your caravan up so the sun's arc goes from front to back or back to front with the annex/awning in the general direction the sun is arcing across. Doing this will keep the bulk of the caravan in shade and the inside cooler as it will be shaded by the awning.

Weather

It is important to know the weather prediction for the area you are camped. Storms can be destructive with items such as awnings and annexes being particularly vulnerable to wind and storm damage.

Using Wheel Chocks and Ramps

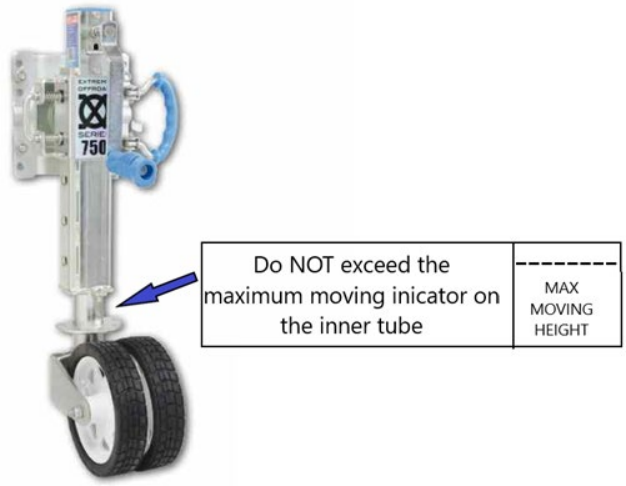
WARNING

Always use wheel chocks to prevent the trailer from moving when unhitched.

The stabiliser legs on your caravan are not designed for supporting the full weight of the trailer, they are there to stabilise it once it is level. Using your stabilisers as a lifting mechanism will void your warranty as will extending them with a "rattle gun" or "impact wrench." Levelling front to back can be done by raising and lowering the jockey wheel prior to adjusting the stabiliser legs. Getting the trailer level from left to right should be done with drive on stepped ramps as illustrated below. Once levelled the legs can be lowered to keep the trailer stable. On soft ground you may want to use timber sole boards under the stabiliser feet.

Operating the Jockey Wheel

The rated load capacity of a jockey wheel is achieved when the jockey wheel is retracted to its lowest position. When moving the trailer on the jockey wheel, always lower it as far as possible but still allowing the wheel to swivel as you steer the trailer.



Stabiliser Legs

Stabiliser legs are installed to stabilise the caravan or camper when setup. Stabiliser legs should never be used to jack a trailer as they are comprised of small bevel gears held in place by small roll pins that will break if overloaded. Stabilisers are best set vertical or 90 degrees to the chassis where possible. When set and an angle the user must be careful not to overload them causing locking pins or the leg itself to bend. Never use impact wrenches to wind the legs, the impact may damage the gears. When using a power tool, use an electric drill with a safety clutch set low to medium to avoid injury or damage to the stabilisers.

Electric Roof

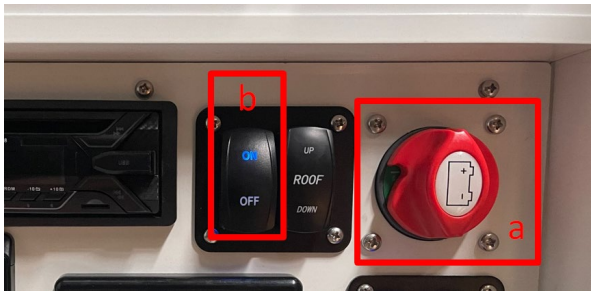
Beware of structures or obstructions directly above the caravan such as low hanging branches, garage or carport coverings and house eves etc. Always allow a minimum clearance of 500mm directly above the caravan before operating the electric roof.

The pop-top roof in your AUSRV MKIII model caravan can be raised or lowered electrically by 2x ram rods located on either side or the caravan inside the cabin, these rams are driven by linear actuator motors which are controlled by a central control box located behind the external kitchen storage drawer.

Before operating the electric roof always visually confirm there are no obstructions above the caravan if extending the roof and between the caravan body and the roof when retracting it. Ensure all roof seals are clear of debris as this may compromise or damage the seal.

To extend the electric roof:

1. Uncouple all 4 (four) safety latches locking the roof down to the body of the caravan.
2. Ensure there is stable 12Vdc power available and turned ON at:
    a. the main 12Vdc battery Isolator; and
    b. the ON/OFF auxiliary rocker switch.



Both switches are located at the entryway control panel.

3. Either using the supplied wireless remote or the ROOF UP/DOWN rocker switch, press and hold the up button to begin extending the roof. Continue to hold the button down until the roof is fully extended and stops automatically. The button can now be let go.

Auxiliary Power & Control Rocker Switches

Remote Style 1

Remote Style 2

To retract the roof press and hold the down button on either the remote or rocker switch until the roof is fully retracted and automatically stops. The button can then be let go.

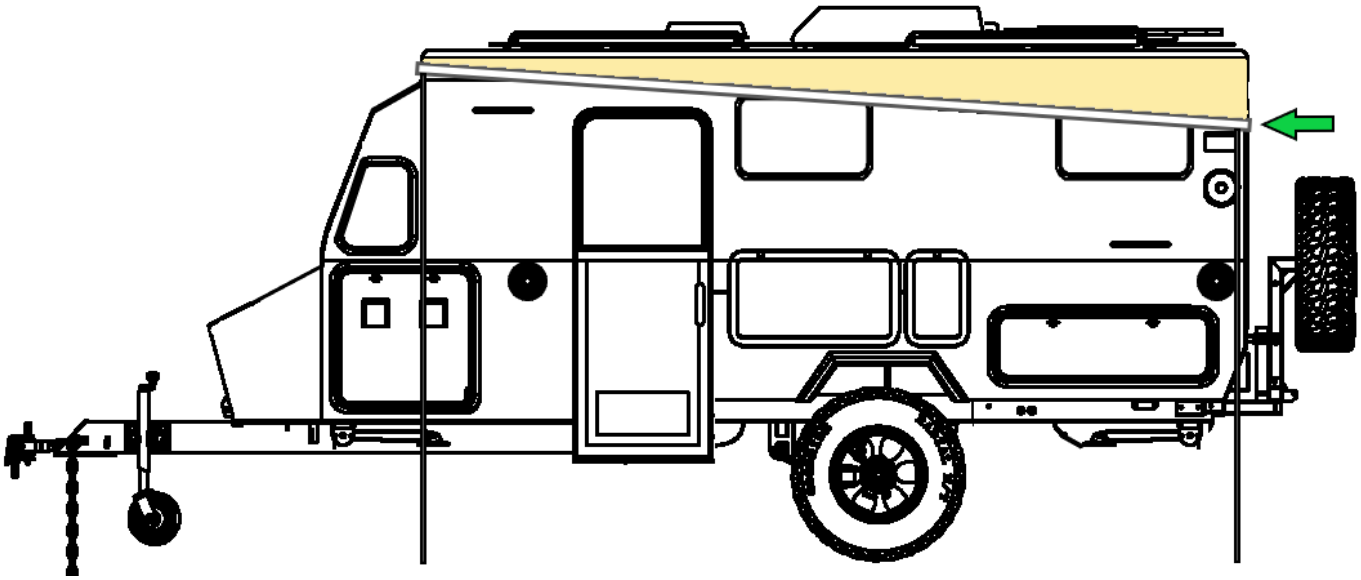
In the event that 12Vdc power supplying the control box is cut off during operation or the voltage level becomes unstable the unit will enter a safety shutdown mode and may require to be reset. See Electric Roof Troubleshooting in Table 13 of this manual for more information.

Electric Awning

When extending the awning always support to front as it extends. Do not allow the awning to carry the full extended weight as this may damage the hinges. Support the end manually by hand or by using the extendable legs. When used as an awning only with no annex setup, it is only suitable for mild weather conditions and should be packed away in high winds. During rain one side must be lowered to prevent water pooling which can damage the awning.

When set up as an annex, the awning has a higher tolerance to wind however should still be packed up prior to high winds and heavy storm conditions.

During rain, the awning should be lowered on one side as illustrated below.



To use guy ropes with your awning you should purchase sail track inserts pictured below that slide into the sail track on the awning fascia. The displayed item is available from the brand Thule.

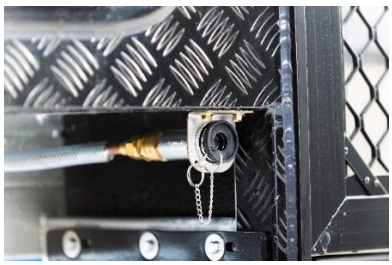
External Kitchen

To extend the kitchen from the caravan, release pad bolt (*fig1*) and press down the blue slide tab (*fig 2*) and pull kitchen out. The kitchen will lock into place when extended. To put kitchen away, again press down the blue tabs and push back into place.

Fig 1

Fig 2

To connect the gas, plug the gas bayonet into the outlet pictured below.



Always use the support leg when the kitchen is extended.

CAUTION

CAUTION – Use of the slide out kitchen cooktop without the annex or awning may adversely affect the safety and operation of the appliance.

Preparing for Bad Weather

During inclement weather, the following should be done:

- Close all roof vents and hatches to prevent water entering.
- Protect the awning from high winds by retracting or securing with guy ropes and pegs.
- Ensure your caravan is not parked on ground that will become boggy and prevent exiting the camp area.
- Lower annex corner poles to create a pitch steep enough to allow all water on roof to run freely off the canvas. Do not allow water to pool.
- Close all external doors and windows to prevent water ingress and wind damage.

Packing Down Your Caravan

When packing down your caravan ensure the following:

- All gas and electric appliances are turned off.
- Gas is turned off at the gas bottle.
- All loose items are secured and unable to move and damage themselves or the caravan.
- All cabinet doors are secured and locked along with all drawers closed.
- Site power lead is removed and stowed.
- The doorstep is raised and secured.
- All roof hatches lowered and secure.
- All windows closed and locked.
- Main door is closed and locked.
- All dust covers in place and secure.
- Secure Ensuite doors and closed toilet.

Towing The Caravan

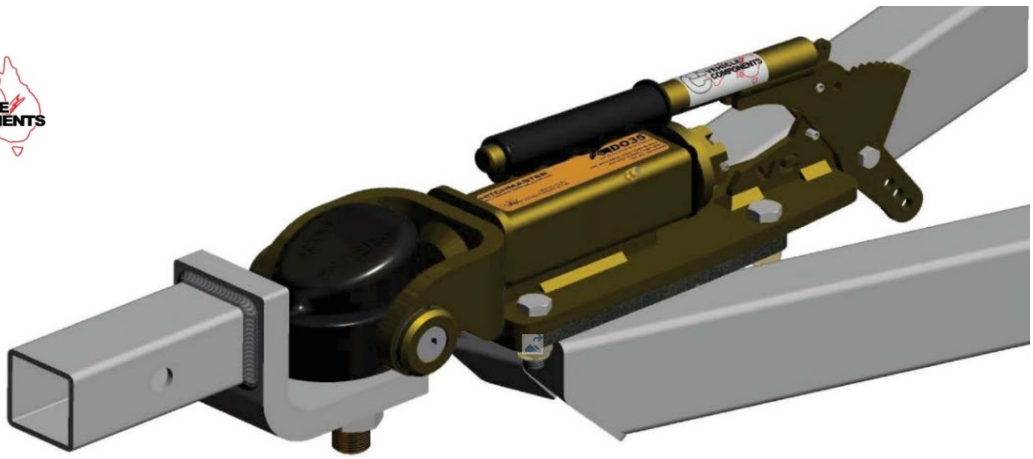
Towing with Trucks

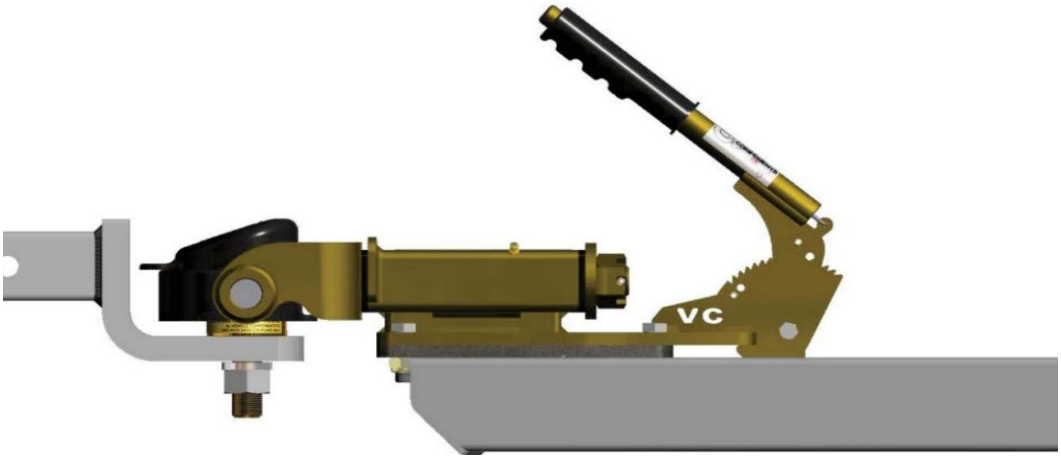
If you intend to tow your caravan with a truck or heavy commercial vehicle you should fit a hitch system to minimise the lash effect of the commercial suspension and distance from the rear axle to the tow point. Truck suspension can be harsh, particularly in offroad conditions. The long distance between the axle centre and the point of attachment can be quite long further exacerbating the effect putting stress on components.

Using a shock absorbing hitch will reduce the effect.

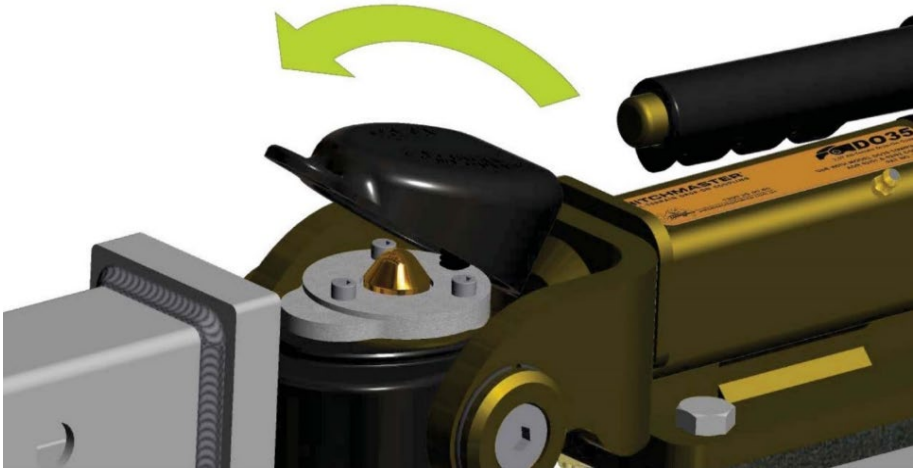
How to Hitch your coupling

The following steps outline how to safely use your coupling to couple and uncouple the trailer from the towing vehicle.





Make sure the handbrake is applied prior to coupling and uncoupling.



Make sure the dust cap is securely connected to the bump cover. This is done by locating the rear lip on the dust cap onto the groove of the bump cover and then pushing it in a downward motion until the dust cover is secure (there should be a slight click when it has been assembled correctly) Test if the dust cover is connected to the bump cover by applying a slight upward force to the dust cover, it shouldn't separate.

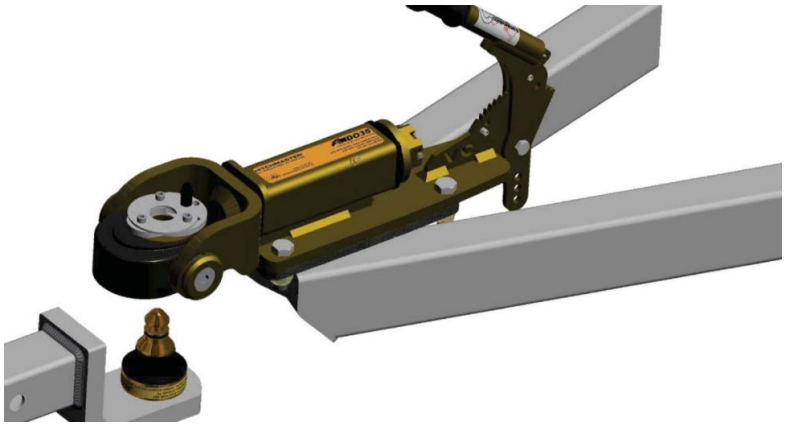
This procedure should be applied if you are uncoupling or coupling up.

Coupling

STEP 1

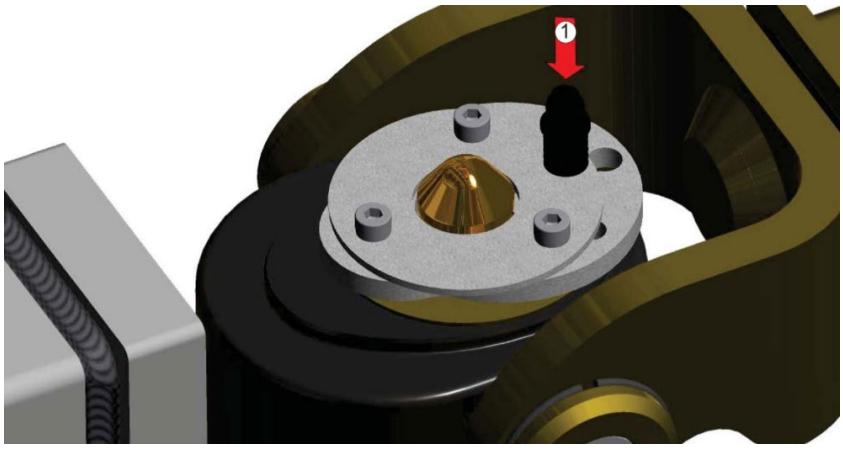
Push down the button (1) and push the locking mechanism back (2). When the locking mechanism (2) is all the way back, release the button (1) locking the plate in place.

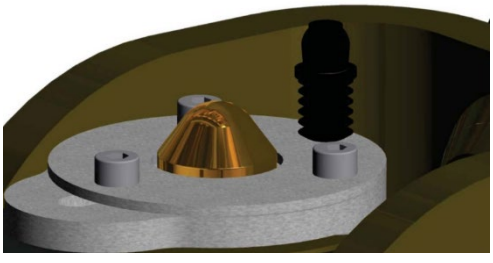
STEP 2



Offer up the tow pin to the coupling making sure the tow pin cover is removed and there is no visible debris on it. Locking plate should be in unlocked position as shown. Lower the coupling onto the tow pin.

STEP 3



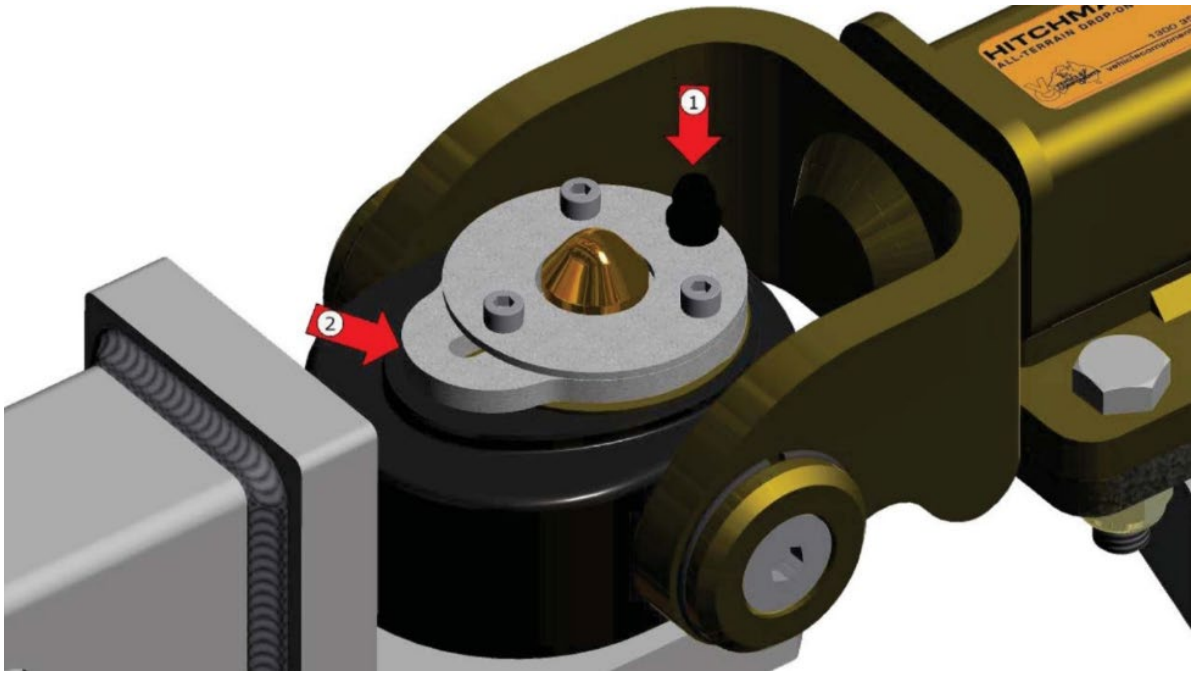


Make sure the tow pin is seated inside the universal and the tow pin top is sticking out of the locking mechanism (see below). Press the button (1) to release the locking mechanism there will be an audible locking noise at which point the mechanism will return to the initial position as shown in step 1. Verify the pin is correctly through the

mechanism and assemble the cap. If the cap will not fit check the locking mechanism is in the correct locked orientation.

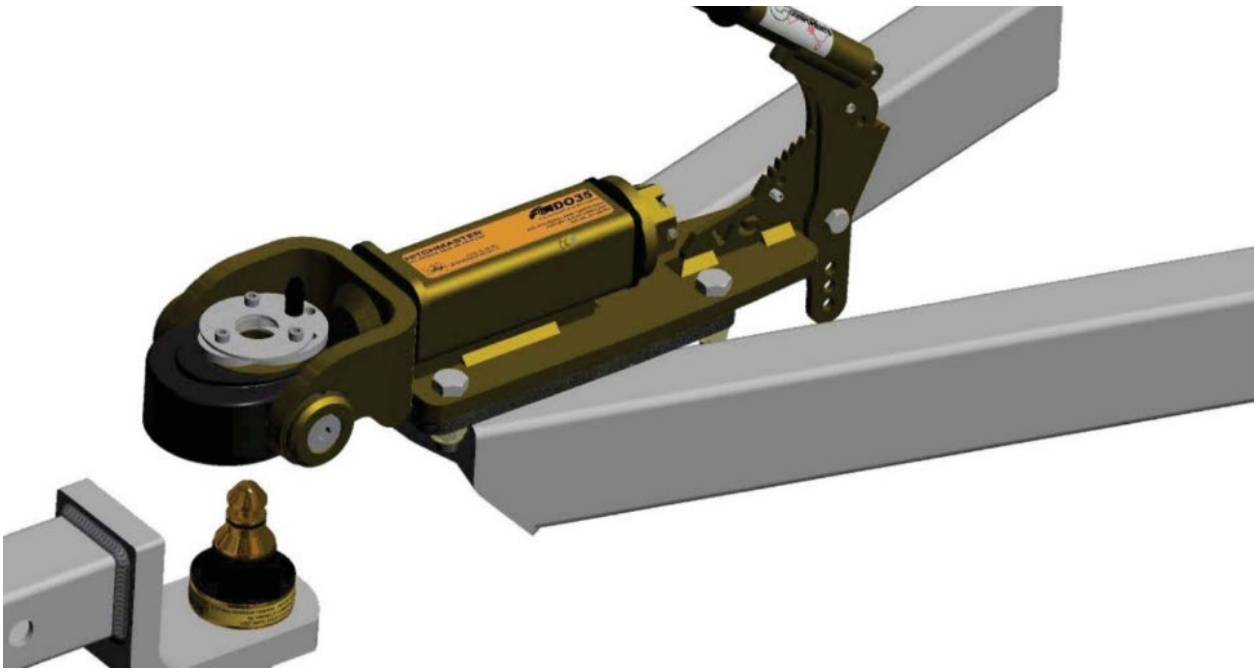
Uncoupling

STEP 1



Push down the button 1 and push the locking mechanism back 2. When the locking mechanism is all the way back release the button while holding the mechanism to ensure it does not spring back to the locked position.

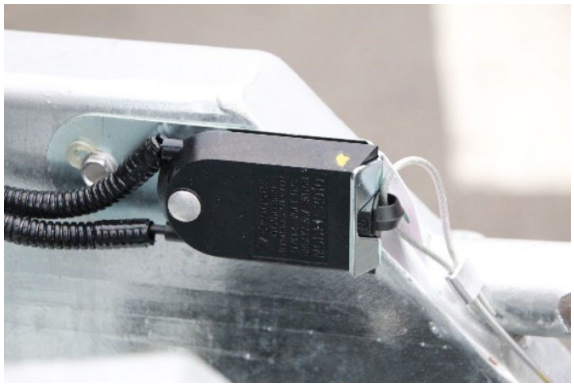
STEP 2



Lift the coupling up off the tow pin.

Connecting the Breakaway

The breakaway lanyard is connected to a simple switch on the drawbar. When connecting the lanyard to the tow vehicle it should be connected to a solid part of the vehicle. Do not incorporate its connection with the safety chains.



Breakaway Switch

Lanyard Connection

- DO NOT CONNECT THE BREAKAWAY LANYARD TO THE SAME POINT AS THE SAFETY CHAIN SHACKLES.
- DO NOT USE THE BREAKAWAY AS AN ALTERNATIVE TO THE HANDBRAKE AND DO NOT REMOVE THE PIN AS AN ALTERNATIVE SECURITY MEASURE. REMOVING THE PIN WILL RAPIDLY DISCHARGE THE BATTERIES.
- IT IS A MANDATORY REQUIREMENT THAT THE BREAKAWAY BATTERY SOURCE BE CHARGED DURING TOWING.
- NSW REQUIRES A BATTERY MONITOR VIEWABLE FROM THE DRIVERS POSITION WITH A MINIMUM OF A VISUAL ALARM FOR LOW BATTERY VOLTAGE

Connecting the Safety Chains

Chains should be crossed over and connected with suitable rated shackles. Ensure they are connected in a way to prevent them dragging on the road but not too tight as to restrict the articulation of the vehicle and trailer combination.

Connecting the Electrics

When connecting ensure the electric cables to your tow vehicle cannot drag on the road or foul the coupling. If necessary, use zip ties or like keep them neat and safe from damage.

Ensure the Electronic Stability Control System is awake and in normal mode.

Wireless Rear-View Camera

A wireless rear-view camera has been factory fitted on the rear of your caravan. The unit is connected to your caravan's parking light circuit, allowing the camera to be used when reversing. Activate the camera by turning your vehicle lights on.

To use the system:

1. Plug in the screen to any available 12V accessory socket in your vehicle.
2. Turn on your parking lights whilst connected via your caravan's trailer plug and the system will start up immediately on power.
3. The screen and camera will synchronise automatically within 5-10 seconds.

The system can be used not only for additional assistance with reversing your caravan but can also assist in monitoring traffic behind your caravan and assistance in manoeuvring such as lane changes.

Troubleshooting the rear-view camera

Symptom	Corrective Action
No Signal	Check whether the car charger (12V accessory socket) is plugged in and has power Make sure only original car charger (12V accessory socket) that was supplied with the monitor is being used Check the camera and monitor are paired

No Picture	1. Check there is power going to the camera by making sure the caravan tail/ parking lights are ON 2. Check the monitor is paired to the camera. a. Power on the monitor and camera. b. Press the Menu button to enter the menu interface. c. Press ▼/+ then ⟲ to select and enter PAIRING. d. Press ▲/– or ▼/+ buttons to select a channel (CH1, CH2, CH3, CH4) to pair the camera to. e. Press ⟲ to confirm the channel and the pairing function will run for 10-seconds. f. The picture will be displayed on screen once completed. Note: If no picture displays after pairing, please re-try the pairing process but removing power to the camera entering pairing mode and re-powering the camera within the 10-second pairing window.
No Sound	Check whether the sound is turned off in the monitor settings Sound will only work when the screen is in single Channel mode
Dark picture	Check brightness/contract settings are adjusted correctly
No Colour	Turn off the power to the camera and monitor and re-power the system (Restart system)
Unable to record	Check an SD card is inserted and in the correct orientation Make sure the SD card being used as been formatted before use SD card storage may be full
Screen has excessive glare	The monitor comes supplied an Anti-glare screen and a screen protector. Make sure the screen protector has been removed before use.
Connectivity issues such as image lag, dropping out, excessive pixelization	1. Make sure the caravan tail/parking lights are ON 2. Make sure the monitor is plugged into a live 12V socket 3. Check camera is paired with the monitor (see above) 4. Make sure supplied antenna is screwed firmly into the monitor screen 5. Uncoil the power cable of the monitor – this may cause electromagnetic interference 6. If still unsatisfactory contact AUSRV (warranty team to escalate to AUSRV compliance team internally)

FURTHER READING

For more information, refer to the camera system instruction manual provided.

Disclaimer: *External impacts such as interference, power lines, speed of travel and weather may affect the range, responsiveness, and visibility of the device. As such never use the camera solely and always actively observe your surroundings. This product has been added as an ADDITIONAL safety product and should never be used as a substitution for active supervision. AUSRV shall not be liable for any loss or damage from not following this and the details within the products instruction manual.*

Charging the Caravan

Mains Power

Your RV will charge from shore power via the Projecta INVCHR2 Inverter-Charger. The Inverter-Charger is directly wired to the 240V circuits in the caravan. To charge with the 5-stage AC charger function of the INVCHR2:

1. Ensure the caravan is connected to shore power via the externally mounted 240v power inlet, located on the offside of the caravan.
2. Ensure the INVCHR2 is switched on at the INVCHRD-BT display panel, located near the inside of the caravan entryway.
3. Ensure the Main RCD and Service isolator switch (both located near the inside of the entryway) and the INVCHR2 dedicated RCBO (located on the INVCHR2 unit) are in the active/closed position.

Note: The factory batteries in your RV are LIiFePRO+ Lithium Iron Phosphate (LiFePO4), the INVCHR2 is configured from the factory for compatibility and optimization for charging this specific battery type and brand.

Solar (PV) Power

The roof mounted solar panels will charge automatically via 2x Projecta IDCX DC-DC chargers.

Note: Solar power provided by the PV system will vary depending on several factors such as position of the sun relative to the solar panels, time of day/year, and relative UV levels.

Motor Vehicle

Your towing vehicle should be fitted with an Anderson plug connection to charge your caravan while towing, this charge will be delivered via the Projecta IDCX DC-DC chargers.

Storage & Care

Long Term Storage

To maximise the life of your caravan you should consider additional protection from the elements. UV light and moisture can have an adverse effect on materials when left unprotected outside. This section outlines some of the things you can do as an owner to protect your investment.

Interior

Moisture in the smallest amounts can cause mould. High humidity and cooling temperatures can create condensation, additionally condensation can form under mattresses due to temperature differences between warm bodies on top and the bed base being cold from outside temperatures. As a precaution you can do the following:

- Check under mattress for moisture before packing up. If moisture is found allow it to thoroughly dry before closing your camper.
- Store 1 or 2 moisture absorbing packs/dehumidifier packs in the caravan to draw away any residual water vapour.
- If packing up in damp or humid conditions, open and dry out the caravan at the first opportunity when returning home.

Exterior

Ensure all seals on the caravan have proper compression at 30-50%, are free of dirt and have nothing protruding past the seals. UV light and the elements can over time cause seals and fittings to perish and become brittle. The use of a caravan cover will extend the life of components and keep your investment looking better for longer.

Batteries

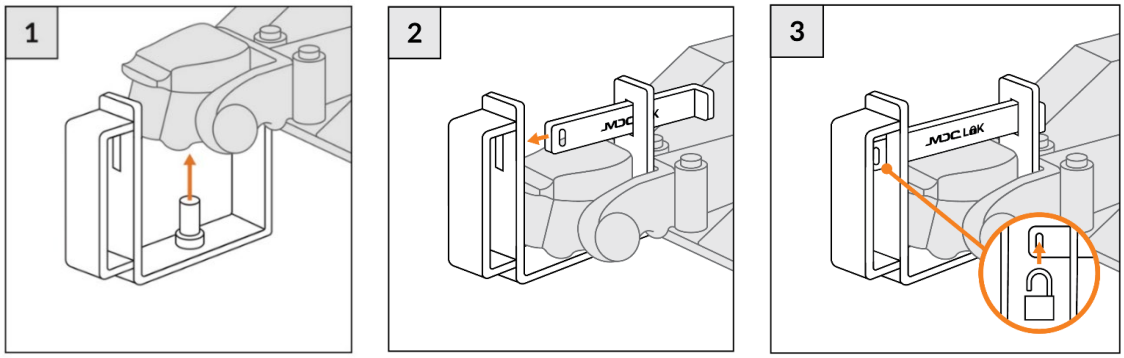
When storing your RV, all DC loads should be turned off and isolated to ensure the battery system is not drained. It is recommended that it remains at 50% charge and recharged every 3 months when stored.

For further information regarding your lithium batteries, refer to the LiFePRO+® website (www.lifeprolithium.com.au)

Your caravan is supplied with an AUSRV engineered coupling lock device. This device is designed and manufactured to deter the theft of your new caravan.

How to attach your lock to your **Cruisemaster DO-35 coupling:**

1. Make sure the dust cap is securely connected to the bump cover. This is done by locating the rear lip on the dust cap onto the groove of the bump cover and then pushing it in a downward motion until the dust cover is secure (there should be a slight click when it has been assembled correctly). Test if the dust cover is connected to the bump cover by applying a slight upward force to the dust cover, it should not separate.
2. Slot the pin into the centre of the coupling, aligning the back tab to run in-between the gap at the rear of the coupling.
3. Insert padlock.



Care and Maintenance of the Caravan

Protection of Finishes

Paint

The paint coatings on your caravan are no different to that of your car in that they need regular care and maintenance. Rubber seals and applied sealants on caravans can shed polymers and pigments that can stain paint finishes if your caravan is not washed regularly.

Washing: Only use mild detergents free of ammonia when washing your caravan. Always check the label to ensure the washing solution is nonabrasive, contains no ammonia or caustics.

Polishing: New caravans should only be polished with wax-based polishes that are nonabrasive. When removing scratches from paintwork use a fine finishing compound. Cutting pastes are too abrasive and will expose the base material.

Protection: Carnauba wax is an excellent protection against oxidisation. The paint on your caravan should be waxed annually regardless of being kept under cover to protect the surfaces from oxidisation.

Acrylic Windows

Windows should be cleaned with a clean, soft, nonabrasive cloth to avoid scratches and soapy water.

**Do not use any cleaners that contain ammonia or solvents. **

Internal Finishes

Laminates and internal wall surfaces should be cleaned with a damp soft cloth. For stubborn marks use a mild detergent based cleaner.

Do not use cleaners that contain ammonia or caustics

Granite Sink Finish

Do not us harsh or caustic chemicals such as glue, paint, concentrated hydrochloric acid etc. Clean with alcohol-based products and wipe with a damp, soft cloth after cleaning.

Ensuite Finishes

Never use harsh detergents or bleach-based products on the toilet or sealants in the ensuite. Use of such products will damage the seals and sealants.

Mirrors

Do not use solvents or chemicals when cleaning mirrors. Warm water and a soft, clean cloth are the best method. Cleaners and solvents may affect the reflective backing causing what is known as “creep” where the edges of the mirror discolour.

Galvanised Finishes

Your galvanised chassis will need maintenance when used offroad. The zinc coating although being tough is still susceptible to damage from stones chips to the coating should be maintained using a zinc rich coating.

High Tensile Bolt and Fittings

Zinc plated bolts and fittings should be coated with a protectant such as a lanolin-based spray. The proprietary item “Lanotec” is recommended.

Stainless Steel

Do not use abrasive cleaners on stainless steel. Purpose made stainless steel cleaners are recommended as are solutions such as 10% white vinegar in water.

Fabrics

Fabrics may not be colourfast and should be washed gently by hand on their own or dry cleaned.

Shade and screen care

- Do not close blinds while the window is open. Air pressure can dislodge the blind material from its guide damaging it.
- Always open and close blinds and screens carefully and evenly with two hands ensuring screens and blind material feeds evenly through the guides.

Corrosion Protection

Reasonable steps should be made by the customer to protect the product from corrosion. Seaside areas, areas with high salt contents in soil and roads that are salted during snow conditions can accelerate corrosion. When used in these areas the product should be thoroughly washed after use and unpainted metal surfaces should be coated in a suitable protectant. Lanotec lanolin spray, Inox or similar are recommended.

Roof Maintenance

Sealants

Roof sealants should be inspected every 6 months for condition. If the sealant has perished or adhesion has failed it should be repaired immediately.

Solar Panels

Accumulated dirt and soiling can affect the performance of the solar panels. Panels should be cleaned as necessary to prevent this. Sealants around solar panel mounts should be checked annually to ensure they are in good condition.

Caravan Body Maintenance

Locks and Latches

Locks need regular maintenance to ensure they operate correctly and stay free from corrosion. Diligent use of WD40 or Inox will help in this regard. Both locks and latches need to be checked for adjustment to ensure correct seal compression.

Rubber Seals

Rubber seals are critical in reducing or eliminating dust and water ingress. Damaged or worn seals should be replaced immediately. Seals that are overly compressed will stay flattened and be less effective. (See maintenance schedule)

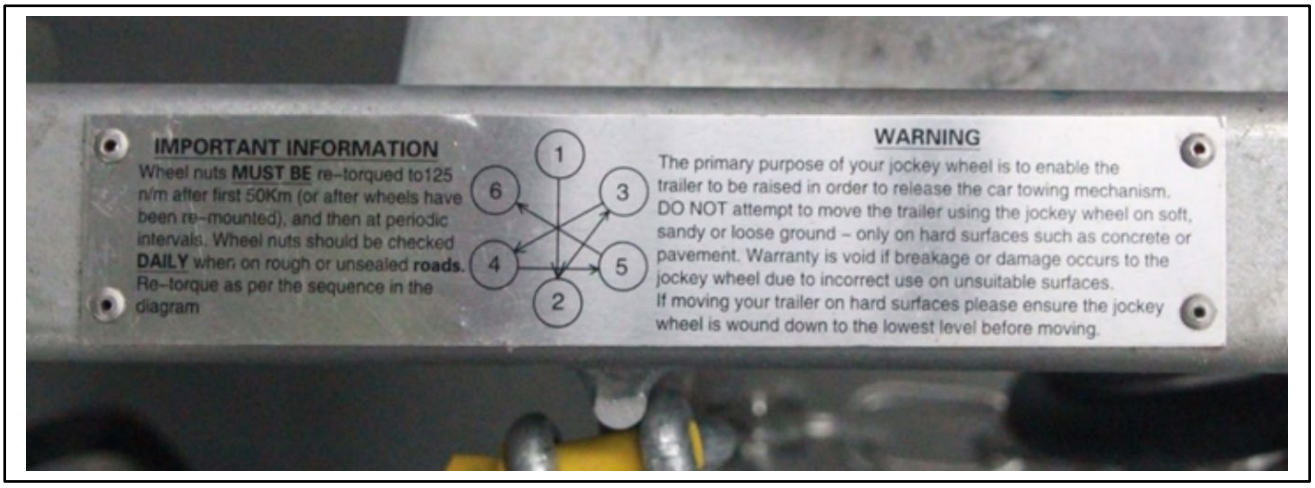
Sealants

Regular checking of sealants will help avoid any likelihood of water ingress on your caravan. Offroad use can cause mechanical damage to seals from vegetation and stones striking the caravan body. 6 monthly inspections should be undertaken, and any necessary repairs made.

Torque Settings

Wheel Nuts

Wheel nuts should be tightened to correct torque using a torque wrench. Never trust a “rattle gun” as these may over or under tighten. A quality torque wrench will ensure nuts are tightened correctly. It is important to remember when picking up your new caravan or after wheels have been removed to check your wheel nuts at 50km, 100km, 250km, 500km and periodically thereafter before each trip and daily when travelling offroad. The correct torque setting is 140Nm for 14mm studs with alloy wheels and 200Nm for 14mm studs with steel rims. Refer to the plate on your drawbar.



Hitch

The high tensile bolts securing your hitch should be tightened to 90Nm. These should be checked at 5000km intervals or 2500km in harsh offroad conditions.

Trailing Arm Pivot Bolts

The pivot bolts are a high tensile steel. The service interval for these bolts is 5000km under normal use and 2500km for harsh offroad conditions. During travel they should be inspected daily to ensure they have not rotated or become damaged. Correct torque is 190Nm.

Hand Brake

Parking brakes are mechanically operated by cable means. The cable attachment occurs outside of the brake backing plate. Cable force applied to the parking lever creates a torque through the pivot pin and cam assembly. Torque transferred to the parking cam results in a spreading force between the primary and secondary shoes. The shoes in turn, move towards the drum until contact is made. Friction generated between the drum and lining contact surface results in parking brake capability.

Use the cable adjuster to give enough tension to be able to set the handbrake lever on the last two notches of the coupling or handbrake is 1/3 raised when unladen. This needs to be checked again when the trailer or caravan is loaded. If the cable is too tight, the brakes will be applied as the axle moves backward under spring deflection.

Adjuster Automotive Type

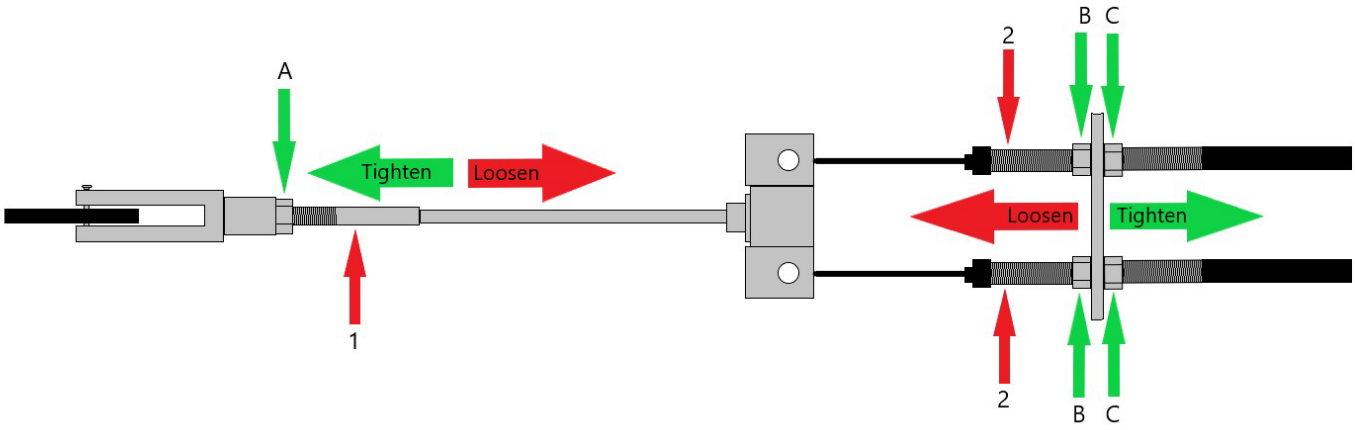
Adjusting the automotive style handbrake on later models is done as follows.

To adjust the left and right side simultaneously:

1. Loosen locknut A
2. Turn shaft 1 clockwise, shortening the length exposed until desired adjustment is achieved.
3. Re-tighten locknut A

For extended adjustment or to balance left and right cables:

1. Choose the side you want to adjust and undo locknut B.
2. Turn locknut C behind mounting bracket clockwise in the direction of the handbrake lever while loosening locknut B to tighten the cable and apply more handbrake.
3. Turn locknut B clockwise towards the backing plate while loosening locknut C to reduce handbrake.
4. When finished, tighten locknuts to prevent further movement.



Correct Use of Your Electric Brakes

Your trailer brakes are designed to work in synchronisation with your tow vehicle brakes. Never use your tow vehicle or trailer brakes alone to stop the combined load. Your trailer and tow vehicle will seldom have the correct amperage flow to the brake magnets to give you comfortable, safe braking unless you make proper brake system adjustments. Changing trailer load and driving conditions, as well as uneven alternator and battery output, can mean unstable current flow to your brake magnets. It is therefore imperative that you maintain and adjust your brakes as set forth in the controller manual, use a properly modulated brake controller and perform the synchronisation/adjustment procedure recommended by the brake controller supplier.

Proven and in some cases approved service methods and correct repair procedures are essential for the safe, reliable operation of the brakes, suspension, and axles as well as the personal safety of the individual doing the work. This manual intends to provide general directions for performing service and repair work with tested, effective techniques. By following these guidelines, it will help assure reliability. The numerous variations in procedures, techniques, tools, and parts for servicing axles, as well as in the skill of the individual doing the work will determine outcomes. This manual cannot anticipate all such variations nor provide advice or cautions as to each. Accordingly, anyone who departs from the instructions provided in this manual must first establish that they neither compromise their personal safety nor the vehicle integrity by their choice of methods, tools, or parts.

- If at all in doubt, please refer all repairs and maintenance to a suitably qualified or experienced mechanical repairer.
- Market Direct Campers accepts no liability for personal injury, loss or damage resulting from incorrect applications, methods, and failure to perform maintenance safely and correctly.

Brake Adjustment

Brakes should be adjusted (1) after the first 300 km's of operation when the brake shoes and drums have "seated," (2) at 5000 km's intervals, (3) or as use and performance requires. The brakes should be adjusted in the following manner:

Never crawl under your trailer unless it is resting on properly placed jack stands. Do not place supports on any part of the suspension system and use the designated jack point or under the spring base plate to jack trailer.

Brake Cleaning and Inspection

Your trailer brakes must be inspected and serviced at 5000km or more often as required by use and performance. Magnets and shoes must be changed when they become worn or scored to avoid inefficient vehicle braking.

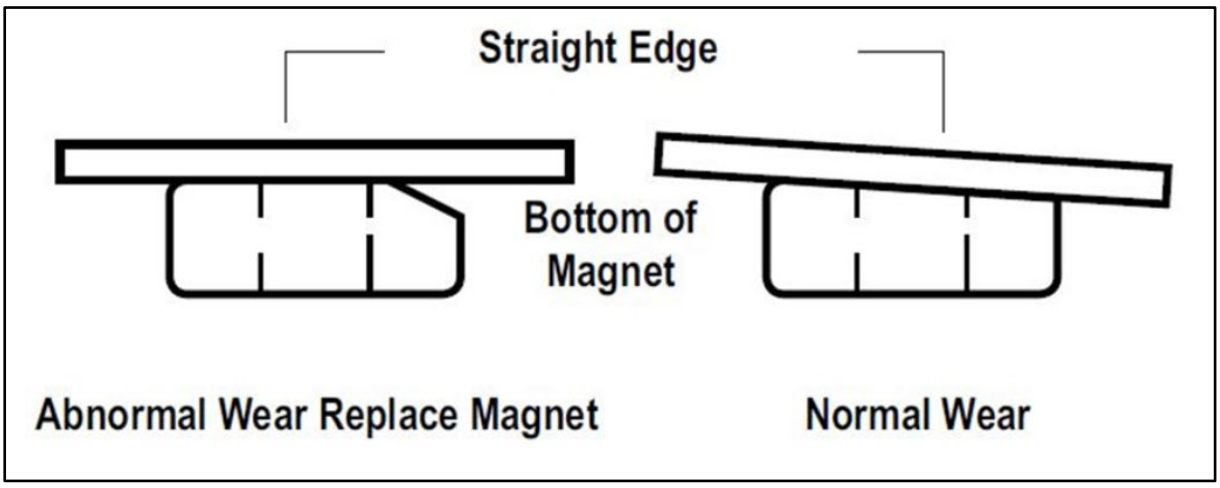
Brake Lubrication

This should only be done by qualified persons.

Do not get grease or oil on the brake linings, drums, or magnets.

Magnets

Your electric brakes are equipped with high quality electromagnets that are designed to provide the proper input force and friction characteristics. Your magnets should be inspected and replaced if worn unevenly or abnormally.



Even if wear is normal as indicated by your straightedge, the magnets should be replaced if any part of the magnet coil has become visible through the friction material facing of the magnet. It is also recommended that the drum armature surface be refaced when replacing magnets.

Magnets should also be replaced in pairs - both sides of the axle. Always use genuine AUSRV OEM parts.

Shoes and Linings

A simple visual inspection of your brake linings will tell if they are useable.

Replacement is necessary if the lining is worn (to within 1.5mm or less), contaminated with grease or oil or abnormally scored or gouged. It is important to replace both shoes on each brake and both brakes of the same axle. This is necessary to retain the "balance" of your brakes. Be sure to replace your shoes only with genuine AUSRV parts available from our outlets.

Corrosion Prevention

It is important to take steps to prevent corrosion of parts on your trailer to extend the service life. Many fittings are high tensile and therefor zinc plated. Fittings such as this can benefit from additional protection. Some helpful products to prevent corrosion are "Lanotec," "WD40", "Inox" and comparable products. These can be spray applied and do an exceptionally respectable job of protecting metal surfaces, particularly in corrosive and aggressive environments near the ocean and inland waterways.

Often, we take our campers and caravans to saltwater environments. Driving through saltwater is never recommended as the residual chloride ions accelerate corrosion. If you are camping near or driving through these kinds of environments, we highly recommend that your trailer be thoroughly cleaned after use. Flushing the chassis and washing and rinsing your trailer is important.

Wheels and Tyres

Highway

Your caravan is fitted with 16” wheels and 265/75 R16 Goodride Tyres. The tyres are a “Light Truck” tyre with a mud terrain tread and a maximum load rating on single axle of 1550kg at 80psi.

Recommended highway pressure at tare weight of the caravan is 62psi.

Recommended highway pressure at ATM of 3000kg is 77psi.

Offroad

Offroad driving requires lower tyre pressures and lower speeds. When driving on rough and corrugated road, a reduction of speed and controlled deflation of tyres is required to protect the caravan and its suspension from damage. In extreme circumstances tyre pressures may be reduced significantly. When lowering from highway pressure, a rule of thumb is to reduce your speed by the same percentage as the lowering of tyre pressure.

Because offroad conditions can vary, you must lower your pressures and reduce speed until vibration and shock through the suspension is at a moderate level to suit the conditions you are experiencing, and the loaded weight of your caravan.

When returning to the highway or when increasing speed, you must reinflate the tyres to correct highway pressures. Failure to reinflate can cause severe handling problems resulting in injury or death.

Suspension

Your camper is fitted with quality independent trailing arm suspension with dual shock absorbers. This design is ideal for the full range of use on and offroad however, there are limitations in prolonged use of corrugated and rough road.

Shock Absorbers & Bushes

The function of shock absorbers is to turn kinetic energy into heat and dampen the rebound in the suspension to keep the tyre in contact with the road. During prolonged periods on corrugated and rough roads it is possible to overheat shock absorbers to the point of failure (shock fade). Best practice is to take regular breaks and allow both the shock absorbers and suspension bushes to cool. Overheating the bushes through prolonged driving on corrugations can soften the thermoplastic and cause premature wear and/or deformation of the bush. On severely rough roads stop regularly up to every hour to allow components to cool.

Electrical Systems

Low Voltage (240Vac) Power System

Mains/Shore Power

AUSRV Caravans are built with an integrated 240V Alternating Current (240Vac) power supply system for charging the battery system and running fixed appliances, such as the Air Conditioner, and domestic appliances, such as laptop chargers, television sets, toasters etc. Primary supply for this system is by connecting to an external power supply, such as the national grid or a local site supply. Your caravan connects to these supplies via an external 15A socket inlet located on the offside wall of the caravan. *See Fig.3* The Projecta INVCHR2 Inverter-Charger in your caravan is directly wired to the 240Vac system and the charging function is powered via the 15A exterior socket. To use grid or site power, you will require a 15A power lead supplied by a 15A outlet.

15A supply leads are physically different from standard 10A leads found in most homes. 15A plugs have a larger earth pin which prevents them from being used in incompatible sockets. *See Fig.4.*

Fig.3

Fig. 4

NOTICE

When charging at home, most domestic dwellings are not built with 15A outlets. Where a 15A outlet is unavailable you will need a conversion box that will step up from 10A to 15A with a safety switch. See Fig 5. Never leave power leads coiled when in use, lay the lead out back and forward in a manner that will not be a trip hazard or risk damage to the lead.

Fig 5

240VAC Overload Protection

Residual Current Device (RCD) Safety Switches

The primary shore power safety switch or Residual current Circuit Breaker with Overcurrent protection (RCBO) is located inside the caravan near the entryway. *See Fig 6.* In the event of a shore power fault, this switch will quickly cut power to the caravans 240Vac system.

- To test the switch, press the blue *TEST* button and the switch will disengage and open the circuit.
- To reset the switch after it has tripped or been tested, push the lever up into the on (I) position.

Fig 6

The primary inverter output power safety switch RCBO is located on the INVCHR2 inverter-charger unit. *See Fig. 7.* This is accessible externally via the hatch located on the offside of the caravan *See Fig 8*.

- To test the switch, press the yellow *TEST* button and the switch will disengage and open the circuit.
- To reset the switch after it has tripped or been tested, push the lever up into the on (I) position.

Fig. 7

Fig 8

NOTICE *It is recommended to test all RCD switches monthly.*

240VAC Distribution

Throughout the caravan are multiple 240Vac General Purpose Outlets (GPOs), the same as found in most domestic dwellings and businesses.

- Each GPO is directly wired to the 240Vac system and can be powered from shore power or the INVCHR2 inverter-chargers inverter function.
- Each GPO is individually switched *See Fig 9*

Fig 9

Automatic AC Power Transfer

The Projecta INVCHR2 Inverter-charger is fitted with an AC transfer switch which manages the 240Vac power automatically switching between shore power and inverter power.

In case of poor AC mains power due to poor voltage/ frequency or waveform characteristic, the Inverter Charger will switch to inverter and battery power.

In case of AC mains failure or exceeding the maximum AC input current set by the user, the Inverter Charger will initiate a quick switch to inverter, which will guarantee continuous power. When stable AC power is resumed, the inverter charger will switch back to AC mains power after a 5 second delay. Due to its ultra quick transfer design, as quick as 0ms. The Inverter Charger could be used as a UPS.

240VAC Service and Isolation

Located near the entryway of the caravan are two control switches used for isolating the 240Vac system.

- The rotary style switch, *See Fig 10*, if turned to the OFF position will isolate All 240vac power from the 15a inlet, this includes the primary shore power RCD and INVCHR2 inverter-charger. This switch is intended for **SERVICE USE ONLY** and should not be used as a power switch during normal operation.
- The light switch style switch, *See Fig 11*, is when switched to the OFF position will isolate the Air Conditioner from the 240Vac system, including the INVCHR2.

Fig 10

Fig 11

NOTICE

DO NOT cut 240Vac power to the air conditioner whilst running, only use the remote as the air conditioner has a soft shutdown function and cutting power whilst running may damage the unit. Refer to the air conditioner OEM documentation for further information.

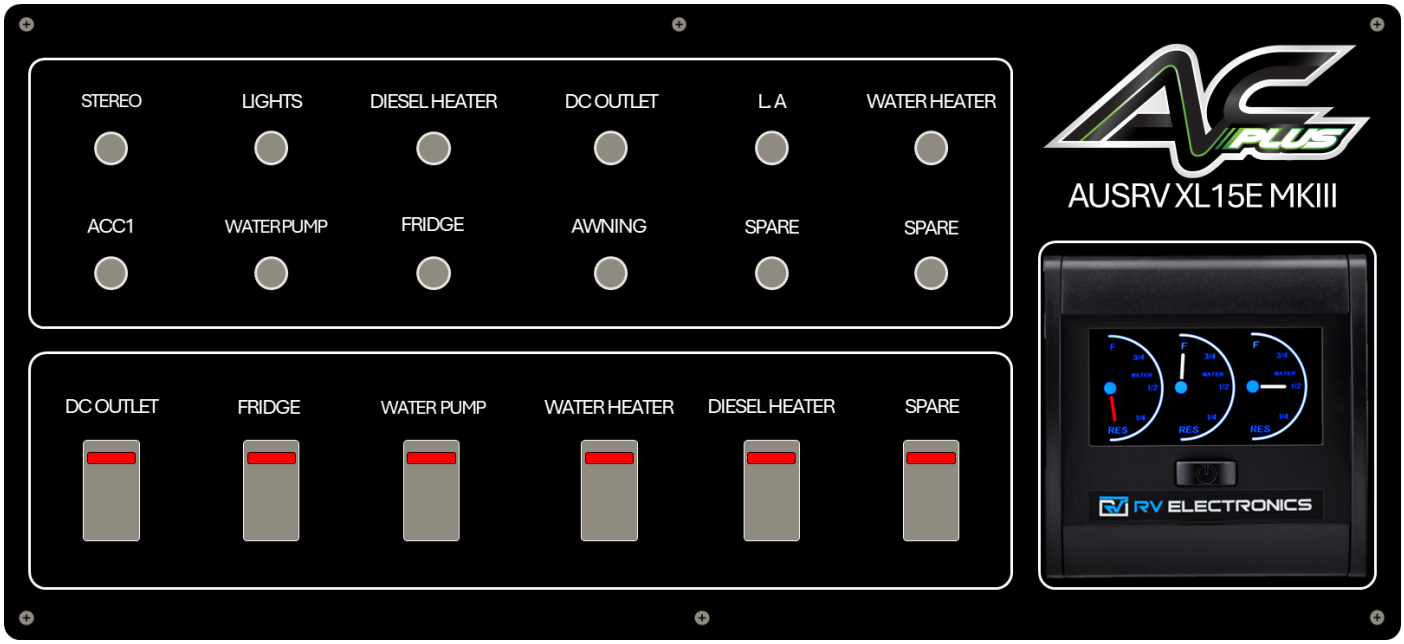
Extra Low Voltage (12Vdc) Power System

Distribution Switchboard Control Panel

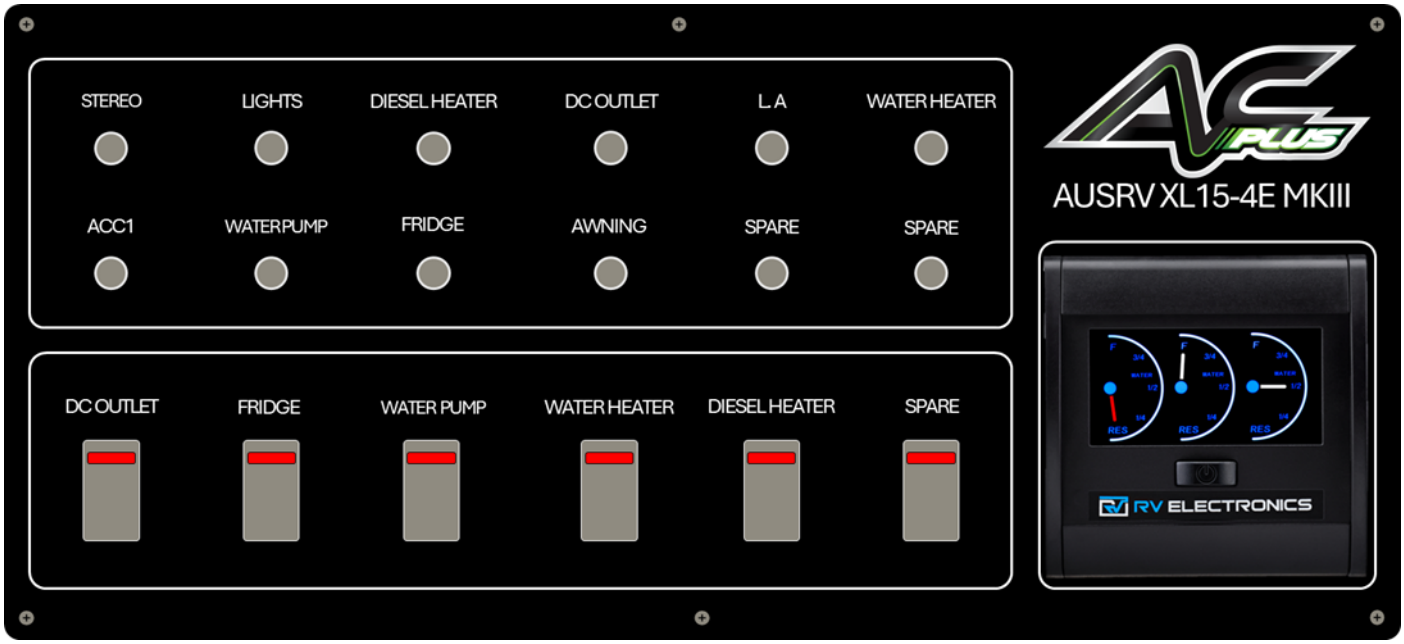
Located in overhead cabinets this panel is the primary location for the 12Vdc power system. It houses the main rotary isolator switch for all non-constant 12Vdc loads on the batteries, rocker switches to control the various circuits throughout the caravan and mini circuit breakers protecting these circuits. It also contains a legend to identify what electrical components are part of which circuit.

AUSRV XL13E MKIII

AUSRV XL15E MKIII



AUSRV XL15-4E MKIII



12V Isolator Switch

- Rotate the red rotary switch to the ON position to allow 12V loads to run. These load draw power directly from the battery system.
- Rotate the switch to the OFF position to isolate these loads, this will prevent power being drawn from the battery system.
- Rotate the switch a further ¼ turns past the OFF position to lockout the switch, it can be removed by pulling knob away from the panel for additional lockout isolation if desired.

Note: The batteries may still be charged, and inverter may still be used while the 12V isolator switch is in the OFF position.

LED rocker switches

- Switching into the up position will turn on the relative circuit and this will be indicated by a red LED light on the switch.

Mini Circuit Breakers

See 12VDC Overload Protection

12VDC Overload Protection

High Load Primary Circuit Breakers (50A and above)

The primary/main 12Vdc circuit breakers will be within 1M of the battery bank. They may be accessed either externally through the battery storage bay or internally through an adjacent electrical bay depending on your caravan model. There will be 2 of these breakers present:

300A Breaker	-	This is the overcurrent protection for the battery bank.
200A Breaker	-	This is the over current protection for the INVCHR2 Inverter Charger

- These breakers are push-to-reset type. When opened/tripped a red lever will open at the bottom of the breaker. To reset push the lever back into the body of the breaker. *See Figures 12 & 13.*
- To manually open the breaker and isolate the circuit, push the red button.

Fig. 12

Breaker in normal state

Fig. 13

Tripped Breaker

Medium Load Secondary Circuit Breakers (10A-50A)

Providing overcurrent protection for directly connected DC appliances and the PV system, these breakers are typically located in the main electrical bay under the dinette seat or bed depending on your caravan model.

- These breakers are push-to-reset type. When opened/tripped, a small black pin on the end of the breaker will be extended out, *See Fig 14*, and will have small amount of resistance to being pressed in. When resetting listen for an audible *click* to confirm the breaker has been successfully reset.

Fig. 14

Mini Circuit Breakers

- Located on the Distribution Switchboard Control Panel
- Each breaker corresponds to a circuit per the legend on the panel. *See Wiring Plan – Distribution Switchboard*
- Breakers are push-to-reset type, when opened/tripped the button will be extended out, *see fig 15*, and will have small amount of resistance to being pressed in. When resetting listen for an audible *click* to confirm the breaker has been successfully reset.

Fig. 15

Single-use Blade Fuses (1A-30A)

- Located on the primary battery bank circuit breaker these fuses are housed with in-line holders and are used for constant power circuits (Stereo memory, Emergency Breakaway system, Trail-Assure Electronic Stability System) *See Figures. 16 & 17.*
- The AutoTerm Diesel heater also uses these fuses and are located mounted near the heater head unit.

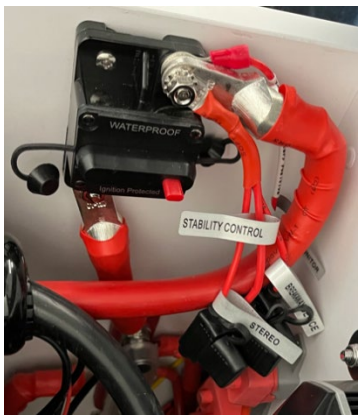


Fig. 16

Fig. 17

PV (Solar) Single-use Ceramic Fuses (10-15A)

- Located underneath the solar panels these fuses are housed in MC4 connectors specifically used for PV systems. Each solar panel has its own fuse for overcurrent protection of the panel.
- To change the fuse push in the tabs on either side of the connector and pull apart the connecter, this will allow the fuse cover to be unscrewed to reveal the fuse. Fuses do not have polarity and can be installed in either direction. *See Figures. 18 & 19.*

Fig. 18

Fig. 19

Note: Automotive Blade and Ceramic style fuses use a metal strip limiter rated to melt at a specific ampere rating, as the strip melts it creates a very high resistance that opens and protects the circuit. This is known as 'blowing' the fuse. This makes them a single-use item and will need to be replaced after the fuse is 'blown'. These fuses can be purchased from most automotive or electrical and online retailers.

Recently blown fuses can be hot enough to cause burns when touched. Allow time for the fuse and housing to cool before handling and discarding the fuse.

Lithium Battery System

Your RV is fitted with a dual 300Ah Lithium Iron Phosphate (LiFePO4) battery system. Capable of providing a total storage capacity of 600Ah.

The factory-fitted charging systems are specifically designed to allow efficient charging, suited to the extreme power demands of the larger battery, and an internal Battery Management System (BMS), built right into the battery itself, constantly monitors the battery health including:

- Over & Under Voltage
- Over & Under Current
- Over & Under Temperature
- Resistance
- Short Circuit

Also fitted, is an external battery monitor display and smart shunt from Projecta, with Bluetooth connectivity, which allows you to manage and monitor your power usage. *See BM500-BT Smart Shunt and Battery Monitor.*

The battery bank and shunt are externally accessible via an offside wall access hatch.

BM500-BT Smart Shunt and Battery Monitor

All AUSRV caravans with Lithium batteries are factory fitted with a Projecta BM500-BT smart shunt and battery monitor that is fitted between the battery bank and the 12Vdc system via the negative pole connection. This is so the shunt can measure the actual voltage, current load coming to and from the battery system and determine an accurate battery State of Charge (SOC) and relay this data to a display screen located near the caravan entryway by data cable. It is also a smart device that can transmit this data via Bluetooth to a companion app on your smart device.

The BM500-BT when correctly configured and calibrated to the battery system will constantly monitor the system and can provide early warning alarms for critical events such as:

- Over and Under Voltage
- Charge and Discharge Over Current
- Low SOC
- Low Time remaining
- Low and High Temperature

Using the BM500-BT Display Screen

The display screen is located near the caravan entryway and is connected to constant power from the battery system and is always on. To reduce constant draw on the battery system by the LED screen the display will automatically turn off after 150 seconds of inactivity. Press any button on the display to wake it back up.

Pressing the centre scroll buttons will cycle through the various display values:

Display Value		Description
Time to go	Mins	Time left under the present load, before the batteries are empty. Or time left under the charge current, before the batteries are fully charged Note: 999 is the highest value
Voltage	V	Voltage of the battery system
Current	A	Current flowing in or out of the battery system
Percentage		Percentage value of the auxiliary battery system state of charge

FURTHER READING

The Voltage meter on the left-hand side of the display is designed for a connection to a starter battery where the BM500-BT is installed in an automobile. It is not used for caravan installations. For more information refer to the Projecta OEM documentation.

Connecting to the Projecta BM500-BT Companion App

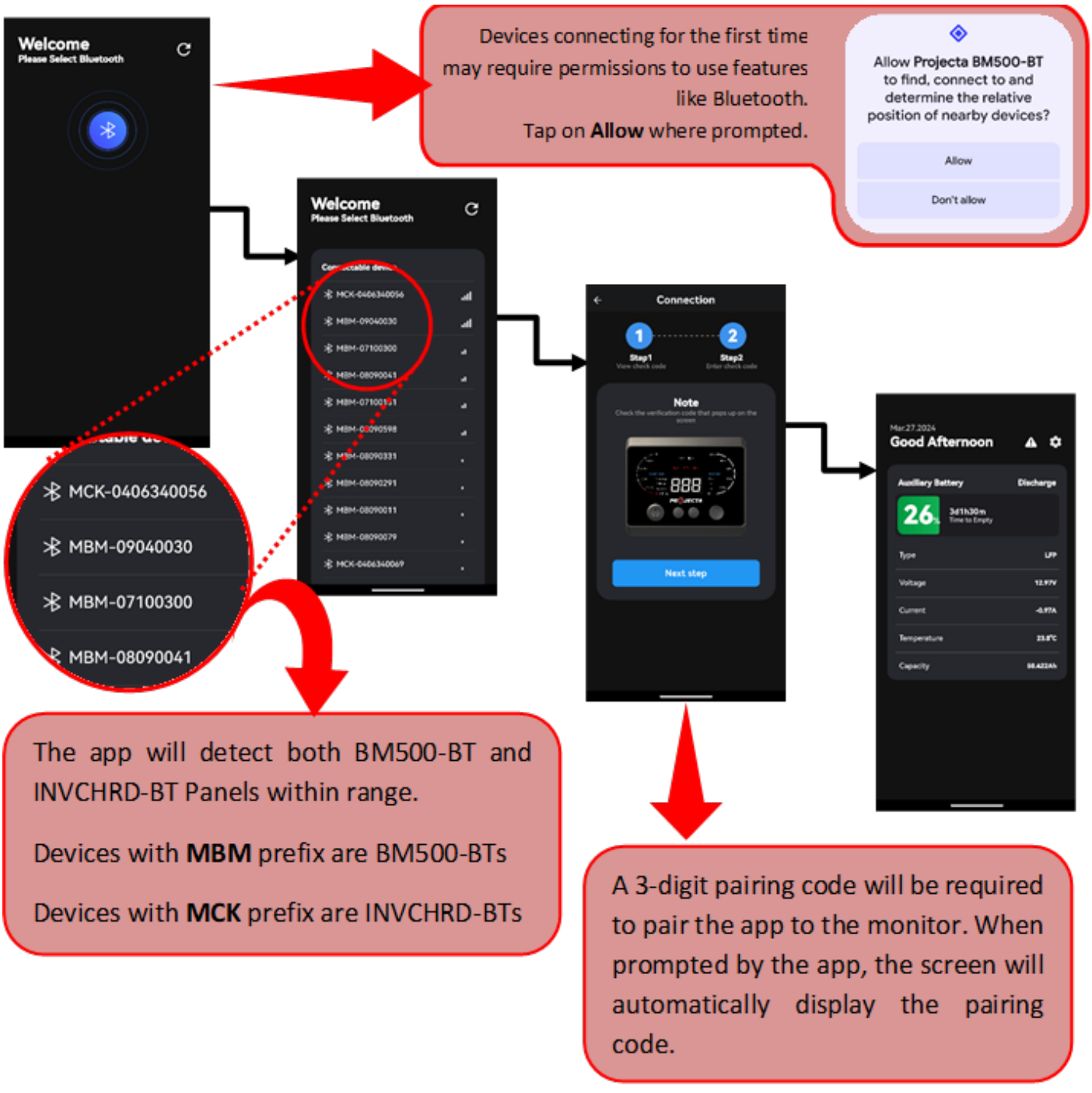
The companion app is available on iOS and Android and can be downloaded via the following QR Codes:

GET IT ON Google Play

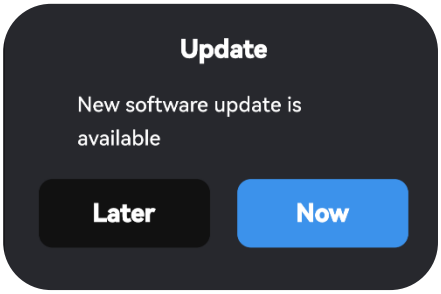
Download on the App Store

PROJECTA BM500-BT

1. Once connected to power, the system will undergo a brief initialisation period while it starts up. Using a smart device with the Projecta BM500-BT application installed, open the app, and connect to the monitor. Following the on-screen instructions.



2. Ensure the PMSHUNT and BM500-BT software is up to date. The app may detect this automatically and prompt you to update. Selecting Now on the prompt will take you to the Information screen. If not prompted to update, navigate to this screen manually:



a. Navigate to the settings screen. 
b. Tap the Information button.

If there is a yellow arrow next to any version numbers, tap on this and follow the prompts to automatically download, load and re-initialize the system. The app will automatically prompt you to reconnect to the system once complete.

FURTHER READING

For further information on navigating and using the companion app, please refer to the Projecta OEM documentation.

Configuring and calibrating the BM500-BT

It is essential for the BM500-BT to be correctly configured and calibrated to ensure the display and the app provide accurate information.

AUSRV fully configure and calibrate the BM500-BT during the manufacture of your caravan, however if the Shunt or batteries (single or both) are ever disconnected, replaced or the shunt is reset to OEM factory settings the BM500-BT will need to be reconfigured and recalibrated. This can be done completely via the app.

Configuration

1. At the home screen of the app once connected, tap on the cog symbol in the top right corner to enter the settings screen.
2. Ensure the settings are configured per t*able 2*:

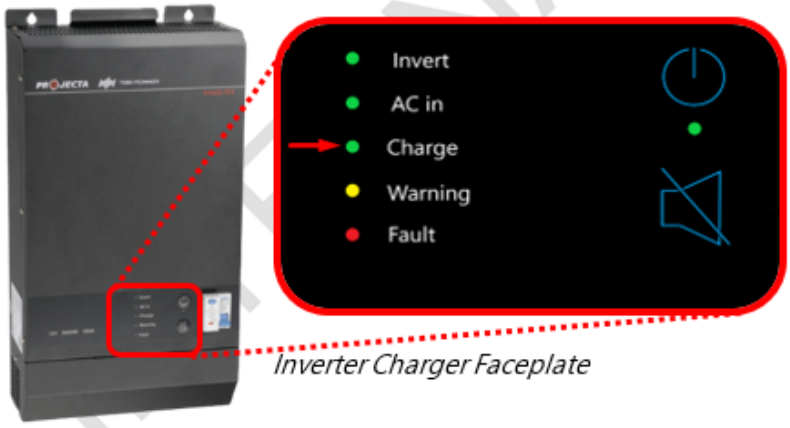
Battery Settings >			**Standard Setting for AUSRV MKIII Models**
Battery Type			LFP
Battery Capacity			600Ah
Battery Function			DISABLE
Alarm Settings >			**Standard Setting for AUSRV MKIII Models**
Buzzer			ENABLED
1	Battery Voltage Low	Alarm or Protection Value:	11.5V
		Resume Value:	12.2V
2	Battery Voltage High	Alarm or Protection Value:	14.8V
		Resume Value:	14.6V
3	Battery SOC Low	Alarm or Protection Value:	20%
		Resume Value:	30%
4	Time To Go Low	Alarm or Protection Value:	15min
		Resume Value:	20min
5	Over-current (Charge)	Alarm or Protection Value:	200.5A
		Resume Value:	195.0A
6	Over-current (Discharge)	Alarm or Protection Value:	-300.5A
		Resume Value:	-290A
7	Battery Temperature Low	Alarm or Protection Value:	-20.0°C
		Resume Value:	-10.0°C
8	Battery Temperature High	Alarm or Protection Value:	50.0°C
		Resume Value:	49.0°C

Table 2

Calibration

1. Ensure the battery system is fully charged. *See Battery Charging.*

This is consistently identified by looking for the Green '● Fully Charged' LED light on the charger inverter faceplate or on the INVCHRD-BT display screen, the right-hand side SOC (state of charge) meter is solid (not flashing) at 100%.



Inverter Charger

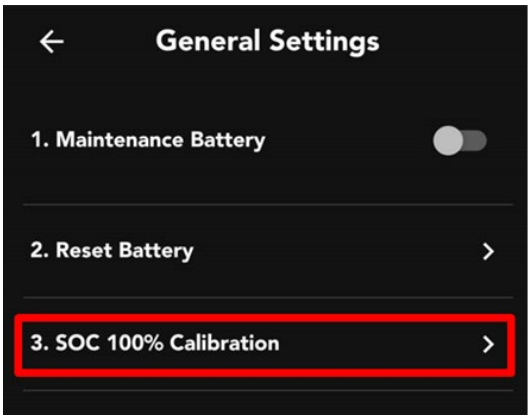
Inverter Charger Faceplate

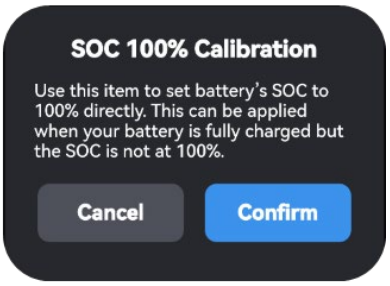
Inverter Charger INVCHRD-BT Display Panel (not BM500-BT display)

2. Once the battery charger is reporting the battery bank as fully charged, ensure there are no loads or charge being applied to the battery bank:
    a. Disconnect the RV from shore power.
    b. Isolate the battery bank from all loads (Red rotary isolation switch)
    c. Ensure the Inverter Charger is switched **OFF.**

Inverter Charger INVCHRD-BT Display Panel (not BM500-BT display)

3. In the mobile app, navigate to General Settings and tap on option 3. SOC 100% Calibration and tap confirm. The BM500-BT is now calibrated and ready for use.





Battery Charging

Charging from Shore Power

The factory fitted INVCHR2 inverter-charger has a 5-stage charging function when connected to 240Vac mains via the 15A inlet.

- Ensure the INVCHR2 is powered ON, this is done by the power switch on the INVCHRD-BT display panel located near the caravan entryway. *See Fig 20.*
- Once connected to power the charger will automatically begin charging the batteries.
- It will indicate when the batteries are fully charged when all 5 bars on the right-hand side of the display panel are solid and not flashing.

Fig 20

Charging from your Vehicle

All AUSRV caravans come factory fitted with a 12-pin trailer plug and 50A Anderson Powerpole plug accessible at the drawbar. To charge from your vehicle corresponding plugs should be fitted for connection. *See CHARGING THE CARAVAN for further details.*

- The factory fitted IDC25X DC-DC chargers are programmed to favour solar power input until the supply falls below a minimum threshold for the controller. By supplying power to the trigger wire through the #12 pin, the unit will switch mode to favour the supply via the auxiliary Anderson plug when the tow vehicle engine is running.
- Vehicles that have a "smart alternator" require the IDC25X's to be activated via the trigger wire for the tow vehicle ECU to detect the charge requirement of an auxiliary battery.

Battery Care & Maintenance

Storage type batteries require periodical maintenance to perform at their peak and extend their service life. The following is an outline of how to gain the best performance and lifecycle from the LiFePRO+ batteries fitted in your RV:

- Always use a quality charger that caters to the voltage requirements of a LiFePO4 battery.
- Never leave your battery stored at low voltage. Before storing your RV ensure that the battery is fully charged, or at least 50% charge, and all power is disconnected/switched off.
- Always ensure that, when in storage, the voltage does not drop below 50% charge.
- When possible, leave the battery connected to a smart charger that will cycle and maintain the battery during storage. Such as the factory fitted, 5-stage charger. If this is not possible check and charge at regular intervals to prevent excessive discharge.
- Never connect unregulated solar power directly to your batteries.

For further information regarding your lithium battery, refer to the LiFePRO+ website (www.lifeprolithium.com.au)

A CONNECTABLE ELECTRICAL INSTALLATION BATTERY SHALL ONLY BE REPLACED BY ONE OF THE SAME TYPE AND SPECIFICATION AS THAT ORIGINALLY FITTED. UPGRADES TO THE BATTERY OR SYSTEM SHALL ONLY BE PERFORMED BY A COMPETENT PERSON.

Lithium (LiFePO4) Battery Reset

LiFePRO+ batteries are equipped with an internal battery management system (BMS) to protect the battery from conditions such as overcharge, over-discharge, and short circuits.

In the event, the internal BMS is triggered (e.g., the battery goes flat), the 12V system will shut down for a brief period and connected display screens may show no voltage during this time. To reset the BMS and recharge the battery, follow these steps:

(A) MAINS POWER AVAILABLE:

1. Turn off all loads.
2. Connect your Caravan to 240Vac mains power and switch it on – this will start the INVCHR2 Battery Charger.
3. Confirm the right-hand side of the display screen light show one or more flashing bars; and
4. Charge battery for at least one hour before turning DC loads back on.

(C) NO MAINS POWER AVAILABLE

1. Connect the trailer plug and Anderson plug to the running tow vehicle.
2. Change the mode on both or either IDC25X DC to DC controller to Override Output mode by holding and pressing the Mode button on the charger for about 10 seconds. When all Battery Type LEDS light up simultaneously, let go of the Mode Button. This will cause IDC25X to commence charging.
3. Charge for at least 15min* before changing back to lithium mode.

**After 10 – 15 minutes with no DC loads applied, the BMS shutoff inside the battery may disengage, and a voltage reading will appear on the PROJECTA display. In this case, follow the steps outlined in the procedure (A) as soon as Mains power is available.*

Use of Appliances

Always check the input requirements for any appliance before use!

- All normal household appliances operable from a 10A socket may be used when connected to mains power. This includes portable induction cookers, jugs for boiling water, electric fry pans and coffee making appliances.
- Sensitive electronics such as chargers, laptops, C-Pap machines are permissible.

Projecta INVCHR2 – 12V 2000W pure sine wave Inverter Charger:

Mobile Phone Charger 5-30W	✓	Laptop 60-250W	✓
Digital Camera 4-19W	✓	Video Game Console	✓
Camcorder 10-30W	✓	TV	✓
Portable Stereo 4-50W	✓	Printer 100-160W	✓
Hand-Held Game Console 20W	✓	PC 200-400W	✓
Fan 30-60W	✓	Small Fridge 250-300W	✓
Small Power Tools 300-500W	✓	Halogen Light 500W	✓
RV Air Conditioner 2000W	✓	Electric Blanket 100-150W	✓
Induction Cooktop 1300-2000W	✓	Coffee Machine 2000W	✓
Microwave 900-2000W	✓	C-Pap Machine	✓
Fan Heater 2000W	✓	Washing Machine 500-1400W	✓

12V DC Outlets:

12v Kettle 150W	✓	12V cooker 10-15 Amps	✓
Small fridge 150W	✓	12V Portable Oven 130W	✓
12V sandwich/Jaffle Maker	X	Portable Diesel Heater	X
12V Washing Machine	X		

USB Outlets:

- Phone and tablet charging only.

INVCHR2 Inverter-Charger

- High Voltages inside
- The appliance is not to be used by persons (including children) with reduced physical, sensory, or mental capability, or lack of experience and knowledge, unless they have been given supervision of instruction.
- Children being supervised not to play with the appliance.
- This device can only charge 12V batteries: -
  INVCHR2 can charge:
    - 12V Lead acid batteries from 100~2400Ah.
    - 12V Lithium batteries from 100~1200Ah

- THE HIGH LOAD PRIMARY CIRCUIT BREAKER MUST BE TURNED OFF BEFORE SERVICING
- MUST ONLY BE SERVICED BY QUALIFIED ELECTRICIAN

INVCHR2 General Safety Instruction

As dangerous voltages and high temperature exist within the Inverter Charger, only qualified and authorized maintenance personnel are permitted to open and repair it. Please make sure Inverter Charger is turned off before opening and repairing it.
This manual contains information concerning the installation and operation of the Inverter Charger.
All relevant parts of the manual should be read prior to commencing the installation.
Please follow all local laws and regulations. Any misuse of the product according to the manual will not be covered by warranty.
General precaution

- DO NOT expose to dust, rain, snow or liquids of any type, the inverter is designed for indoor use. DO NOT block off ventilation, otherwise the Inverter Charger could overheat.
- DO NOT put any flammable goods near to inverter.
- NEVER place unit directly above lead acid batteries, gases from a battery will corrode and damage Inverter Charger.
- DO NOT place battery on top of Inverter Charger.

Precaution regarding battery operation.

- If battery acid contacts your skin, use plenty of water wash the acid off. If acid goes on your clothes remove these clothes. If irritation to the skin occurs, see medical advice.
- Lead Acid batteries may generate flammable gas during charging. NEVER smoke or allow a spark or flame in vicinity of battery.
- DO NOT place metal tools on the battery, a spark may occur, and a short circuit might lead to explosion.
- REMOVE all personal metal items such as rings, bracelets, necklaces, and watches while working with batteries. Batteries can cause short-circuit current high enough to make metal melt and could cause severe burns.

General Description

The INVCHR2 is a 2-in-1 inverter chargers designed for high power management applications such as RV, utility vehicles, marine and emergency.

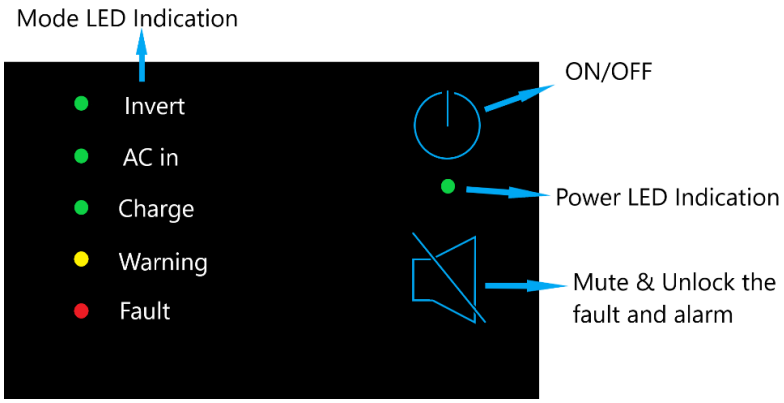
With the rapid charging capability of lithium batteries, the Inverter Chargers can provide high current charging from shore power and can start and powering the most demanding appliances, such as air conditioning, water pumps, washing machine, freezer, compressor, power tools and induction cooktops.

The inverter charger is fitted with an AC transfer switch which manages the AC power automatically switching between shore power and inverter power.

With Grid Boost feature, INVCHR2 can work with a limited AC source such as a generator or restricted AC mains to provide an additional boost using battery power.

INVCHR2 Control Panel

Located behind the external access hatch on the offside of the caravan.



LED LEGEND	
LED	Function
Invert	It will illuminate when the unit is inverting.
AC In	It will flash when the unit detect any input, mains, or generator.
Charge	It will flash when the unit is in float charging. It will illuminate when the unit is in bulk or absorption charging.
Warning	It will flash when the unit has a warning.
Fault	It will flash when the unit has an error.

Inverter Charger Functions

Grid Boost

Grid Boost is a useful feature when limited grid supply is available or working with a generator. The Inverter Charger will disconnect the mains AC power providing power from the inverter and battery or boost this power using AC mains and the inverter / battery power. With this feature, you can avoid tripping a shore power circuit breaker or reduce generator capacity by up to 50%.

High performance pure sine wave

INVCHR2 is a pure sine wave inverters generating a near perfect waveform.

High surge power capability

Providing outstanding surge power capabilities, you can easily run heavy inductive loads like fridges, coffee makers, microwaves, power tools, air conditioning and induction cooktops.

Battery low voltage protect.

Inverter Charger provides configurable battery low voltage protection.

Lithium Battery Compatible

Projecta Inverter Chargers support a universal LFP charging profile and is provided by AUSRV with a pre-defined LFP charging profile specifically optimized for LiFePRO+™ Lithium Batteries.

AC Transfer Switch

In case of poor AC shore power due to poor voltage/ frequency or waveform characteristic, the Inverter Charger will switch to inverter and battery power.

In case of AC shore failure or exceeding the maximum AC input current set by the user, the Inverter Charger will initiate a quick switch to inverter, which will guarantee continuous power. When stable AC power is resumed, the inverter charger will switch back to AC shore power after a 5 second delay. Due to its ultra-quick transfer design, as quick as 0ms. The Inverter Charger could be used as a UPS.

Ground Relay

The neutral output of Inverter Charger is automatically connected to earth upon no external AC sources are available. Once external AC sources present, the ground relay will open. The Ground relay is required for the RCD to function correctly.

Protections and Safeguards

The INVCHR2 is equipped with a series of complete hardware and software protection functions to ensure its stable and reliable operation.

Overload Protection

When overload protection is trigger on, it will restart automatically after 60s. After three consecutive overload shutdown protections, the equipment will not restart automatically and will require a manual restart.

Over temperature protection

If the internal temperature becomes too high, the INVCHR2 will enter the over-temperature protection. After the internal temperature returns to normal, it can automatically resume normal operation.

Short circuit protection

The equipment will automatically shut down when the AC output is shorted and needs to be manually activated.

Battery over temperature protection During charging

The equipment will continuously monitor the battery temperature. When the battery temperature is too high, the equipment will automatically reduce the charging current. When the battery is hot the charger will automatically turn off to protect the battery.

Battery low voltage protection

To prevent the permanent damage caused by the over discharge of battery, the equipment will automatically cut off the output according to the low voltage protection point set by the user.

RCD (RCBO)

The Inverter Charger is fitted with an RCD (Safety Switch) to ensure maximum protection for our customers. The RCD is also fitted with an over current feature to protect wiring. If the RCD trips it will need to be manually reset. *See Residual Current Device (RCD) Safety Switches*

INVCHR2 Operation

Make sure the battery voltage is within the permissible range before turning ON the breaker.

1. Turn on the circuit breaker between the battery and INVCHR2.
2. Turn on the switch on the INVCHRD-BT display panel. By default, the inverter function will be active.
3. Turn the switch off to turn the INVCHR2 off.

After the inverter power is turned OFF, there is still residual power and heat in the chassis, which may lead to electric shock.

FURTHER READING

For more information on Functions and Operation of the INVCHR2 please refer to the OEM documentation.

Using Air Conditioner with Inverter

NOTICE

DO NOT turn inverter off while air conditioner is running! Your Truma air Conditioner has a soft shut down feature for its protection. Turning off the power supply before allowing the air conditioner to complete its soft shut down may cause damage to the air conditioner.

INVCHRD-BT Bluetooth Display Screen

Allows users to monitor and control the INVCHR2. It can remotely switch on/off the INVCHR2. Displays battery voltage, current, inverter load percentage, AC input/output voltage, frequency, and power. Battery status can also be monitored via smart phone or tablet if connected with Bluetooth via the Projecta Inverter Charger companion app.

Using the INVCHRD-BT Display Screen

The display screen is located near the caravan entryway adjacent to the shore power RCD switch and is connected to constant power from the INVCHR2 when the INVCHR2 is on. By default, the display will always be on as long as the INVCHR2 is on. Press any button on the display to wake it back up.

Pressing the centre scroll buttons will cycle through the various display values:

Display Value		Description
Battery	V	Battery voltage
	A	Battery current*
AC Output	kW	AC output power
	Hz	AC output frequency
	V	AC output voltage
	A	AC output current
AC Input	kW	AC input power
	Hz	AC input frequency
	V	AC input voltage
	A	AC input current

Battery current will not detect loads form the 12Vdc system as it does not directly communicate with the BM500-BT shunt. This display value will only display battery current going into the battery system from the INVCHR2 battery charger.

Connecting to the Projecta INVCHRD-BT Companion App

The companion app is available on iOS and Android and can be downloaded via the following QR Codes:

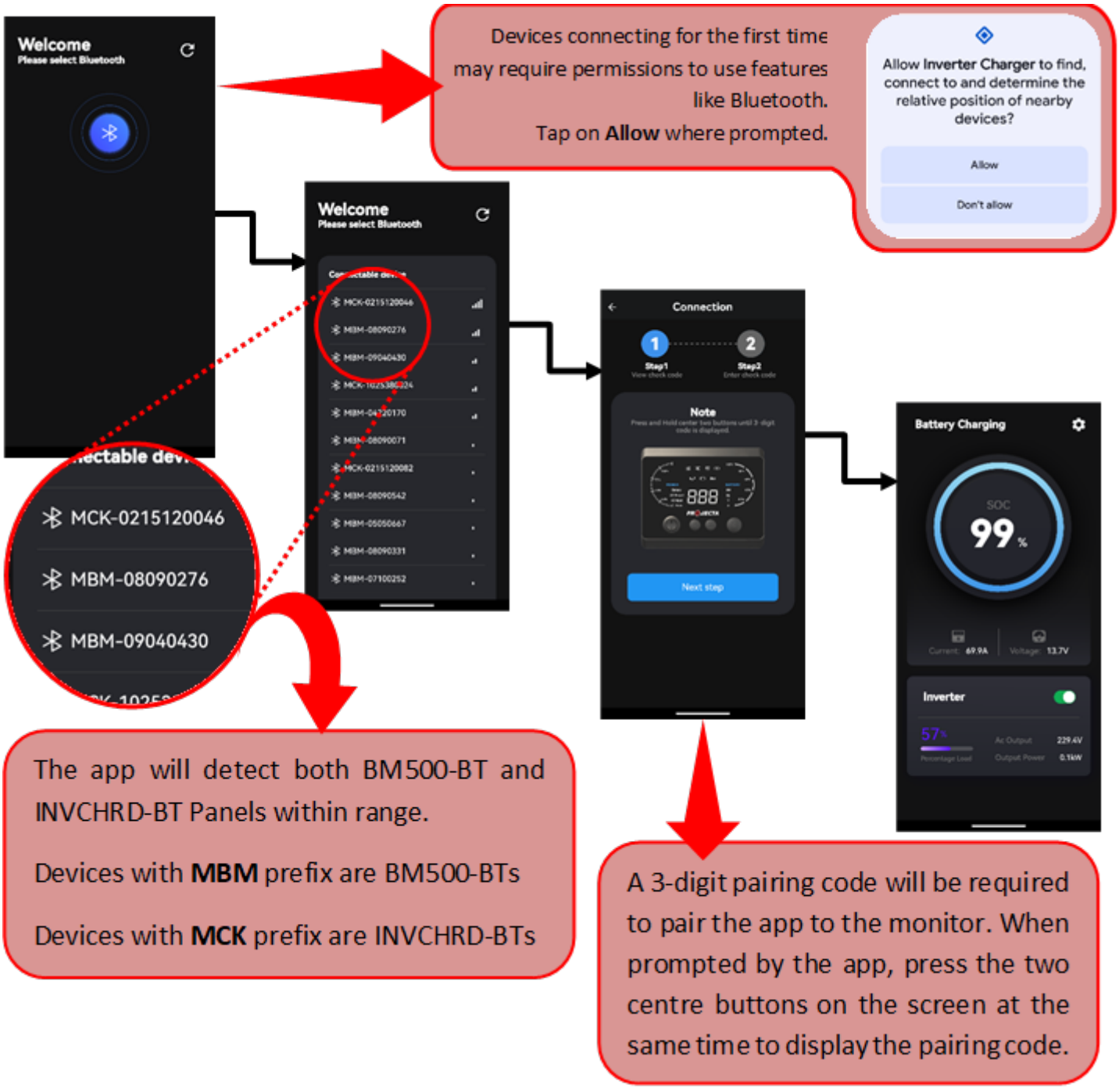
GET IT ON Google Play

Download on the App Store

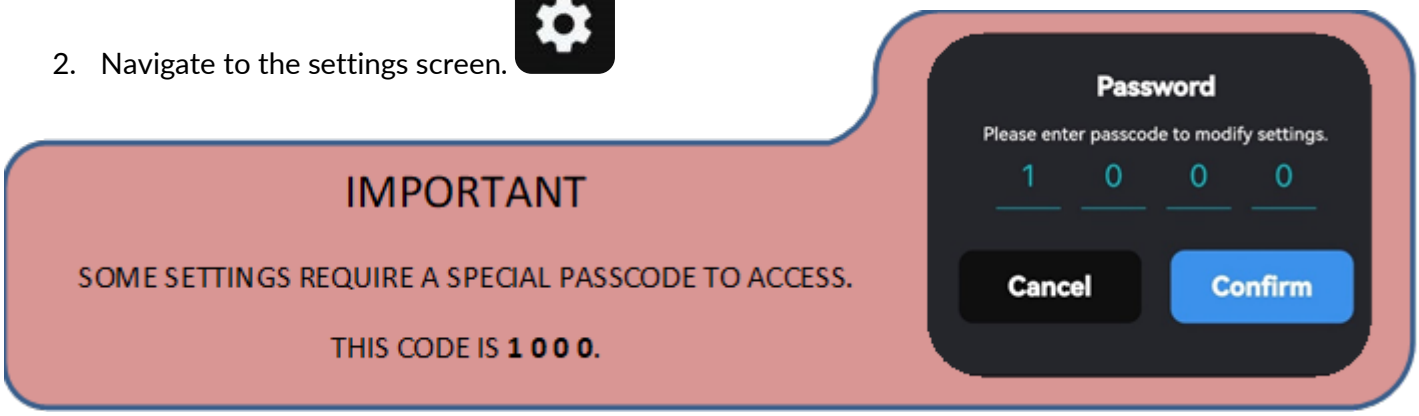
PROJECTA INVERTER CHARGER

TBB POWER

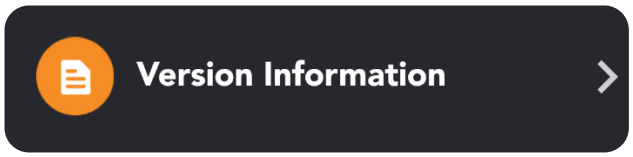
1. Once connected to power, the system will undergo a brief initialisation period while it starts up. Using a smart device with the *Inverter Charger* application installed, open the app and connect to the monitor. Following the on-screen instructions.



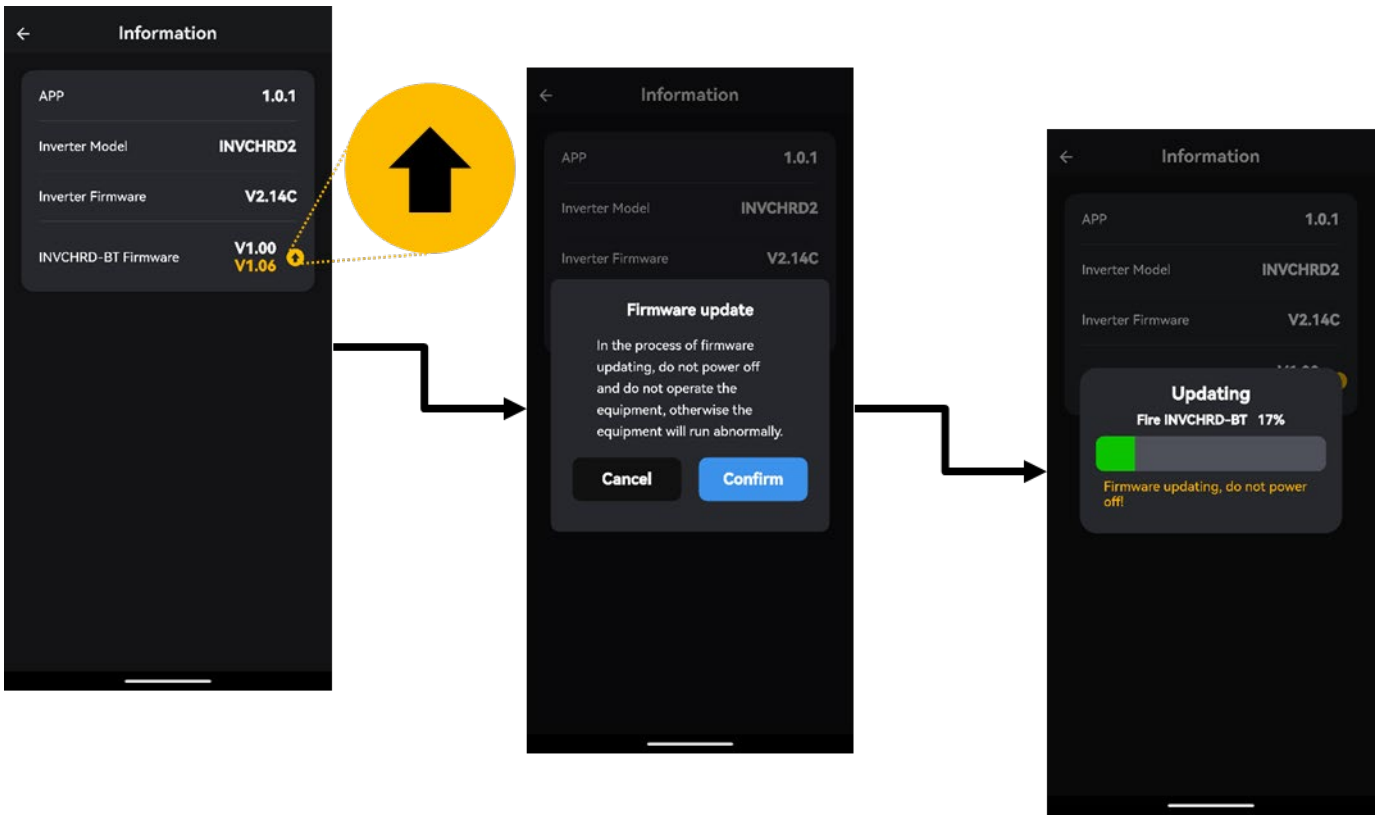
2. Navigate to the settings screen.



3. Ensure the Inverter-charger & INVCHRD-BT (Remote screen) firmware is up to date.



If there is a yellow arrow next to any of the version numbers, tap on this and follow the prompts to automatically download, load and reinitialize the system. The app will automatically reconnect to the system once complete.



Configuring the INVCHRD-BT

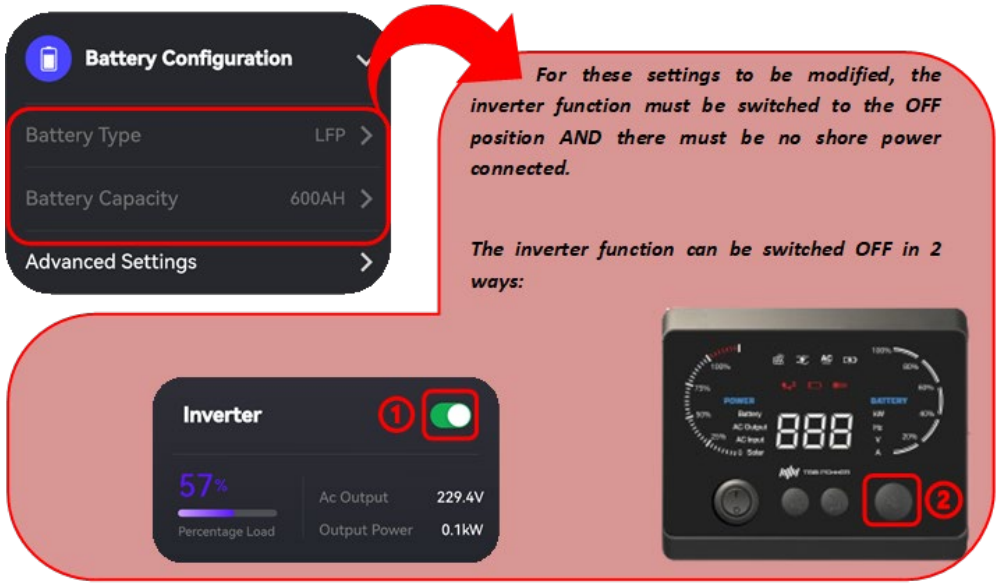
NOTICE

It is essential for the INVCHRD-BT to be correctly configured to ensure the display and the app provide accurate information.

AUSRV fully configure the INVCHRD-BT during the manufacture of your caravan, however if the INVCHR2 is ever replaced or is reset to OEM factory settings the INVCHRD-BT will need to be reconfigured. This can be done via a combination of the app and directly at the INVCHRD-BT display screen.

App Configuration

1. At the home screen of the app once connected, tap on the cog symbol in the top right corner to enter the settings screen.
2. Ensure the settings are configured per *Table 3*:



Standard Setting for AUSRV MKIII Models		
Battery Type		LFP
Battery Capacity		600Ah
Advanced Settings		
1	Max Charge Current	120
2	Low Voltage Protect Recover	12.2
3	Low Voltage Warning	12.0
4	Low Voltage Protect	11.5

AC Input Configuration		Standard Setting for AUSRV MKIII Models
1	Maximum AC Input Current	16
2	AC Wave Harmonic Adaption	NORMAL
3	AC Input Source	GRID
4	Detect Neutral and GND Voltage	DISABLE
Display panel Configuration		**Standard Setting for AUSRV MKIII Models**
Beep Silent Mode		(Toggle) OFF

Table 3

Direct Display Configuration

To access the direct settings of the INVCHRD-BT, follow the below steps:

Step 1. To enter into the configuration: Press scroll down/confirm button for 2 seconds.

Step 2. Then you can use scroll up or scroll down button to choose the parameter you want to change.

Step 3. Long press the scroll down/confirm button for 2 seconds to trigger on the configuration, the number/icon will flash.

Step 4. Use scroll up or scroll down button to change the value.

Step 5. Afterwards, long press the scroll down/ confirm button for 2 seconds to confirm the configuration. The two bars (load ratio and battery soc) will flash indicating the configuration is in process.

Step 6. After you have done all configuration you need, please press scroll up/return button for 2 seconds to exist configuration.

With the INVCHR2 powered ON. Ensure the settings are configured as per *Table 4*:

Standard Setting for AUSRV MKIII Models	
Absorption Voltage	14.0
Float Voltage	13.5
Max Charge Current	120
Output Voltage	240
Output Frequency	50
AC Input Rating	16
Alarm Buzzer	ON
Enable SOC Display	ON
Enable Screen Off Function	OFF

Table 4

AUSRV works closely with Projecta engineers to determine the best settings for compatibility and optimization of the charging algorithm with LiFePRO+ Lithium batteries. It is strongly recommended not to deviate from the AUSRV factory specified settings in this document.

For more information on Functions and Operation of the INVCHRD-BT please refer to the OEM documentation.

Maximising Battery Use

There are ways to maximise the life of your batteries when off-grid. It is important to have your vehicle wired correctly to charge whilst towing to your campsite.

Fridge Maximising

You can limit the power required by your refrigerator and freezer by following these steps:

- Pre-cool/freeze your food and water prior to departure. Freeze to the lowest possible temperature before packing into your travel fridge.
- Use frozen bottles of water to fill empty space in both the fridge and freezer sections. A full fridge is far more efficient so where possible, insert additional items or bottled water to replace items taken out.
- When driving and charging your caravan, lower the fridge temperature to take advantage of the power source.
- When camped, change your freezer temperature from minimum to around -6° to -8° Celsius and run the chiller section at 0° to 2° Celsius.
- Limit the number of times you open your fridge to prevent air exchange.
- Keep portable fridges in shade and ensure good air flow around the fridge.
- Use the Anderson plug connection in preference of the 12-volt plug. The Anderson plug connection makes better contact and reduces voltage loss.

Electrical Accessories

- If you are not using it, turn it off.
- Inverters are an inefficient source of 240 VAC power. If you can avoid using 240-volt appliances via the inverter you should.
- Appliances with heating elements such as kettles, coffee makers and heaters as well as items like microwave ovens will drain battery power very quickly when using the inverter. Avoid using them if you can and use the gas cooker for cooking and boiling water.

Lighting

- Turn off lights when not needed.

Heating

- The diesel heater is an efficient method of keeping your caravan warm and uses only small amounts of power. Always run at the minimum temperature setting required to keep the caravan warm and avoid switching off and restarting in short periods of time as shutdown and start up are when the heater uses it highest power requirement.

Solar Panels

- Keep solar panels clean and free of dust etc.
- Full sun will charge faster than shade. Parking in shade will reduce their capacity to recharge the battery.

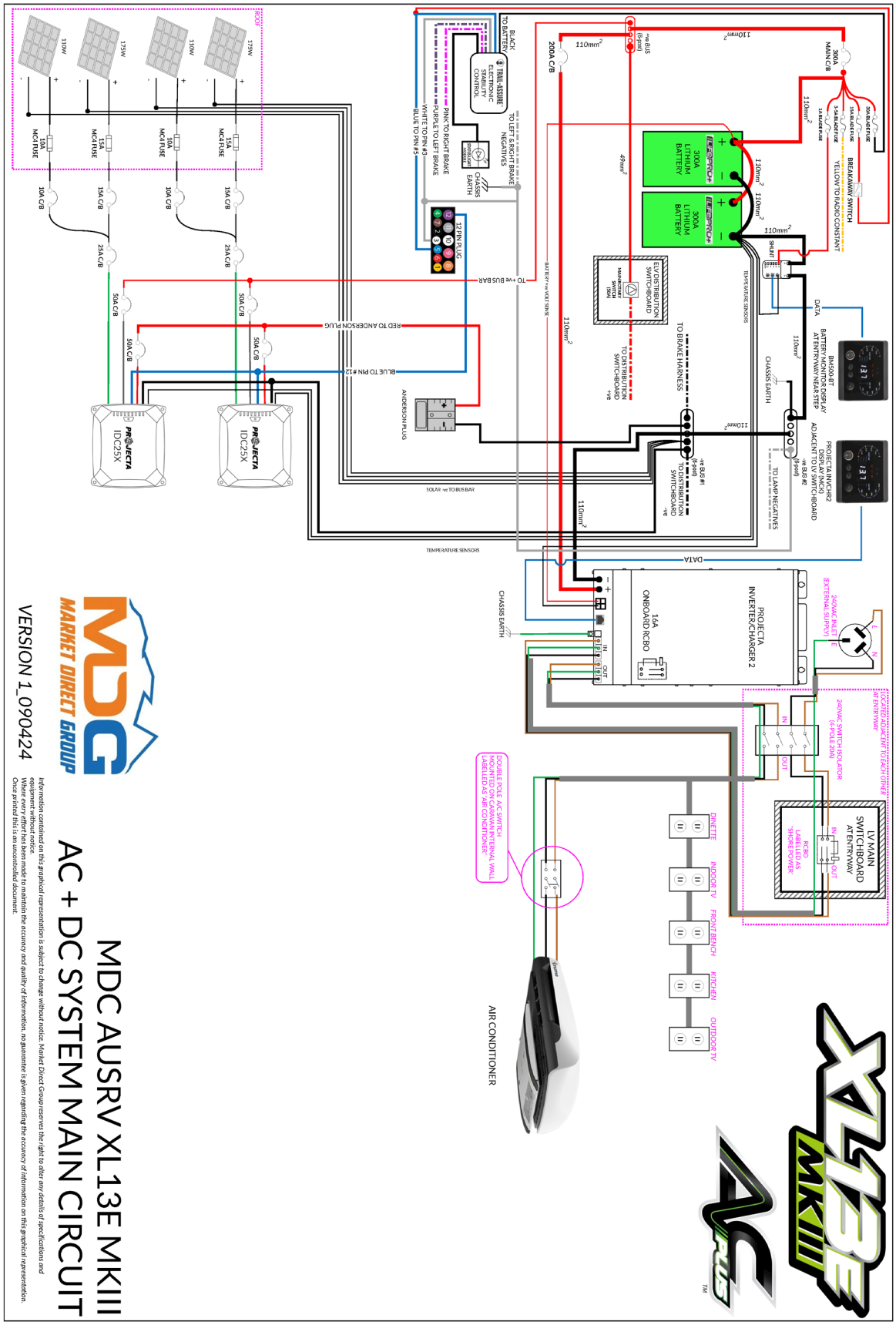
Generators

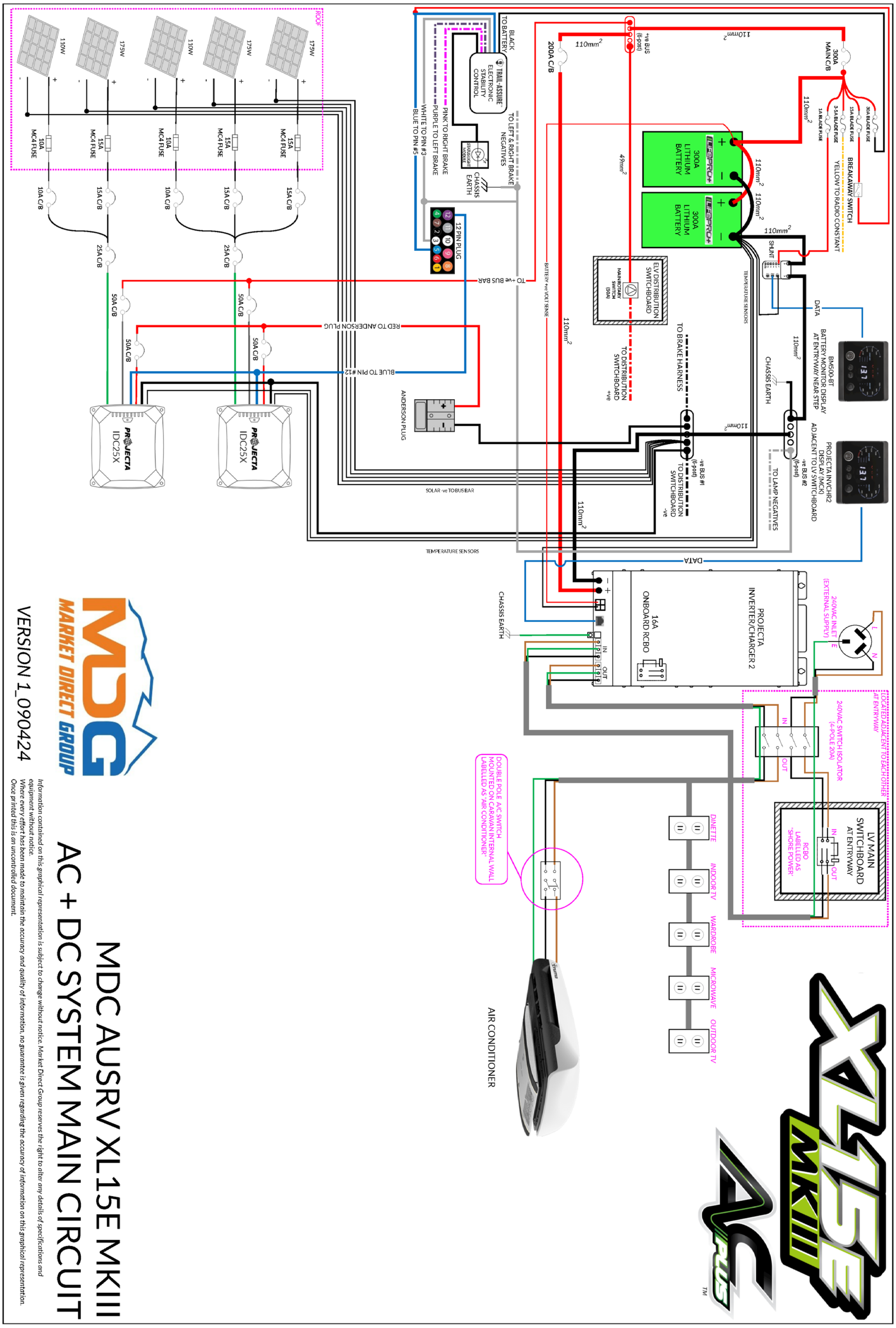
Generators are an excellent way to maximise off-grid camping. A decent quality 2.2Kva generator will run the air conditioner and keep the caravan well charged.
Note: Not all camp sites allow generators, particularly National Parks. Always ensure that generators are permitted in the camping area before using.

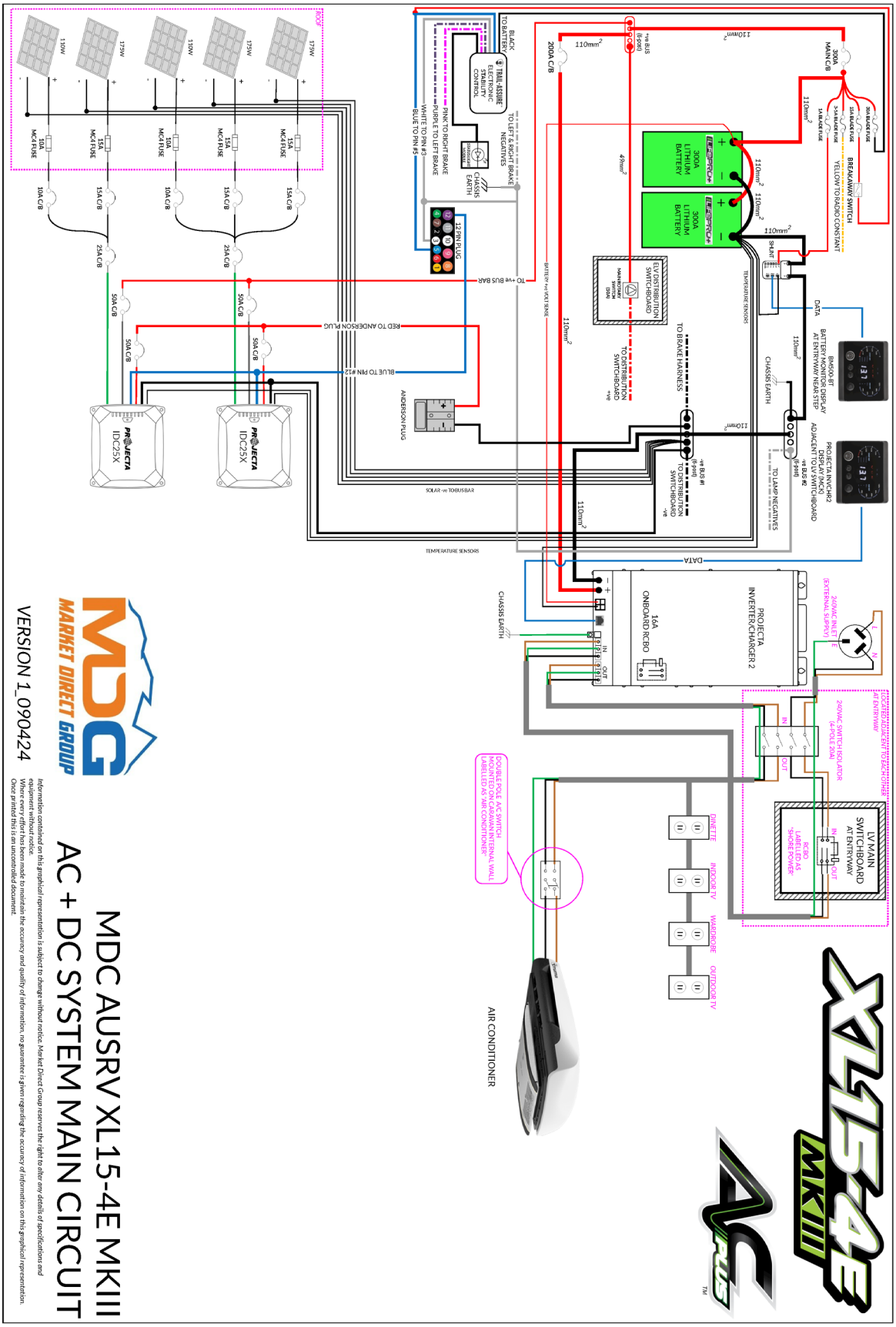
Wiring Plans

AC + DC Main Circuit

AUSRV XL13E MKIII

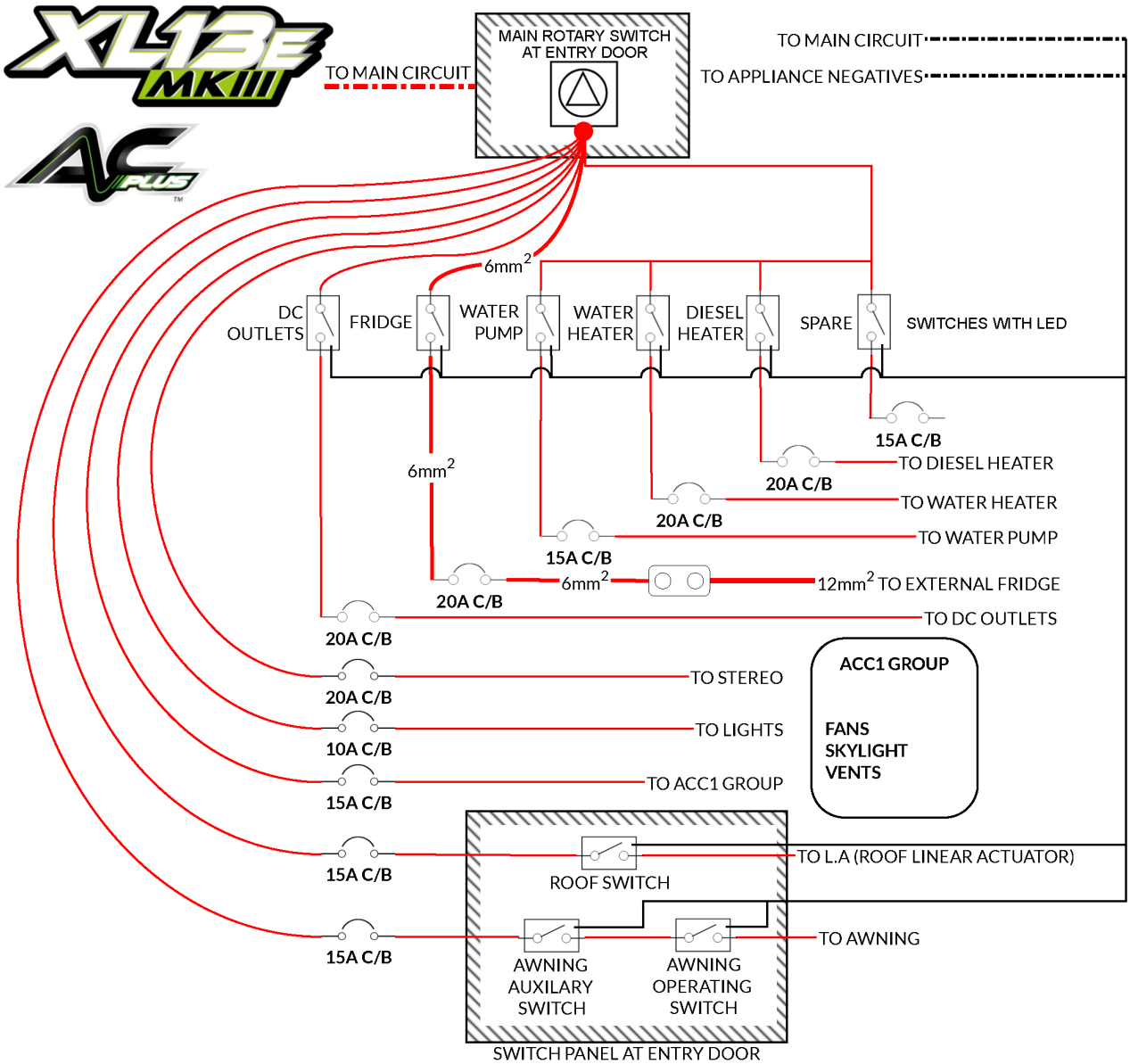



MDC AUSRV XL15E MKIII
AC + DC SYSTEM MAIN CIRCUIT
VERSION 1_090424
MDC MARKET DIRECT GROUP
Information contained on this graphical representation is subject to change without notice. Market Direct Group reserves the right to alter any details of specifications and equipment without notice.
Whilst every effort has been made to maintain the accuracy and quality of information, no guarantee is given regarding the accuracy of information on this graphical representation.
Once printed this is an uncontrolled document.
XL15E MKIII
AC PLUS
ROOF
300A MAIN C/B
200A C/B
300A LITHIUM BATTERY
300A LITHIUM BATTERY
SHUNT
BREAKAWAY SWITCH
YELLOW TO RADIO CONSTANT
ELV DISTRIBUTION SWITCHBOARD
TO BRAKE HARNESS
CHASSIS EARTH
TO LAMP NEGATIVES
BM500-BT BATTERY MONITOR DISPLAY AT ENTRYWAY NEAR STEP
PROJECTA INVCHR2 DISPLAY (MCX) ADJACENT TO LV SWITCHBOARD
12 PIN PLUG
ANDERSON PLUG
RED TO ANDERSON PLUG
BLUE TO PIN #12
TO +ve BUS BAR
TRAIL-ASSURE ELECTRONIC STABILITY CONTROL
TO LEFT & RIGHT BRAKE NEGATIVES
PINK TO RIGHT BRAKE
PURPLE TO LEFT BRAKE
WHITE TO PIN #3
BLUE TO PIN #5
PROJECTA IDC25X
PROJECTA IDC25X
SOLAR -ve TO BUSBAR
TEMPERATURE SENSORS
DATA
PROJECTA INVERTER/CHARGER 2
16A ONBOARD RCBO
240VAC INLET (EXTERNAL SUPPLY)
240VAC SWITCH ISOLATOR (4-POLE 20A)
LOCATED ADJACENT TO EACH OTHER AT ENTRYWAY
LV MAIN SWITCHBOARD AT ENTRYWAY
RCBO LABELLED AS "SHORE POWER"
DINETTE
INDOOR TV
WARDROBE
MICROWAVE
OUTDOOR TV
DOUBLE POLE AC SWITCH MOUNTED ON CARAVAN INTERNAL WALL LABELLED AS "AIR CONDITIONER"
AIR CONDITIONER


MDC AUSRV XL15-4E MKIII
AC + DC SYSTEM MAIN CIRCUIT
VERSION 1_090424
MDG
MARKET DIRECT GROUP
XL15-4E MKIII
AC
PLUS
TM
Information contained on this graphicsl representation is subject to change without notice. Market Direct Group reserves the right to alter any details of specifications and equipment without notice.
Where every effort has been made to maintain the accuracy and quality of information, no guarantee is given regarding the accuracy of information on this graphicsl representation.
Once printed this is an uncontrolled document.
300A MAIN C/B
BREAKAWAY SWITCH
YELLOW TO RADIO CONSTANT
300A LITHIUM BATTERY
200A C/B
BLACK TO BATTERY
TRAILASSURE ELECTRONIC STABILITY CONTROL
PINK TO RIGHT BRAKE
PURPLE TO LEFT BRAKE
WHITE TO PIN #3
BLUE TO PIN #5
12 PIN PLUG
CHASSIS EARTH
TO BRAKE HARNESS
TO +VE BUS BAR
RED TO ANDERSON PLUG
BLUE TO PIN #12
ANDERSON PLUG
SOLAR -ve TO BUS BAR
TEMPERATURE SENSORS
DATA
BMS04.8T
BATTERY MONITORING SYSTEM
AT ENTRYWAY NEAR STEP
PROJECTA INVCHR2
DISPLAY (MCX)
ADJACENT TO LV SWITCHBOARD
EVC DISTRIBUTION SWITCHBOARD
TO DISTRIBUTION SWITCHBOARD
TO LAMP NEGATIVES
PROJECTA INVERTER/CHARGER 2
16A ONBOARD RCBO
CHASSIS EARTH
240VAC INLET (EXTERNAL SUPPLY)
240VAC SWITCH ISOLATOR (4-POLE 20A)
LV MAIN SWITCHBOARD AT ENTRYWAY
RCBO LABELLED AS 'SHORE POWER'
DOUBLE POLE A/C SWITCH MOUNTED ON INTERNAL WALL LABELLED AS 'AIR CONDITIONER'
AIR CONDITIONER
PINETTE
FRIDGE/TV
WARDROBE
OUTDOOR TV
175W
10A MC4 FUSE
15A MC4 FUSE
10A C/B
15A C/B
25A C/B
50A C/B
IDC25X

Distribution Switchboard Control Panel

AUSRV XL13E MKIII



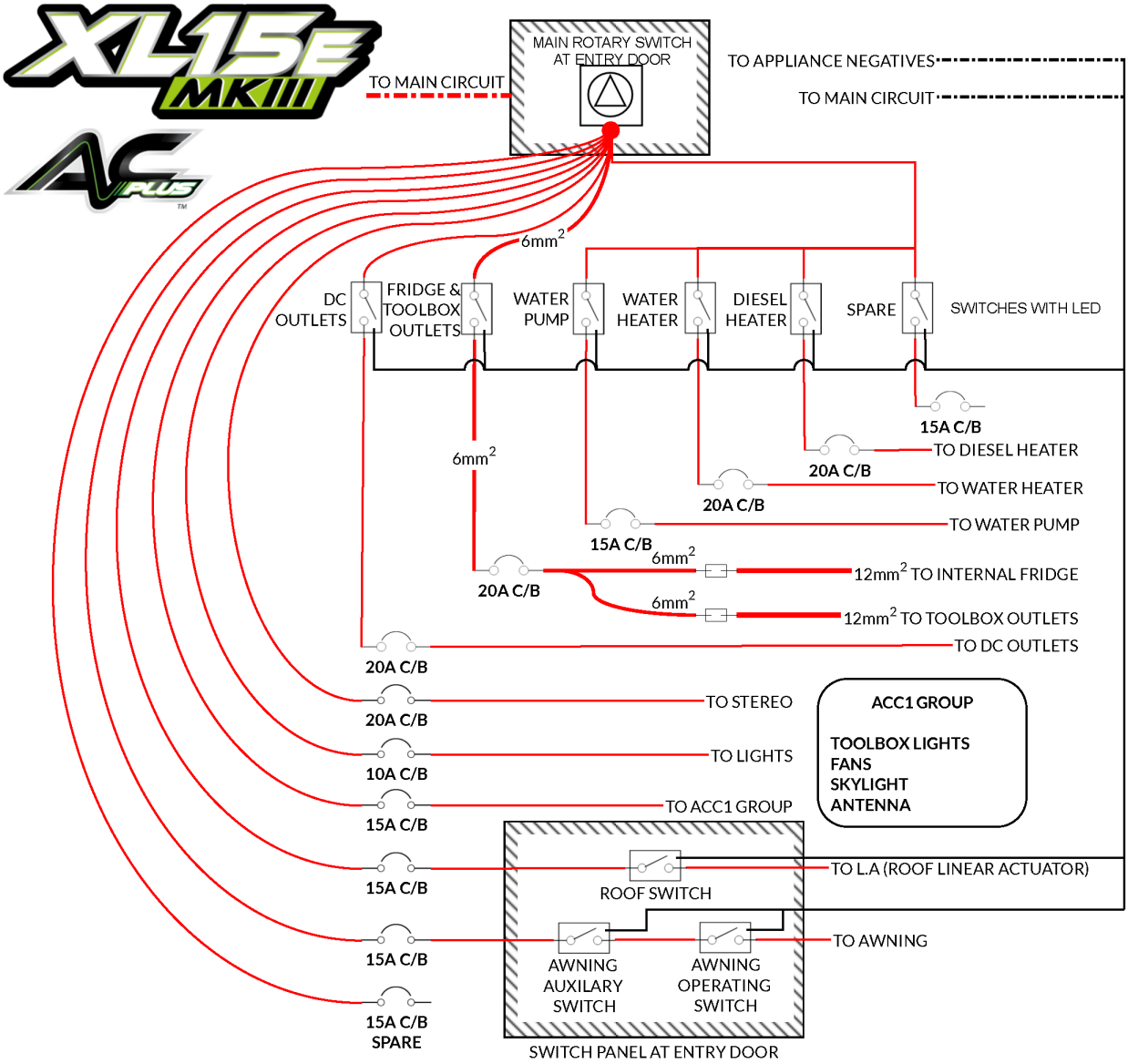
Wire Size Guide

Application	Colour	Application	Colour
Stereo	BROWN	Exhaust Fan	ORANGE/WHITE
Awning	BLUE	Handle Light	RED/GREEN
Water pump & gauge	PINK/WHITE	Floor Light	BLACK/WHITE
Hot Water System	PURPLE/WHITE	Hatch Light	BLUE/WHITE
Sirocco Fan	PURPLE	Wall Light	GREY
DC outlets	BLUE/RED	Spot Lights	RED/BLACK
Diesel Heater	RED	Step Light	BLACK/RED
Toilet	YELLOW/WHITE	Ceiling Light	WHITE

MARKET DIRECT GROUP

AUSRV XL13E MKIII DISTRIBUTION SWITCHBOARD CIRCUIT

VERSION 1_110424

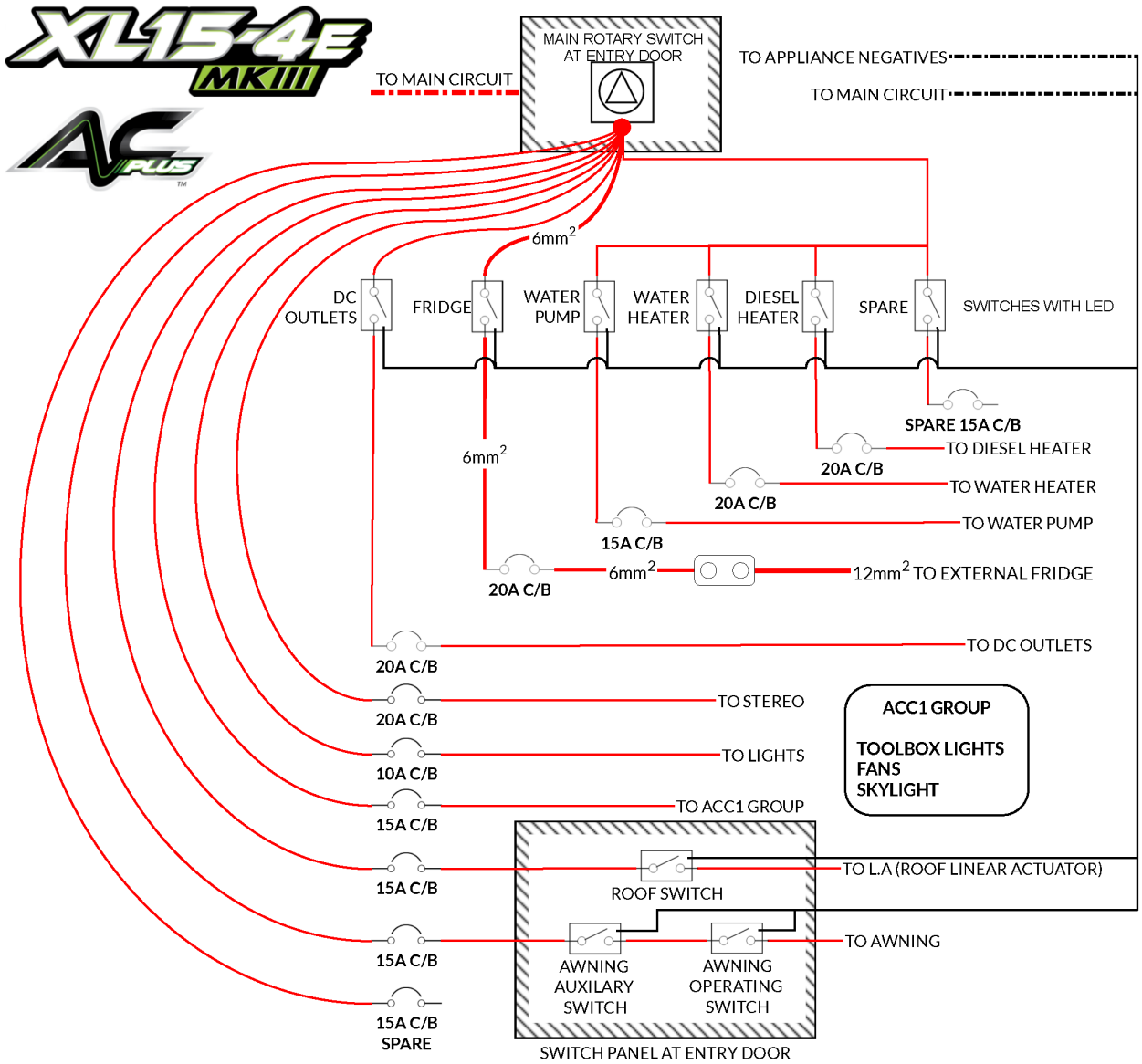


Wire Guide

Application	Colour	Application	Colour
Stereo	BROWN	Range Hood	BLUE/BLACK
Awning	BLUE	Cooktop/Oven	RED/WHITE
Water pump & gauge	PINK/WHITE	Cabinet Light	ORANGE
Hot Water System	PURPLE/WHITE	Hatch Light	BLUE/WHITE
Sirocco Fan	PURPLE	Wall Light	GREY
DC outlets	BLUE/RED	Spot Lights	RED/BLACK
Diesel Heater	RED	Step Light	BLACK/RED
Toilet	YELLOW/WHITE	Handle Light	RED/GREEN
Exhaust Fan	ORANGE/WHITE	Ceiling Light	WHITE

AUSRV XL15E MKIII DISTRIBUTION SWITCHBOARD CIRCUIT

VERSION 1_110424



Wire Guide

Application	Colour	Application	Colour
Stereo	BROWN	Range Hood	BLUE/BLACK
Awning	BLUE	Cooktop/Oven	RED/WHITE
Water pump & gauge	PINK/WHITE	Cabinet Light	ORANGE
Hot Water System	PURPLE/WHITE	Hatch Light	BLUE/WHITE
Sirocco Fan	PURPLE	Wall Light	GREY
DC outlets	BLUE/RED	Spot Lights	RED/BLACK
Diesel Heater	RED	Step Light	BLACK/RED
Toilet	YELLOW/WHITE	Handle Light	RED/GREEN
Exhaust Fan	ORANGE/WHITE	Ceiling Light	WHITE

MARKET DIRECT GROUP

AUSRV XL15-4E MKIII DISTRIBUTION SWITCHBOARD CIRCUIT

VERSION 1_111123

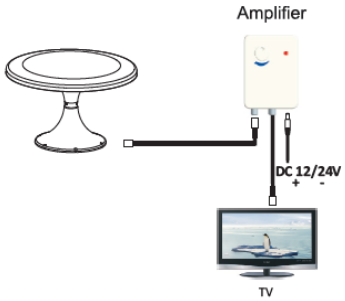
TV Antenna

All AUSRV caravans are factory fitted with a Milenco POWER 900L omnidirectional antenna. This antenna comes fitted with a high-gain, low noise amplifier which is pre-wired to all the TV antenna F-type outlets throughout the caravan.

Omnidirectional TV antennas do not require rotating to obtain a TV signal, their radiation pattern allows them to receive high-quality reception from all angles without the need to locate the closest signal source. To use the Milenco Power 900L, there are only 3 steps:

1. Supply 12V power to the amplifier and TV, by switching on the “DC OUTLETS” on the control panel of the caravan.

2. Make sure the TV is connected to any F-Type outlet in the caravan.



3. Run a channel scan on the TV.

If there are local terrestrial signals (DVB-T, ISDB-T, DMB-T/H, ATSC) or AM radios, the antenna will receive them.

NOTE: Do not forget to run channel scan if the caravan has moved to a new location since previous use, as the new location will have difference reception/signals available.

Gas & Water Systems

Truma UltraRapid Hot Water System

Operating Instructions

General Safety

*Read the included Truma operation manual supplied with you trailer

The use of upright gas cylinders from which gas is taken in the gas phase is mandatory for the operation of gas regulators, gas equipment and gas systems. Gas cylinders from which gas is taken in the liquid phase (e. g. for forklifts) must not be used, since they would result in damage to the gas system. In the event of leaks in the gas system or if there is a smell of gas:

- Extinguish all naked flames.
- Do not smoke.
- Switch off all appliances.
- Shut off the gas cylinder.
- Open the windows and doors
- Do not actuate any electrical switches.
- Have the entire system checked by an expert.
- Repairs may only be carried out by an expert.

- This device may be used by children aged 8 years or above and by persons with reduced physical, sensory, or mental capabilities or lack of experience and / or knowledge, only if they are supervised or have been given instruction regarding the safe use of the device and have understood the potential risks. Children must not use the device as a toy.

- To avoid the risk of accidental resetting of the over-temperature guard, the device may not be supplied with power via an external contactor, such as a timer, nor may it be connected to a power circuit that is regularly switched on or off via a device.

⚠DANGER

Failure to operate the P&T safety valve (Fig. 22 - 4) at least once every six months may result in the water heater splitting. Continuous leakage of water from the valve may indicate a problem with the water heater!

- Water may drip from the discharge pipe of the P&T safety valve and this pipe must be left open to the atmosphere.
- The P&T safety valve is to be operated regularly to remove lime deposits and to ensure that it is not blocked.
- Any discharge pipe connected to the P&T safety valve is to be installed in a continuously downward direction and in a frost free ambient.
- Always remove the cowl cover prior to operating the water heater.
- Do not place articles on or against this appliance.
- Do not use or store flammable materials near this appliance.
- Do not spray aerosols in the vicinity of this appliance while it is in operation.
- Do not modify this appliance.
- Any modifications to the unit, including accessories and cowl, or the use of spare parts and accessories that are important to the operation of the system that are not original Truma parts and failure to follow the installation and operating instructions will void the warranty and release Truma from any liability claims. It also becomes illegal to use the appliance, and in some countries, this even makes it illegal to use the vehicle.

- Any work involving connection or interconnecting wiring must be carried out by a licensed electrician. If the mains cable (supply cord) is damaged, it must be replaced by the manufacturer, its service agent, or similarly qualified persons to avoid a hazard.
- Before accessing terminals, please ensure all supply circuits are disconnected (i.e., 230V – 240V and 12V) and that the gas supply is securely turned off.
- The operating pressure for the gas supply is 2.75 kPa (AUS – Propane) and must correspond to the operating pressure of the appliance (see data plate).
- LPG systems and pressure regulators must comply with the technical and administrative regulations of the country in which the appliance is used. For your own safety it is necessary to have the complete gas installation regularly checked by an expert (at least every 2 years). The vehicle owner is always responsible for arranging the gas inspection.
- Do not operate when travelling.
- Do not operate the water heater when refueling the vehicle and when it is in the garage.
- Items sensitive to heat (e. g. spray cans) must not be stored in the installation area, since excess temperatures may occur there under certain circumstances.
- During the initial operation of a brand-new appliance (or after it has not been used for some time), an amount of fumes and a slight smell may be noticed for a short while.

Always observe the operating instructions prior to starting! The vehicle owner is responsible for correct operation of the appliance.

⚠ Before using the product for the first time, it is essential to flush the entire water supply through with clean warm water. Always mount the cowl cap when the water heater is not operating! Drain the water heater if there is a risk of frost! Warranty claims will not be accepted for frost damage.

⚠ Always remove the cowl cover prior to operating the water heater.

If connecting to a central water supply (rural or city connection) or when using more powerful pumps, a pressure reducer must be used which prevents pressures of greater than 400 kPa occurring in the Truma UltraRapid.

Filling the Truma UltraRapid with Water

Check that the drain valve (3) and the P&T safety valve (*Fig.22a - 4*) in the cold-water intake are closed.

- Close drain valve (*Fig. 21 - 3*). Lever in the “e” position (close).
- Test lever (*Fig. 22a - 4a*) of the pressure relief valve (4) must be in the “close” position.

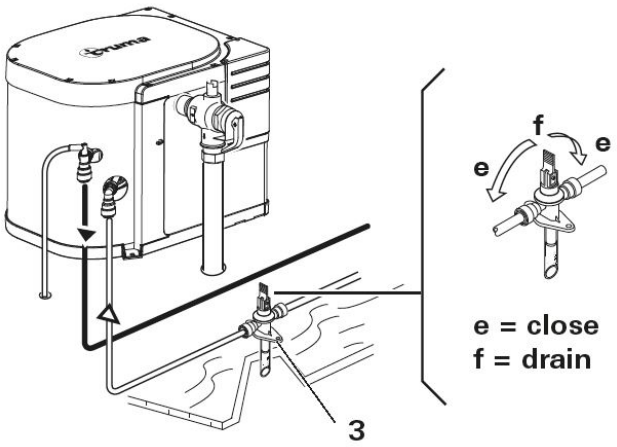


Fig 21

– Open hot tap in bathroom or kitchen, with pre-selecting mixing taps or single-lever fittings set to “hot.”
– Switch on power for water pump (main switch or pump switch).
– Leave the tap open to let air escape while the water heater is filling. The heater is filled when water flows out of the tap.

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

- If just the cold-water system is being used, without a water heater, the heater tank is also filled up with water. To avoid damage through frost, water must be drained by means of the drain valve, even if the heater has not been used. As an alternative, two shut-off valves, resistant to hot water, can be fitted in front of the cold and hot water connection.

Pressure and Temperature Relief Valve (P&T safety valve)

- Risk of scalding injury from hot water and/or tampering with the P&T safety valve!
- Do not actuate the P&T safety valve if the appliance is still hot.
- Do not place a plug or reducing coupling in the discharge pipe (*Fig. 22a - 4b*) of the P&T safety valve.
- Do not operate the water heater without a functioning P&T safety valve - this could cause an explosion.

The P&T safety valve (4) is a safety component and must not be removed for any reason other than replacement.

The P&T safety valve is not serviceable; if defective it must be replaced (failure to reuse an old P&T safety valve). It must be replaced by a certified service technician.

Tampering with the P&T safety valve will void the warranty.

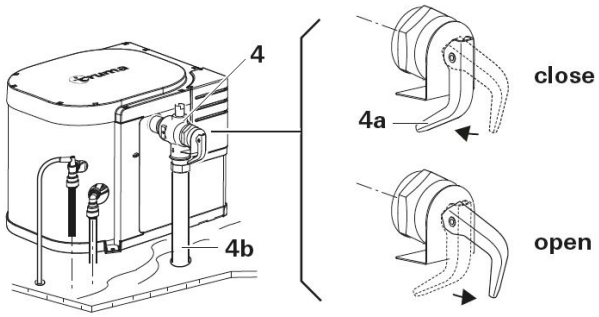


Fig 22

4 P&T safety valves

4a Test lever

4b Discharge pipe

Draining the Water Heater

- If the vehicle is not used during periods of frost, it is essential that the Truma UltraRapid be emptied.
- Disconnect power for water pump (main switch or pump switch).
- Allow the appliance to cool down.
- Open hot water taps in bathroom and kitchen.
- Open drain valve (*Fig.21 - 3*). Lever in the “f” position (drain). The water heater is now drained directly to the outside via the drain valve (3).
- Check that the water has been completely drained (14 litres).

Switching On Gas Operation

- ⚠ Never operate the heater without water in it!
- ⚠ If the wall cowl is positioned close to an opening window (or hatch) – directly under it – the window must remain closed when the water heater is in use (see warning plate).

Removing The Cowl Cover

- Grab the handle of the cowl cover.
- Press the palm against the lid (*Fig.23a - 1*) while pulling the lid off the cowl (*Fig.23a - 2*).

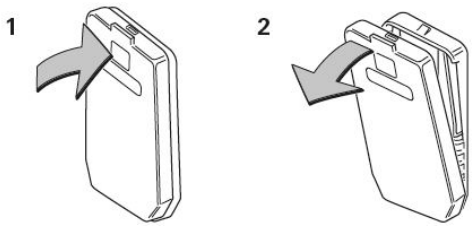


Fig 23a

Select Water Heater Mode

Use the control panel to select the water heater mode.

Fig 23b

a = Red indicator lamp “Fault”

b = Water heater “On” 60 °C or 70 °C

c = Water heater “Off”

If there is air in the gas supply line, it may take up to a minute before the gas is available for combustion. If the appliance switches to “Fault” during this time, switch off the appliance – wait 10 minutes – and switch on again!

When using the vehicle switches

Refer to operating instructions of the vehicle manufacturer or see switch labels.

Switching Off Gas Operation

– Switch off the water heater to position (*Fig. 23b - c*).

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

Fig 24

Before setting off on any journey, fit the cowl cap with the Truma UltraRapid switched off (*Fig. 24*). Please ensure that it is secure and locked in place (risk of accident). Defective cowl caps must not be used. Drain the water heater if there is a risk of frost! Warranty claims will not be accepted if this is ignored.

Red Indicator Lamp “Fault”

The red indictor lamp (a) lights up if there is a fault. For probable causes please refer to “Fault finding” on page 6. To unlock, switch off the appliance, wait 10 minutes, and switch on again.

Maintenance

- Do not modify this appliance.
- Servicing should only be carried out by authorized personnel.
- Only original Truma parts may be used for maintenance and repair work!

Please contact the Service Australia for service and repairs.

Decalcification

The Truma UltraRapid must be descaled on a regular basis (at least twice a year).
We recommend the use of suitable normal commercial products for the cleaning, disinfection, and care of the Truma UltraRapid. Products containing chlorine are unsuitable.

- To avoid the colonization of micro-organisms, heat up the Truma UltraRapid to 70 °C at regular intervals.
- The drain valve (*Fig. 21 - 3*) and the P&T safety valve (*Fig. 22 - 4*) are to be operated regularly to remove lime deposits and to ensure that they are not blocked. Frequency: every 6 months.

Fuses

The water heater 12 V fuse is on the PCB on the water heater. Accessible by removing 2 screws and the corner cover facia. (*Fig. 25*)

Important note

Only replace the miniature fuse on the PCB with a fuse of the same type: 1.6 A (slow action).

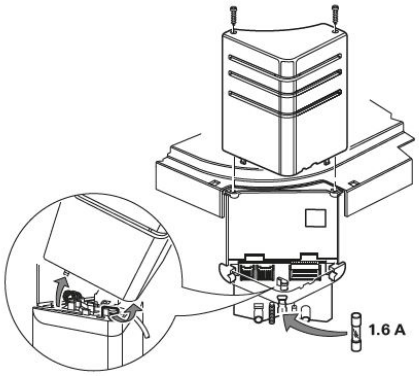


Fig 25

Circuit Breaker

There is a circuit breaker allocated to the water heater circuit switch on the main electrical panel. To reset this breaker, push in.

Water Heater Troubleshooting

Gas Operation

Symptom	Cause	Remedy
When switching on, the heater does not operate.	No 12V DC supply voltage.	Check the power supply (operation voltage min. 10.5V). Check the Truma UltraRapid fuse (*refer to maintenance "Fuses"*).
When switching on, the heater does not operate, and the red lamp lights up after approx. 30 secs.	– Cowl cover fitted. – Air in the gas supply. – No gas supplies. – Incorrect gas pressure.	Remove cowl cover and / or clear any obstruction. Check gas valves and gas cylinder. To unlock (and purge air), switch off the appliance, wait 5 minutes, and switch on again.
Heater operates for a prolonged. time and then the red lamp lights up.	Excess temperature thermostat has responded.	Check water level, refill if required (close drain valve). To unlock, switch off the appliance, wait 5 minutes, and switch on again.

Water Supply

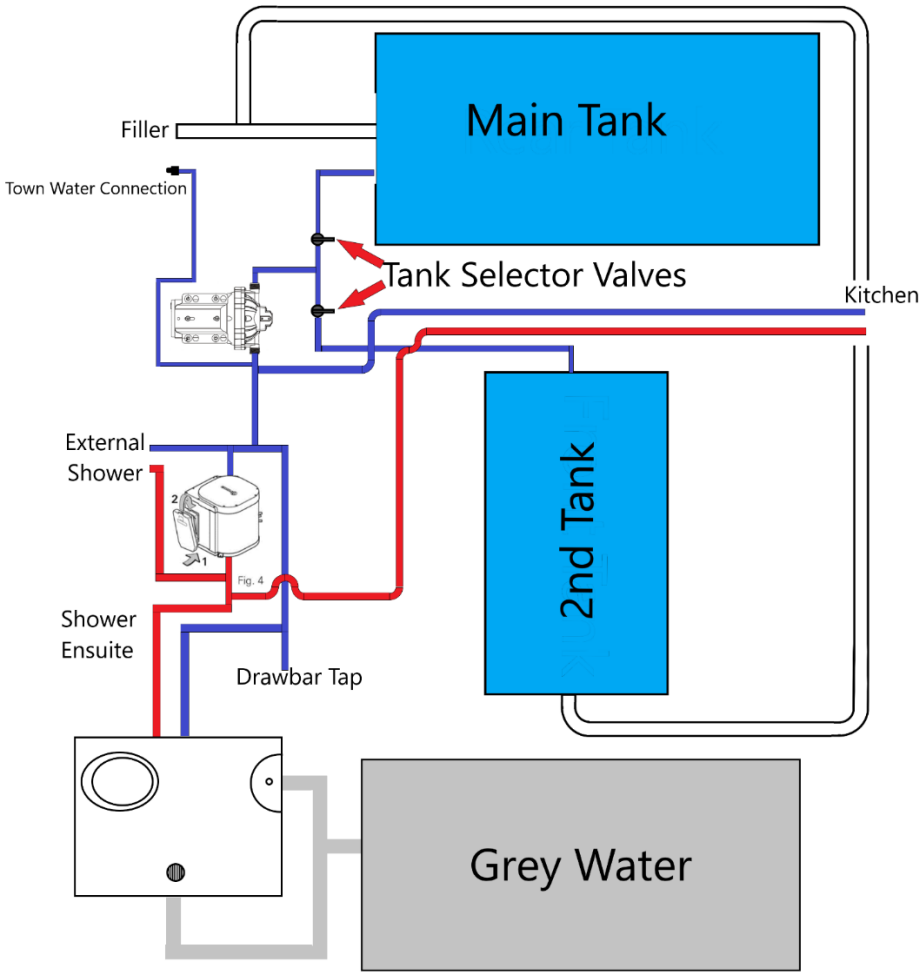
Symptom	Cause	Remedy
Water drips from the P&T safety valve.	– Water pressure to high. – Lime or dirt under the P&T safety valve seat.	Check water pressure (max. 400 kPa), use a pressure reducer when connected to central water supply. Allow the appliance to cool and then slowly raise the test lever (*Fig. 22a – 4a*) to flush the water system and attempt to force dirt or foreign matter out of the P&T safety valve seat. Replace P&T safety valve. This must be performed only by a certified service technician.
When opening the cold-water tap, hot water comes out.	– Hot water flows back through the cold-water supply.	-Fit a non-return valve in the cold-water supply (refer to installation instructions "Water connection"). -Non return valve faulty

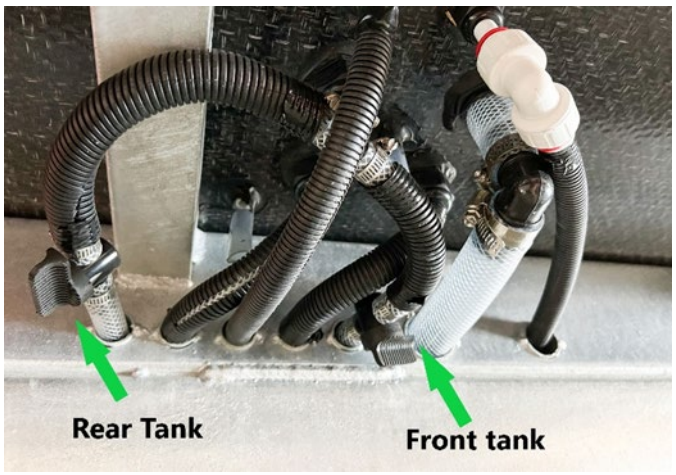
Water Pumps

The pump when switched on is activated by the release of pressure at the tap and will pump water continuously until the tap is turned off and pressure restored. Should the pumps activate while the taps are turned off this could indicate a leak and require investigation and rectification.

Selecting Fresh Water Tank

Beneath the water pump location on the outside of the caravan you will find the selector valves to choose which water tank feeds the water pump.





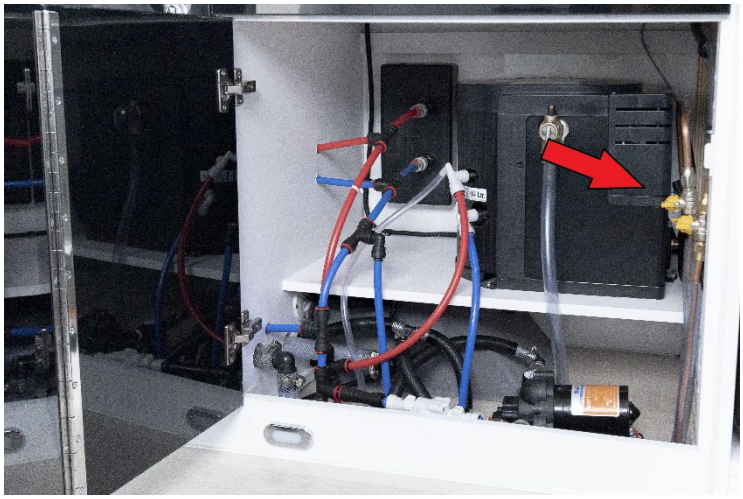
Connecting the Gas

Your caravan is fitted with plumbed gas with the regulator and gas bottle placement at the front of the trailer. Always ensure gas bottles are serviceable and within the 10-year service life. This information is stamped on the bottle base.

Once you connect your gas bottle you can connect the external BBQ gas hose to the bayonet connection provided. Once the bayonet is secure, ensure all controls on the stove are in the "Off" position and then turn on the gas bottle valve. When the burner ignites hold the button down for 5 seconds then release. **NOTE: It will take up to a minute or so for the gas to purge the line and flow through the burners.**

Internal Kitchens and Hot Water Systems each have an isolation valve on their gas supply line. Ensure the valve is turned on (handle running parallel to the gas line) when using these appliances.

The gas isolation valves for the hot water system are beside the system under the bed and gas cooktop is in the cupboard beneath the cooktop.



CAUTION

All gas appliances and supply must be turned off at the isolation valve when towing. Always turn off your gas bottle before towing your caravan. Never use gas appliances without adequate ventilation and always remove any gas flue and ventilation covers before use.

Do not place items near or on any gas flue or exhaust as this may result in a fire or malfunction causing severe injury or death. Always keep a minimum of 500mm clearance from all flues and exhausts.

Protecting from Mould

Mould is exceedingly difficult to clean once a porous surface is affected. There are several ways you can prevent the occurrence of mould on your caravan. Never leave your camper packed away wet. If you must leave a campsite with wet canvas or a damp interior, be sure to open and dry out your tent thoroughly at the very first opportunity when you get home. Mould can develop in just a couple of days so do not take the risk.

When packing up dry, it is important to check under the mattress that there is no build-up of condensation overnight. Body heat on a mattress can create enough temperature difference with the exterior for moisture to form under it. If left unchecked this can cause mould when your caravan is stored.

Toilet Care and Maintenance

Chemicals:

Always use water treatment and conditioning products recommended by the manufacturer.

Thetford

Waste Holding Tank: The recommended product for the waste holding tank on Thetford toilet systems is Aqua Kem Blue or Aqua Kem Green for better environmental performance.

Cleaning Cassette Tank: "Cassette Tank Cleaner" is the recommended product for this application.

Grey Water Tank: Tank Freshener

Flush Water Tank: Only suitable for AUSRV models that have a toilet flush tank. Thetford recommend "Aqua Rinse".

Do not use Thetford tank cleaner chemicals in your caravans' main water tanks. These are NOT food safe chemicals ingestion of these chemicals may lead to illness or injury.

IN THE CASE OF INGESTION OR SUSPECTED INGESTION. CONTACT THE AUSTRLIASN POISIONS INFORMATION CENTRE IMMEDIATELY AND SEEK MEDICAL ATTENTION.

AUSTRALIAN POISIONS INFORMATION CENTRE 13 11 26

Diesel Heater

AUTOTERM Air-2D Model

INFORMATION

Please read this manual before installing and/or operating the AIR heaters. This manual contains the necessary information to use this product correctly. Disregarding these instructions can void the warranty of the product, lead to damage to the product and/or property and be a risk to health.

A video tutorial of the Diesel heater functions is available on YouTube via the QR code below.

General Instructions

- ***Always run the heater at maximum heat for 15 minutes on startup.***
- Heaters built-in fan draws air through the air intake opening. The air heated by the heater is channeled to cabins and desired spaces via outlet channels.
- Fuel is supplied by a separate fuel pump from the fuel tank of the vehicle or vessel or from an additional fuel tank.
- The heater can be powered by a battery of the vehicle or a separate battery.
- Temperature in rooms can be regulated by using a temperature sensor and a control panel, which sets heating parameters.
- When a temperature sensor is present (either built into the control panel or additionally installed), the heater is constantly comparing the actual temperature with the set temperature and automatically adjusts the heating capacity according to the heat demand.

Safety Precautions

CAUTION

- Do not use or install the heater in places where flammable vapour or gases or substantial amounts of dust may form and accumulate.
- Disable the heater when the vehicle or vessel is being fueled.
- Do not cover the heater with clothing, pieces of fabric and so on, and do not place such objects in front of the air intake pipe or inlet and output of the heated air.
- Do not install the fuel line inside the cabin of a vehicle.
- The installation arrangement must exclude the possibility of contact of the exhaust pipe with the air intake, fuel pipe, or other flammable objects.
- The vehicle where the heater is installed must be equipped with a fire extinguisher.

CAUTION

- Disconnect the heater from its battery during repair works on the heater.
- Do not connect the heater to the power circuit of the caravan, when connected to shore power and there is no battery.
- Do not connect or disconnect connectors of the heater when the heater is powered.
- When electric welding is carried out on the vehicle, or repair work is done on the heater, the heater must be disconnected from the battery.
- Do not use fuses rated differently from indicated on the electric circuit diagram.
- Do not use makeshift devices (wires etc.) instead of fuses.

NOTICE

- Do not disconnect the heater from power before the purge cycle ends.
- When the heater has been switched off, do not switch it on again for 5-10 seconds.
- Do not step on the heater or put any objects on it and in it.
- Electric wiring, the air intake, and the fuel pipe must be protected from contact with sharp edges of vehicle structures.

Useful Accessories

Levelling Blocks

These are excellent for levelling your trailer on set up. Stabiliser legs are not meant for correcting the trailer angle, they are there to keep it stable when people are in it. Using levelling blocks will extend the service life of the stabiliser legs and make set up much safer and faster. See below images.

Wheel Chocks

Wheel chocks are an important safety device when leaving your trailer parked on even the slightest incline. On level ground it is recommended to chock both sides of the wheel. On a hill you should chock the wheels on the downhill side ensuring the chocks

Covers

Hard floor campers and caravans will benefit from a storage cover. Perishable fittings such as rubber seals and plastic will be protected from UV radiation. Paint and gelcoat finishes will oxidise less, and this will extend the service life of these finishes.

Stone Protection

There are proprietary devices available that assist in protecting your trailer from stones thrown up by the tow vehicle. Rock Tamer and Stone Stomper are two of the most used.

Troubleshooting

240 Volt Electrical

PROBLEM	POSSIBLE CAUSE	REMEDY
No power	Not connected to mains	Connect to mains power
	240Vac Isolator Switch is turned OFF	Turn ON isolator switch
	RCD unit has tripped	Reset the RCD unit switch to up position. - Check main RCD at entryway. - Check RCD at INVCHR2
	Site power supply tripped	Check RCD on site power
	10-amp converter tripped	Check your 10-amp converter
	Generator RCD tripped	Check and reset RCD on generator
CHARGING FROM MAINS POWER		
SYMPTOM	POSSIBLE CAUSE	REMEDY
No power to charger	Mains power not connected	Connect mains power
	Charger not plugged in	Plug in mains charger
	Charger not turned on	Turn on charger
	RCD tripped	Reset RCDs
No charge with charger on	Tripped circuit breaker	Reset circuit breaker CB1 & CB2
	Incorrect charger setting	Set charger to correct battery type and power setting (AGM for standard batteries)
	Battery voltage too low (less than 6 volts)	Change charger setting to "Supply" until battery voltage reads minimum of 6 volts then choose setting "recondition" if this function is available. Choose "AGM" if not available.
If error code appears on the charger display refer to the Projecta user manual.		

Table 5

12 Volt Electrical

PROBLEM	POSSIBLE CAUSE	REMEDY
No power	Main switch turned off	Turn on main rotary switch
	Tripped main circuit breaker	Reset CB1 circuit breaker located with batteries
	Flat Battery	Battery needs reset: See *Lithium (LiFePO4) Battery Reset* section of this manual.
		Battery needs reset: If no mains power available jump start using another 12v battery to waken DC to DC controller and start solar panels charging.
Not charging from mains power.	RCD has tripped	Reset RCD protection on wall and/or at INVCHR2
	Charger not turned on	Ensure INVCHR2 is turned on at the INVCHRD-BT display screen
	240Vac Isolator Switch is turned OFF	Turn ON isolator switch
Not charging from solar	See *Solar Charging* troubleshooting (*Table 8*).	
Not charging from vehicle	See *Charging from tow vehicle* troubleshooting (*Table 8*)	

Circuit not working	Tripped circuit breaker	Check and reset the individual circuit breaker on the control panel

Table 6

CONTROL PANEL & ACCESSORIES		
SYMPTOM	POSSIBLE CAUSE	REMEDY
Control panel will not switch on	Flat batteries	Charge batteries
	Tripped circuit breaker	Reset circuit breaker CB1
Accessory circuit not working	Tripped circuit breaker	Reset circuit breaker above circuit switch by pushing in. Listen for click.
RV Electronics tank gauge not working	Flat battery in face panel	Remove face cover and replace battery (see RV electronics manual)
Inverter not switching on	Tripped circuit breaker or RCD	Reset circuit breaker CB2 & RCDs

Table 7

CHARGING FROM TOW VEHICLE		
SYMPTOM	POSSIBLE CAUSE	REMEDY
No charge Alternator light not showing on DC to DC	Tripped breaker	Check & Reset circuit breakers CB5 & CB1
	Tripped breaker in car circuit	Check car circuit breaker/fuse
No charge, alternator, and solar light both on	Trigger wire for DC-to-DC unit not activated	Connect trigger wire for DC to DC to accessory power from car via trailer plug.
No charge DC to DC alternator lit	Tripped breaker	Check & Reset circuit breakers CB4 & CB1
	Trigger wire for DC-to-DC unit not activated for smart alternator	Connect trigger wire for DC to DC to accessory power from car via trailer plug.

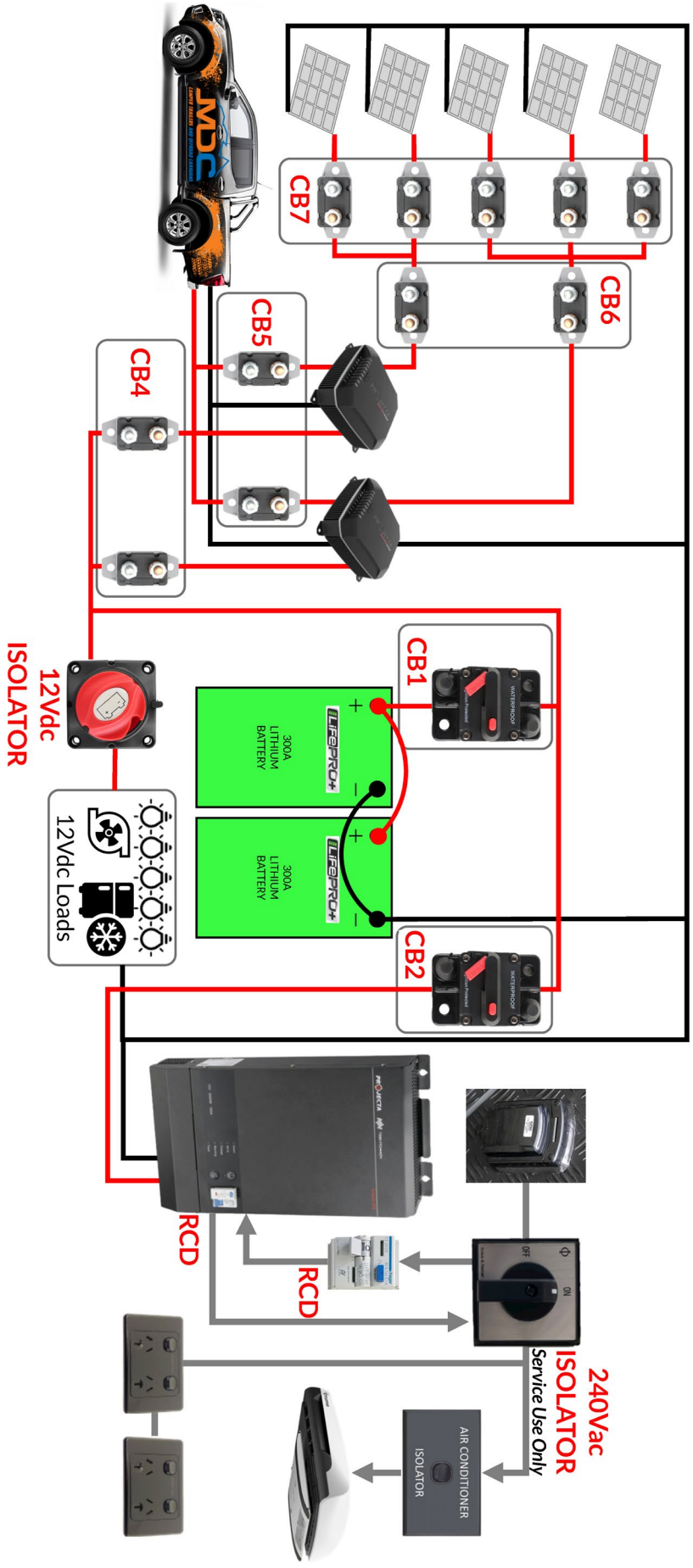
Table 8

SOLAR CHARGING		
SYMPTOM	POSSIBLE CAUSE	REMEDY
No solar power DC to DC solar light not showing	Tripped circuit breaker	Check and Reset circuit breakers CB6 & CB7
	DC to DC overloaded	Reset DC to DC by disconnecting from battery and solar input. See Projector user guide.
No solar power DC to DC solar light showing	Tripped circuit breaker	Check & Reset circuit breaker CB4 & CB1
Weak solar charging (low voltage output)	Weak solar input due to shade	Move to sunnier area
	Weak solar due to dirty panels	Clean panels
	Incorrect setting	Ensure DC to DC is set to correct battery type
Solar charging not meeting demands	Power demands exceeding designed solar output	Add additional solar panels
		Reduce load

Table 9

INFORMATION

Expectations of the solar charging system should be reasonable. For example, running two fridges without adding additional solar and following best practice such as pre-cooling and tight packing will reduce cooling efficiency, increasing power requirements of the refrigerant compressor and lead to reduced available battery capacity and the ability of the solar panels to maintain power requirements. Using the inverter functions can also very quickly diminish battery capacity. It is essential that diligent power management practices are taken whenever off grid.


CB7
CB6
CB5
CB4
CB1
CB2
12Vdc
ISOLATOR
300A
LITHIUM
BATTERY
300A
LITHIUM
BATTERY
12Vdc Loads
RCD
RCD
240Vac
ISOLATOR
Service Use Only
AIR CONDITIONER
ISOLATOR

Water

PROBLEM	POSSIBLE CAUSE	REMEDY
Pump not working (no noise)	No power from control panel	Check circuit breaker
	Flat Battery	Charge battery
	Faulty pressure switch	Replace pump, Contact dealer for replacement
	Bad electrical connection	Check connections with multimeter or test light
Pump working but no water flow	Airlock in water lines	Turn on tap and hold finger over nozzle for 5 seconds and release. Repeat several times. If this fails, fill water tank, and use mains pressure to pressurize tank
	Water tank is empty	Fill water tank
	Kinked hose	Check hoses ensuring none are fouled
	Damaged / worn pump diaphragm	Repair or replace pump

Table 10

Gas

PROBLEM	POSSIBLE CAUSE	REMEDY
Cooker not igniting	Gas bottle empty	Fill gas bottle
	Gas bottle not turned on	Turn on valve on gas bottle
	Gas hose on cooker not connected	Check bayonet is securely connected into receiver
	Regulator blocked	Check regulator is not obstructed.
	Kinked hose	Check hose is not twisted and kinked
Remember that first use after connecting gas will take a little while for the gas to purge the line to the cooktop. Hold the control knob down for up to 4 minutes		

Table 11

Brakes

PROBLEM	POSSIBLE CAUSE	REMEDY
No Brakes	Open Circuits	Find and correct
	Severe under adjustments	Adjust brakes
	Faulty controller	Test and correct/replace
	Short circuits	Find and correct
Weak Brakes	Great or oil on linings or magnets	Clean or replace
	Corroded connection	Clean or replace connectors
	Worn lining or magnets	Replace
	Scored or grooved brake drums	Machine or replace
	Poor Synchronisation	Correct Controller setting
	Poor Brake adjustment	Adjust Brakes
	Glazed brake Linings	Re-burnish or replace linings
	Overloaded trailer	Correct loading. Check at weighbridge
Brakes Locking	Poor Synchronising with controller	Adjust controller
	Poor Adjustment	Adjust brakes as per instructions
	Faulty controller	Test and rectify or replace
	Loose, bent, or broken components	Inspect and replace components
	Out-of-round brake drums	Machine or replace
	Insufficient wheel load (dual Axle)	Correct trailer level to even load
Intermittent brakes	Faulty controller	Test and Correct
	Broken Wires	Repair or replace
	Loose connections	Find and repair

	Faulty ground	Find and repair

Table 12

Electric Roof

PROBLEM	POSSIBLE CAUSE	REMEDY
• Roof will not extend from closed position. • Roof will not retract from open position. • Roof operates unevenly/crooked	(Will not extend from closed position) External roof locking latch is still coupled to its catch	• Uncouple the locking latch/s
	(Will not retract from open position) Roof props have not been removed.	• Check and remove all roof props.
	There is an obstruction blocking the path of the roof.	• Check and clear any obstructions from the path of the roof.
	No power available to the L.A (Linear Actuator) motors	• Check the battery isolator and auxiliary rocker switch are both in the ON position. • Check and Reset CB1 and the Mini-circuit breaker labelled 'L.A' on the 12Vdc distribution switchboard control panel. • Check the battery system is able to deliver constant power above 9Vdc and up to 15A when running.
	Controller has entered error mode	• *See Actuator Control Error Codes, Table 14*
	A single actuator may be triggering a fault code	• *See Actuator Control Error Codes, Table 14*
	A single actuator may have failed	• *Contact MDC/AUSRV for further support*
Roof does not respond to wireless remote control	Remote battery is flat	• Replace remote battery

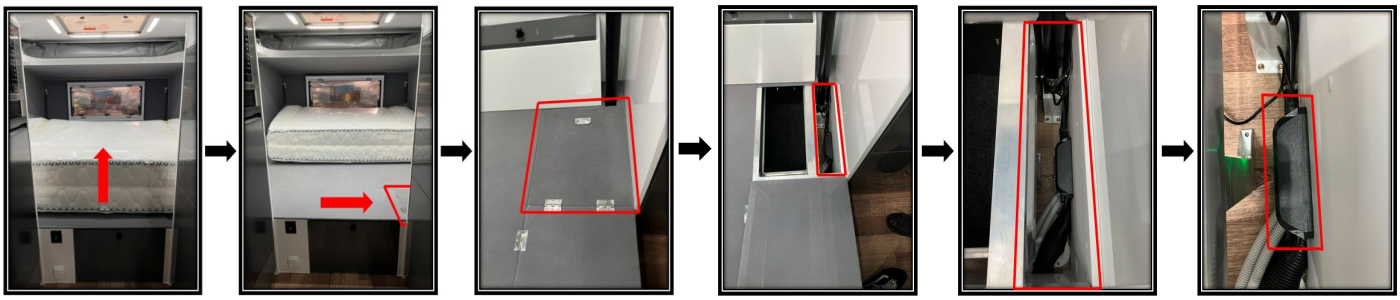
Table 13

Actuator Control Error Codes

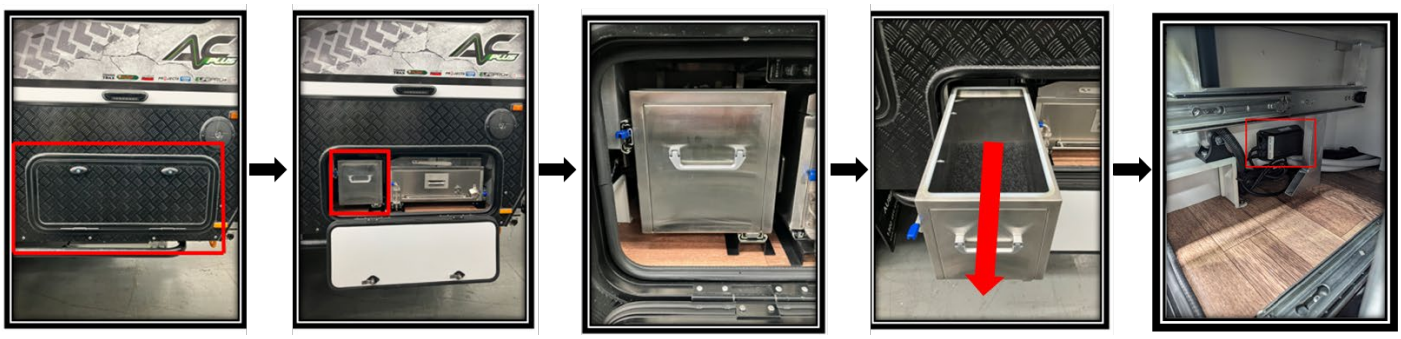
The electric roof actuator controller can produce error codes depending on the fault that may be occurring if the system is not performing as expected. To view these error codes a wired, handheld remote is supplied with your caravan. To access and connect the wired remote and view any error codes, do the following:

1. Locate the actuator controller:

   Internal access:

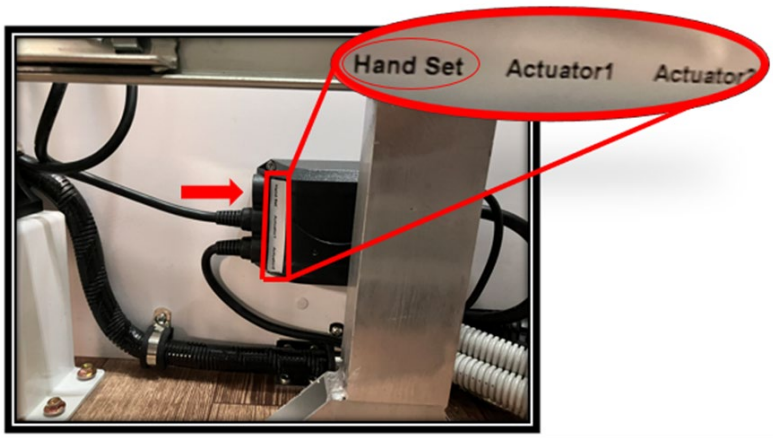


External access:



2. Connect the wired remote to the available *HANDSET* port on the side of the controller.
3. Once connected, if there is a current error code active, the wired remote will display the code on the LED screen.

①: actuators extend, ②: actuators retract, ③: stroke position memory 1, ④: stroke position memory 2, ⑤: stroke position memory 3, ⑥: Reset, ⑦: LED screen, displays error codes and stroke positions in real time



4. Use *Table 14* to determine the fault and how to clear the error code.

ERROR CODE	FAULT	HOW TO CLEAR CODES
E02: Out of sync	Actuators are beyond the set deviation value when running.	Performing a reset of the system can clear the error code.
E05: Channel 1 overcurrent	Single actuator has trigged overcurrent status, please check if the actuator is overloaded by an obstruction blocking movement of the roof.	Clear any obstructions from the path of the roof.
E06: Channel 2 overcurrent		
E07: Channel 3 overcurrent		
E08: Channel 4 overcurrent		
E10: Channel 1 no Hall signal	Single actuator has no Hall signal.	Please check whether the connection between the actuator and controller are secure and reliable and there is no damage to the connections or cables. Performing a reset of the system can clear the error code.
E11: Channel 2 no Hall signal		
E12: Channel 3 no Hall signal		
E13: Channel 4 no Hall signal		
E16: Abnormal power cut off	There was an unexpected power cut off during running of the actuators.	Please check there is stable power being delivered to the system. Restore power to the system and perform a reset of the system to clear the error code.

Table 14

INFORMATION

If after following the above troubleshooting and the actuator control codes cannot be cleared or there are not control error codes and the roof will still not respond to any command from the wireless remote, wired remote, or

rocker switch, contact MDC/AUSRV for further support and advanced troubleshooting steps.

Performing Actuator System Reset

Where a reset of the actuator system is required

1. Press and holding the R button on the wired remote OR press and hold both UP and DOWN buttons on the wireless remote.
2. After 10seconds the system will clear the error code and attempt to set the rams back to their zero position. The roof will close completely and then the actuators will slightly raise. A soft 'click' can be heard from the controller.
3. Release the button/s.
4. If there is no remaining fault, the system will now be in normal operating mode.

Handy Tips

Driving Offroad

Towing your caravan offroad adds many dimensions to the driver's responsibilities and factors to be considered. When travelling remote always carry enough spare parts and supplies to cater for a "worst case scenario." Always perform preventative maintenance and daily checks. Minimum trailer spares would consist of:

- Wheel Bearings
- Seals
- Wheel studs and nuts

These are available from Market Direct Campers

Wildlife

Australian outback roads are notorious for wandering stock and native wildlife which can be a serious danger to motorists. Due care must always be taken, and the possibility of an animal strike considered regarding speed and time of day you are driving. Most animals in the outback are more active at night which increases the likelihood of an animal strike between dusk and dawn. Towing a camper or caravan increases braking distance and has inherent risk associated with aggressive and defensive manoeuvring to avoid a collision.

Corrugations & rough road

Corrugations are arguably the most taxing and damaging road conditions to vehicles. Constant vibration can loosen vehicle components and as a stress dynamic to vehicles and drivers well more than normal road driving. In these conditions take regular breaks to reduce driver fatigue and fatigue to vehicles. Shock absorbers can become extremely hot on corrugated roads which can cause damage to seals resulting in shock absorber fade (reduction in damping effect) and in extreme cases failure of the seal completely. On rough and corrugated roads, it is important to adjust tyre pressures on your car and trailer to soften the effect and extend the contact patch of the tyre on the road.

Bulldust

This phenomenon is common on outback roads. Fine dust can settle in large holes obscuring them from unsuspecting drivers. It is important to reduce speed in these conditions and drive carefully to avoid the possibility of damage or an accident.

Sand

When driving on sand it is important to lower tyre pressures on both the vehicle and trailer. By lowering the pressure, you will effectively create a larger footprint for the tyre which will reduce how far it sinks in sand. Sand shape and compaction will vary around the country so necessary reduction in tyre pressure will vary. Always keep

in mind the lower the pressure the lower the speed you should travel. When lowering pressures to 20psi or less you also increase the chance of rolling the bead of the tyre off the rim so sharp turns should be avoided. When driving these conditions, it is strongly advised you carry a tyre pressure gauge/deflator and a portable compressor to reinflate when back on the highway.

Causeways

Outback roads often have causeways to control water runoff and prevent erosion of the road. When travelling at speed these causeways can be a danger to motorists and vehicles so due care should be taken to reduce speed when approaching them. In very remote areas these often will not have signposts so particular care should be taken in these areas.

Creek and River Crossings

These crossings can be extremely dangerous even in low water levels and should never be attempted in times of even mild flooding. Towing a camper or caravan elevates the risk in this situation and should never be attempted unless you are completely assured it is safe to do so. If there is any doubt about access in flood prone areas, you should contact the local authorities to find out conditions and dangers before you proceed.

Protecting the environment

Remote areas and National Parks are sensitive areas, and all precautions should be taken not to damage tracks, interfere with flora and fauna and not to contaminate the area. In sensitive areas it is advisable to use grey water tanks and contained toilets. If your camper or caravan is not fitted with such, both toilets and grey water tanks are available as portable self-contained units. Always store food, food scraps and rubbish in secure containers, native animals can be quite resourceful in scavenging for scraps. Dingos have been known to open locked eskies to get to food so do not chance it, always secure these items when travelling.

Trip Planning

* When planning remote trips always consider where you will resupply for fuel, food, and water. Some remote fuel stations may run out of fuel during busy periods or times when large fuel trucks are unable to access the area due to road conditions and closures or simply close outside of the season. Always check conditions and availability of fuel before setting out to remote areas.

Shire Councils

There are many resources available for planning your trip away. Every state has a tourism website as so regional councils which will give you extensive information on camping sites, things to do and see, events happening in the area and contact information for booking sites or activities.

National Parks

Each state's national parks organisation has a website to assist in finding campsites and provide specific information about each park's unique qualities. As a planning resource these are extremely good. All contact information will be available.

Wiki Camps

This smartphone app is an excellent resource for finding all kinds of camping across Australia. If you are looking for free camping you will not find a better resource. There is an app add on that even assists in finding fuel stops with user updates on fuel prices.

Facebook

These days there are numerous Facebook groups dedicated to travelling with campers and caravans and groups dedicated to travel in specific areas. The area specific groups have many locals as members and are a fantastic way to find out local track closures, conditions, and research the area in general.

Recovery Equipment

Recovery points

Your AUSRV caravan is factory fitted with receiving slots for bolt-in recovery points. Most models are also supplied with these recovery points fitted including 4.5t rated steel bow shackles. Do not attempt to recover via points that aren't designated recovery point. Your vehicle must be fitted with rated points that exceed the safe load of any recovery straps or tow straps being used.

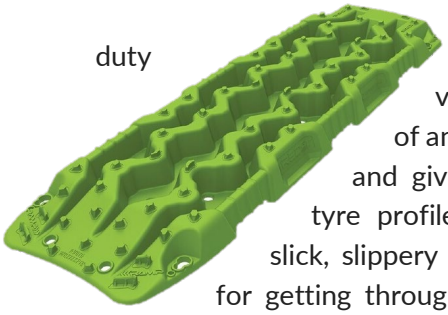
Hardware

When towing your caravan offroad it is imperative that you are prepared for anything. Where it be the desert outback, beaches, or tropical rainforests even the most experiences adventurers can sometimes get 'stuck in the mud'. Having appropriate, quality recovery gear and knowing how to use it, can make the difference between a slight inconvenience and a timely, expensive remote recovery. Some key pieces of equipment recommended for any offroad escapes include:

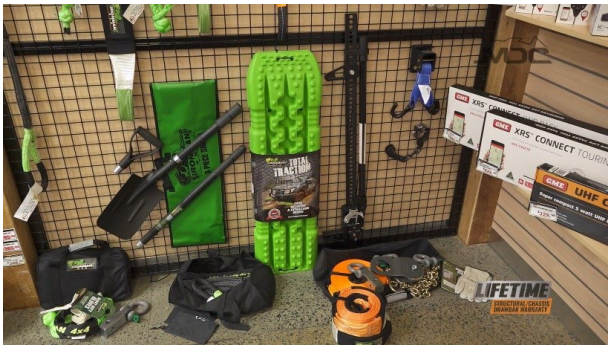
- **Shackles -** Shackles are an integral part of any recovery kit, they are the key connecting point when securing a load and must be appropriately rated. There are 2 main types of recovery shackles commonly used.
  - **Steel bow shackles.** Usually the most budget-friendly option, steel bow shackles are one piece steel loops secured by a hi-tensile steel bolt. Coming in many different colours and sizes, international standard requires the weight load rating to be embossed into the steel so be sure to pay close attention to this when selecting the best suited bow shackles for your kit.

  - **Soft shackles,** pictured below, add a great deal of safety to any recovery situation as they are lightweight and made from soft, let surprisingly strong webbing and polyethylene rope. This can reduce dangers of impact to persons and property damage in the event of equipment failure. Typically, more expensive than a traditional steel shackle, however, this technology has become much more available and affordable in recent years and has been quickly adopted by novice and expert adventurers alike as a staple piece of gear in recovery kits.

- **Snatch straps.** Typically manufactured from nylon webbing, these heavy-duty straps are designed for not only strength, by flexibility. Compared to traditional rope cording a snatch strap will stretch to a degree which helps to brace loads when high torque is needed, spreading the force out more evenly across the connecting gear and minimising damage in the event of equipment failure. The soft materials are also less damaging to the environment when snatching around tree trunks, compared to heavy chains. The added benefit of these simply being lighter to carry makes the investment in a good quality snatch strap worth the payload savings alone. Always be sure to check the rated weight load and look for the compliance tag to ensure you have a safe, correctly rated strap that will perform correctly.



- **Recovery/traction boards.** A must-have for any off-roader, these heavy-duty plastic boards are designed to be able to take the weight of your caravan (or vehicle) to provide a portable source of arguably the most important resource of any off-road traversal, traction! These boards, when placed under the wheels lift and give additional tread to the tyre profile allowing traversal over slick, slippery or unstable ground. Ideal for getting through mud, bogs, sand, snow and up wet or mossy cliff faces making for much faster recoveries. There are many different sizes, colours, and variety of recovery boards on the market so be sure to do your research and find what best suits your needs.



- **Shovels and high lift jacks** are extremely handy to have for recoveries. All AUSRV caravans come standard with chassis mounted jacking points, so having a hi-lift jack can help get you out of a tough spot when you really need it.
- A **tyre gauge and air compressor/inflator** are another must-have to deflate (or inflate) your tyres to the correct pressure when travelling offroad. Depending on the terrain you are crossing, it may be necessary to deflate your tyres to a lower pressure to allow to better traction and handing of vibrations, such as corrugations or rocky beaches. Uneven inflation of tyres on the same axle can cause dangerous handling in your towing combination.

- **Tyre repair kits** are an excellent investment when travelling remote in the event you are unlucky enough to damage more tyres than you have spare. These dry repair kits are easy to use and can be used many times for minor damage such as punctures.

Hiring Your Camper/Caravan

We want you to get the best experience you can have from your Camper Trailer or Caravan for many years. To help you achieve that, we encourage you to read the below information prior to considering hiring your camper trailer or caravan to third parties.

1. INCREASED WEAR AND MORE MAINTENANCE

The ordinary lifespan and maintenance schedules for camper trailers and caravans assume ordinary use, which will not be continuous or as extensive as for a product rented out for much of the year. If you rent out your product, then even if every person who rented it uses the product perfectly, and they will not, you would still need to take it for maintenance at your own expense more frequently, and your product will inevitably incur more wear. These are not defects in manufacture but are simply inevitable consequences of heavier use.

2. UNKNOWN DAMAGE

If you rent your product out, then there are countless ways for it to be returned to you in worse condition. Sometimes, the renter will not even notify you of an incident which caused damage, and the damage can get worse as it goes unrepaired. Even where you are notified, you may not personally know how the damage was caused, and will only have the renter's explanation, which may be biased or incomplete. This can make it much harder to identify and subsequently repair the damage, or to claim for the damage under warranties (if applicable) or insurance.

3. VOIDS MANUFACTURER'S WARRANTY

We have sold you this product for your own personal use, and the manufacturer's warranty which we provide with it will be immediately voided if you rent the product to third parties. This will prevent you from making claims under that warranty in the future including during times when your product is used by you personally.

4. COMPLICATES AUSTRALIAN CONSUMER LAW PROTECTIONS

Your manufacturer's warranty being voided (see above) does not affect your rights under the Australian Consumer Law but renting your product out can complicate the claims process and, in some cases, might cause claims to be rejected which otherwise would not have been. This is because we may reject a claim if it is unclear whether problems have been caused by misuse or incident while your product was in the possession of a third party.

SUMMARY: Renting your camper trailer or caravan to third parties puts your product at risk and may cost you access to warranties and insurance. For your own benefit, we strongly recommend that you understand the risks before allowing third parties to use your caravan or camper trailer.

Warranty Statement

These Warranty Terms form part of the contract between you and Market Direct Group Pty Ltd (ACN 115 038 483) ("we" or "us") for the purchase of your new Offroad Caravan or Camper Trailer. Please read these Warranty Terms carefully. Should you have any questions relating to this Warranty, then please contact us.

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

1. VALIDITY OF CLAIMS

a) Claims under this Warranty may only be made by the original purchaser of the item in question. This Warranty commences on the original date of purchase and expires 12 months after that date, except with regard to the structural integrity of the drawbar and chassis, for which this Warranty shall continue for the entire operational life of the Camper or Caravan.

b) This Warranty only applies to items sold as "new" and does not extend to any items sold via auction, or labelled "factory seconds," "ex-demonstration" or "damaged," unless specifically stated otherwise by us in writing. (Please see further on this page for more information).

c) This Warranty is an agreement between us, and you are personally and is not transferable under any circumstances. If an item is sold to a third party by the original purchaser, then this Warranty is terminated immediately for that item, and the original purchaser shall make no claims or be eligible for any claims on behalf of the new owner.

d) This Warranty does not apply to new products purchased from us and then used in hire schemes or as rentals. Hiring or renting your products to third parties may negatively affect your ability to make claims for those products under any other warranties as may apply.

- This Warranty does not cover damage due to unauthorised modifications, misuse, abuse, incorrect assembly, improper or irregular maintenance, or accident or collision. Without limiting the generality of this clause, some examples of circumstances that may cause damage not covered by warranty include: Failing to have your caravan or camper serviced at the frequency indicated in the manual for that product, or to perform regular basic maintenance as indicated in the manual.
- Taking your caravan or camper through any environment or over any surface which the manual for that product indicates the product was not designed for. As an example, if you partially submerge the caravan, you will not be able to claim for resulting water damage.
- The expected operational lifespan of your caravan assumes use as a holiday home, not as a primary residence. If you use your caravan as a primary residence, you will not be able to claim for the increased rate of wear and tear; and
- Exceeding the load limits for your caravan or camper will cause strain on parts of the vehicle. The advertised load limits are for a load distributed roughly evenly across the caravan, and you may overload the caravan at lesser weights if the weight is disproportionately placed in one part of the caravan. You may not be able to claim for any failure or resulting damage caused or contributed to by such overloading.

e) If we approve a warranty claim, then the work performed to remedy that claim must be performed either by us or by a person whom we approve in writing to do that work. If you have rectification works performed by an unapproved third party, whether under an approved warranty claim or otherwise, then we may not be responsible for the costs of those works, and this Warranty shall not cover those works, or any damage or loss of value arising from those works.

f) Any affiliates, representatives, associates, agents, suppliers, resellers or similar of ours have no authority to approve or deny warranty claims on behalf of us.
We shall not be liable, (in part or whole) for any warranties, either express or implied, made by agents or resellers unless we give an express written agreement to be bound by such a warranty, and such liability shall be strictly limited to the extent of that written agreement. Such unauthorised claims shall be the responsibility of the agent or reseller only.

2. REMEDIES AND LIMITATION OF LIABILITY

a) Except as otherwise required by law, your remedy if we accept a warranty claim will be limited to our choice between repair works with our chosen repairer, replacement goods, or a refund, as we reasonably consider appropriate to rectify the basis of the claim.

b) If we accept a warranty claim arising from a major failure, or for which we cannot provide a remedy in a reasonable time, then you may be entitled to a refund for that product. You will not be entitled to a refund or a replacement if

the product has become damaged while within your care unless that damage is limited to fair wear and tear and damage caused by a defect and not contributed to by your actions or neglect.

c) You agree that, to the greatest extent permitted by law, we shall not be liable for consequential or special damages of any kind, including aggravated, punitive, or exemplary damages. Without limiting the generality of this clause, you agree that our liability shall be limited in all cases to the amount you paid for the products underlying a claim.

3. ITEMS NOT COVERED UNDER THIS WARRANTY

This Warranty does not cover damage of the following kinds or to the following products or parts of products:

a) Rust
b) Wheels and Tyres
c) Paint
d) Travel Covers and Straps
e) General consumables (e.g. bearings, light bulbs etc)
f) Zips and mesh or screens.

While these items are not covered under this Warranty, they may be covered by other warranties you have in respect of the product. This Warranty expressly applies to Tents for the general 12 Month term, including our canvas components, poles, and fittings. The Warranty for tents is subject to the same limitations as other parts of the caravan.

4. FACTORY SECONDS, EX-DEMONSTRATION AND DAMAGED GOODS

a) From time to time, we may offer for sale items marked as “factory seconds,” “ex-demonstration,” or “damaged.” This Warranty does not apply to any goods sold under these markings.

b) If other warranties apply to goods sold while marked as “factory seconds,” “ex-demonstration,” or “damaged,” then those warranties will apply the standard for a product with those markings, which will be a lower standard than that for a product sold as new. If you purchase a product with these markings, you acknowledge that the reduced price for the product reflects that some claims will not be available which would have been for a product marked as new.

c) Any items sold as “factory seconds,” “ex-demonstration” or “damaged” items are sold on an “as is” basis. Due to the nature of such items, i.e. being “ex-demonstration,” “factory seconds” or “damaged,” it is reasonable to expect that some imperfections or flaws may exist even where it is not initially apparent. While we will notify you of any defects or damage to such goods of which we are aware, you purchase the goods on notice that we may not be aware of all such defects and damage, and that the price you pay for the goods includes a discount to allow for the risk of you discovering further defects or damage.

d) We do not make any representations as to the quality or fitness of any goods sold on these bases, and it is a term of the contract for the purchase of any such goods that the customer has made their own enquiries and inspections and relies exclusively upon those enquiries and inspections in deciding to make that purchase.

5. GOODS BOUGHT AT AUCTION

From time to time, we may, at our discretion, offer items for auction, either independently or via a third party. Whilst every effort will be made to provide all relevant information regarding the item on auction, as per Australian law, goods bought at auction are not covered by this Warranty and are not covered by the majority of consumer guarantees under the Australian Consumer Law. You may not have any rights to make a warranty claim for products purchased at auction.

6. LODGING A CLAIM

If you purchased a caravan or camper which you believe is covered by warranty, and you become aware of something you believe to be a defect or damage resulting from a defect, then you should follow the process set out below to obtain the fastest response and greatest chance of having your claim approved:

a) As soon as reasonably possible after becoming aware of what you believe to be a defect or damage caused by a defect, lodge a warranty claim through our website using our online Warranty Claim Form.

b) Once we receive a warranty claim form, we will respond in one of three ways. We will either accept the claim, reject the claim, or ask for further information to allow us to decide whether to accept or reject the claim. If a claim consists of multiple parts, we may give different responses to different parts.

- If we accept a claim, we will notify you of the acceptance, and discuss with you how to remedy the claim. While we endeavour to accommodate your preferences in this process, we will generally provide our choice between repair works with our chosen repairer to the standard we deem reasonably remedies the accepted claim, replacement goods, or a refund, unless we accept that the claim is for a major failure.
- If we reject a claim, we will notify you of the rejection and explain the reasons for the rejection. You may provide us with further information or explanations to appeal the rejection, but providing us with further material may not change the result; or
- If we have insufficient information to either accept or reject a claim, we will ask you to provide us with more information to allow us to make that decision. We may require any kind of information which we consider to be

relevant to the decision, which may involve questions about the use of the products, photographs of the products, or about the maintenance history of the products. If you fail, neglect, or refuse to provide us with information which we reasonably require to process your claim, we may reject the claim on the basis of that lack of information. that basis, even if you subsequently correct the information. If you are unsure whether information is relevant, include it in your application and we will assess its relevance.

c) If you act or fail to act in a way which either prevents us from determining the true cause and extent of the subject of a claim, or which substantially constrains or limits our capacity to provide a remedy, this will adversely affect the handling of your claim. As examples of such conduct:

- If you arrange for repair works before we can assess a product, we may not be able to determine whether the repair works were covered by a warranty or may not be able to provide the appropriate remedy after those works.
- If you do not notify us of a claimable matter without delay, we will not be liable for damage caused by the delay, and we may not be able to determine the initial cause of the damage once time has aggravated it; and
- If you refuse to allow us to access the product for the purposes of assessing a claim, we may reject the claim on the basis that we have insufficient information.

d) If you provide us with false, misleading, or selectively incomplete information, we may reject that application on that basis, even if you subsequently correct the information. If you are unsure whether information is relevant, include it in your application and we will assess its relevance.

7. CONTACT

If you have any further questions relating to warranties, or are unsure about any aspect of this section, then please contact us.

Phone: 1300 494 494 (Option 4).

Travel Record

Your caravan service record booklet and logbook will help you keep track of kilometres travels and service records.

Trip Name	Date	Km Start	Km Finish	Cumulative Km

Trip Name	Date	Km Start	Km Finish	Cumulative Km

Mechanical Maintenance

Maintenance is essential to keep your caravan in a safe and usable condition. Caravans are no different to any other motor vehicle and require servicing at regular intervals which may vary according to use and the environment in which it is used. The service schedule outlines the service intervals for safe travelling and your owner obligations under our warranty policy. Servicing should always be carried out by a competent person with relevant experience.

- Never work beneath the caravan while suspended on a jack. Always use “Jack Stands” with an adequate SWL.
- Always use dedicated jacking points
- 240V appliances and wiring must only be serviced and repaired by a qualified tradesperson.
- Gas plumbing must only be serviced and repaired by a qualified gas fitter

Hitch

Cruisemaster DO35

To ensure a long service life we recommend the following periodic maintenance procedures.

1. Always keep Tow Pin and Universal mating surfaces clean and lightly lubricated.
2. Check condition of Tow Pin O-Ring and replace if necessary (Part No. 18D-DO35-101).
3. Regularly lubricate grease points with multi-purpose grease.
4. Periodic adjustment of Slotted Nut & Pin may be required of coupling head loosens excessively and should be a competent person.
5. Flush with clean water if locking mechanism does not open fully due to dirt ingress.

Ball Bearing Slides

To lubricate and protect from corrosion the ball bearing slides should be lubricated with a small amount of general-purpose grease every 6 months.

Wheels and Tyres

Tyres should be checked for damage prior to each trip. Inspect for adequate tread depth and any damage particularly to sidewalls. Wheel nuts must be checked with a torque wrench. When picking up your new caravan check the wheel nut torque at 50, 100, 200 and 500km. Check before each trip and daily when travelling for longer periods. Do not over tighten, always use a torque wrench to ensure accuracy.

Highway

Your caravan is fitted with 16” wheels and 265/75 R16 Goodride Tyres. The tyres are a “Light Truck” tyre with a mud terrain tread and a maximum load rating on single axle of 1550kg at 80psi. *See the tyre pressure recommendation chart.*

Offroad

Offroad driving requires lower tyre pressures and lower speeds. When driving on rough and corrugated road, a reduction of speed and controlled deflation of tyres is required to protect the caravan and its suspension from damage. In extreme circumstances tyre pressures may be reduced significantly. When lowering from highway pressure, a rule of thumb is to reduce your speed by the same percentage as the lowering of tyre pressure.

Because offroad conditions can vary greatly, you must lower your pressures and reduce speed until vibration and shock through the suspension is at a moderate level to suit the conditions you are experiencing, and the loaded weight of your caravan.

When returning to the highway or when increasing speed, you must reinflate the tyres to correct highway pressures. Failure to reinflate can cause severe handling problems resulting in injury or death.

Brakes

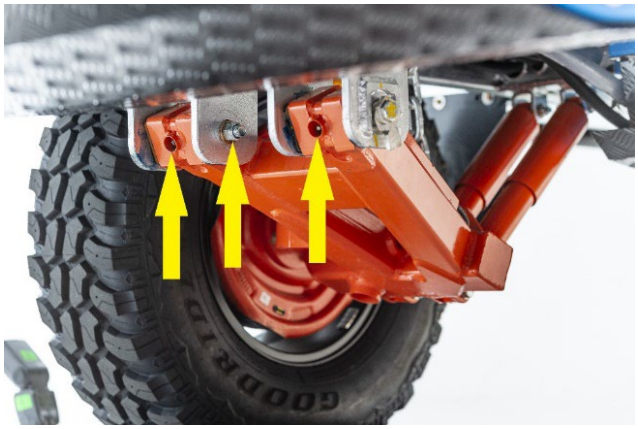
The electric brakes on your caravan are a drum type. Drum brakes require regular adjustment to ensure even pad wear and proper performance. This is an important safety item. The recommended interval for checking adjustment is 5000km.

Bearings and Seals

The Timken bearings in your caravan are protected with a rubber seal on the rear of the drum and a friction fit bearing cap on the front. Normal use without encountering water crossings these should be services every 5000km.

Suspension

Your camper is fitted with quality independent trailing arm suspension with dual shock absorbers. This design is ideal for the full range of use on and offroad however, there are limitations in prolonged use of corrugated and rough road. Suspension maintenance should be done as per the schedule contained in this booklet. Regular lubrication and inspection are critical, and the grease points are indicated below. Regular checks of the torque on the trailing arm bolts indicated will prolong correct wheel alignment.



Trailing arm suspension should not be reversed up gutters and obstructions in a heavy matter. Always use a ramp or similar if you are backing over high gutters and obstacles.

Shock Absorbers & Bushes

The function of shock absorbers is to turn kinetic energy into heat and dampen the rebound in the suspension to keep the tyre in contact with the road. During prolonged periods on corrugated and rough roads it is possible to overheat shock absorbers to the point of failure (shock fade). Best practice is to take regular breaks and allow both the shock absorbers and suspension bushes to cool. Overheating the bushes through prolonged driving on corrugations can soften the thermoplastic and cause premature wear and/or deformation of the bush. On severely rough roads stop regularly up to every hour to allow components to cool.

Wheel Alignment

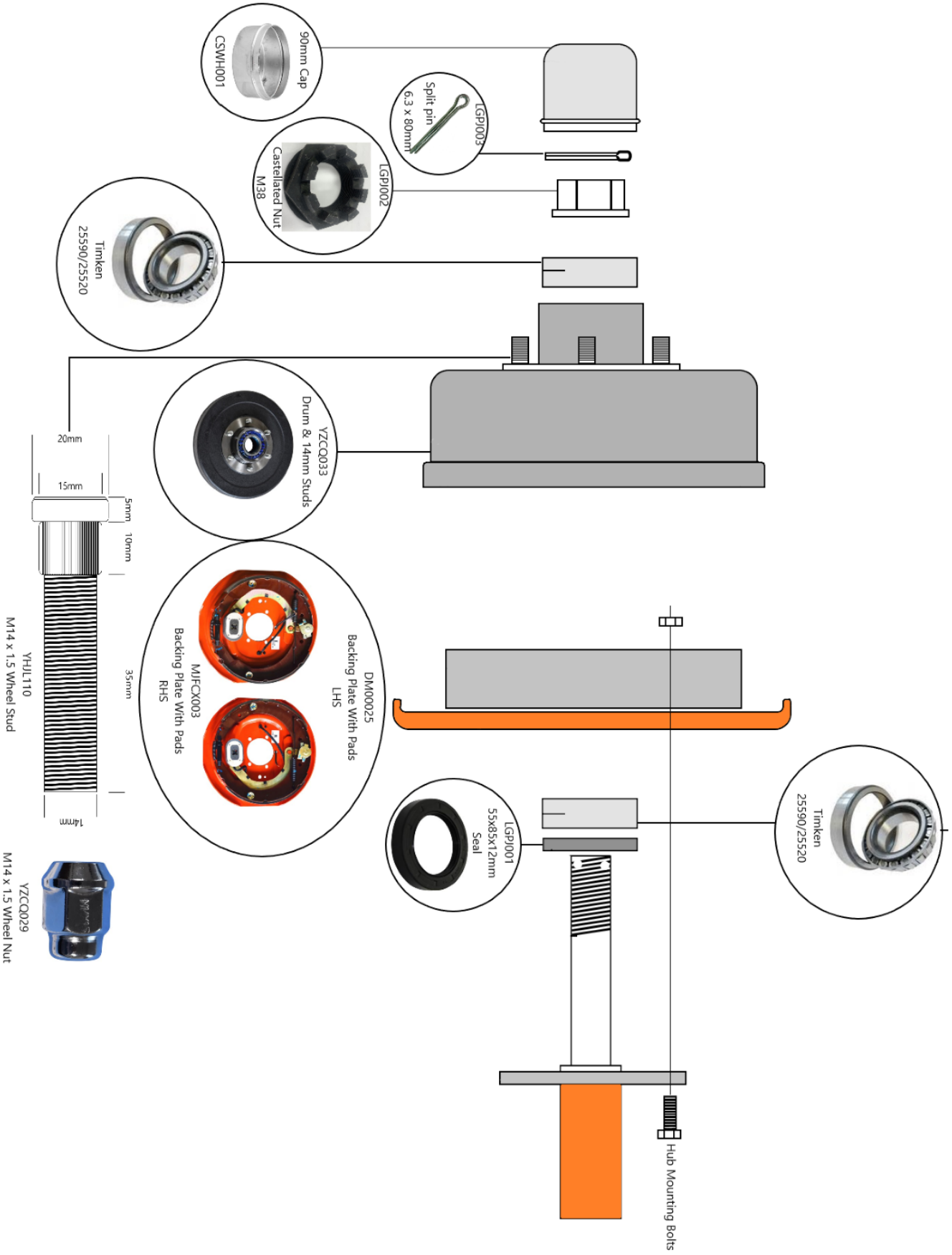
The wheels on your caravan are aligned at the factory. Refrain from backing up gutters and obstruction heavily. Always create a ramp when reversing obstacles to prevent premature misalignment of the wheels. Wheel alignment should be checked regularly every 10,000km or when tyre wear indicates.

Spare Part Numbers

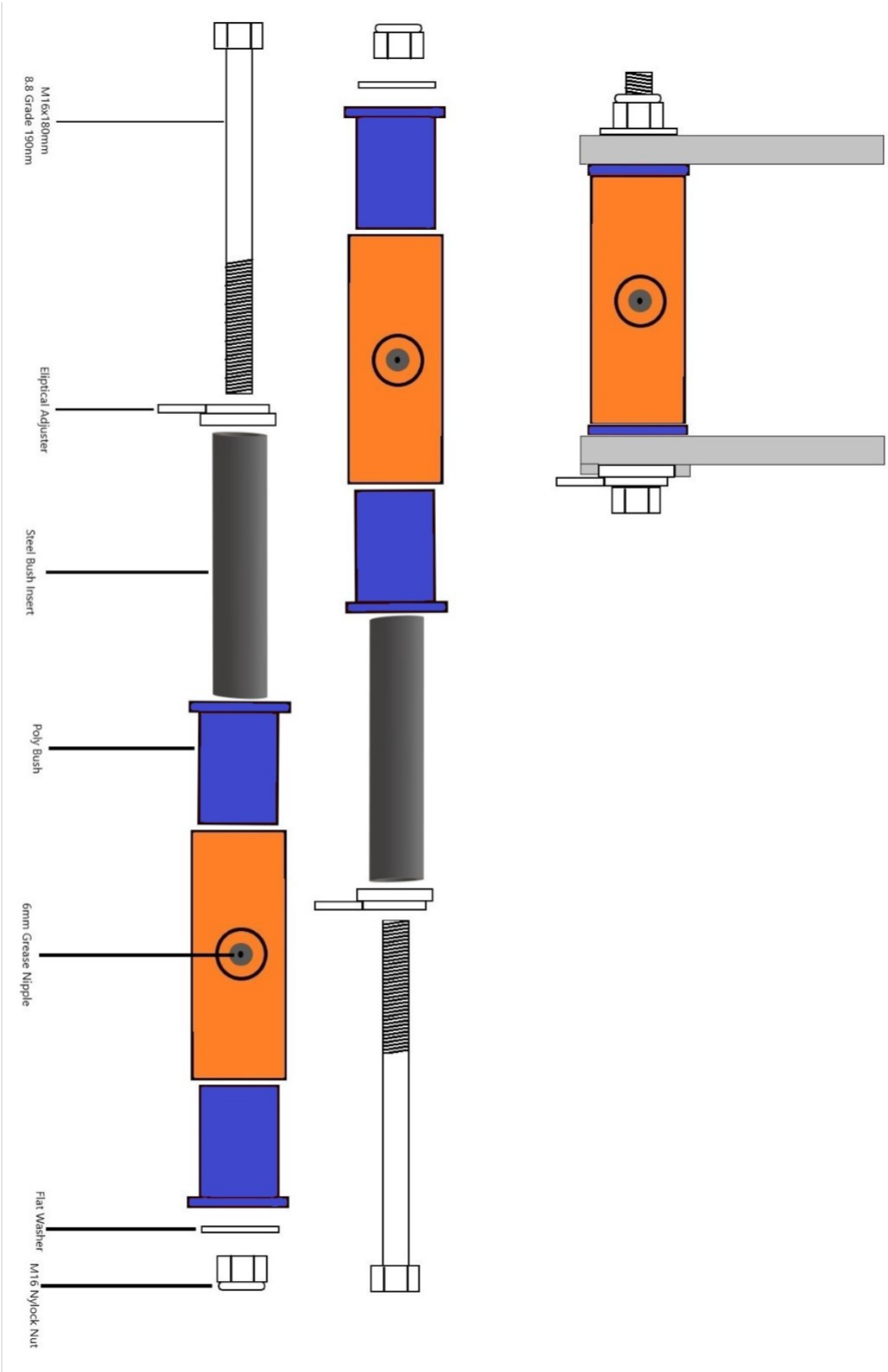
Common Hub & Suspension Components

Timken Bearing (inner & outer bearings)	25590
Bearing Cone (Inner and outer bearings)	25520
Bearing Seal (Common size)	55 x 85 x 12mm
Round Bush	YJJJ036-2
Steel Bush Insert 30 x 114mm	YZCN002
Adjuster Cam	YDZS030
LHS Backing plate Assemble (with pads)	DM00025
RHS Backing Plate Assembly (With Pads)	MJFCX003
Crown Nut M38	LGPJ002
14mm Wheel Stud	YHJL110
14mm Wheel Nut	YZCQ029
½" UNF Wheel Stud	YZCQ009
1/2" UNF Wheel Nut	YZCQ007
Grease Nipple	6mm Tapered

Hub Assembly



Trailing Arm Bushes



Service Schedule

500KM FIRST SERVICE		CHECKED
Hitch	• Check hitch bolts to 90Nm. • Lubricate with high temperature bearing grease.	
Handbrake	• Inspect and adjust handbrake.	
Brakes & Bearings	• Inspect and adjust brakes. The check bearings are well greased, and the crown nut is correctly tightened.	
Wheel nuts	• Inspect condition and torque to 125Nm (12mm studs). (140Nm 14mm studs alloy rims) (200Nm 14mm studs steel rims).	
Tyres	• Inspect for abnormal wear, damage, and pressure.	
General fixings	• Ensure no loose fittings.	
Seals & Latches	• Check all seals on doors and hatches compress 30-50%. All seals are in serviceable condition and free of damage.	
Suspension	• Grease bushes and check for play. • Check torque on suspension hanger bolts (190Nm). • Check retaining chain shackles tight.	

Service Centre:	Notes: _____ _____ _____ _____ _____ _____

Every 6 MONTHS / 5,000KM SERVICE		CHECKED
Hitch	• Check hitch bolts to 90Nm.	
Handbrake	• Check the cable and adjust if necessary.	
Hand winch	• Check brake function and webbing.	
Suspension	• Lubricate and check bushes for excess movement. • Torque bolts to 190Nm.	
Brakes	• Inspect and adjust. Check lining thickness and drum wear.	
Wheel bearings	• Remove, clean and re-lubricate. Inspect for wear and replace if necessary.	
Wheel Nuts	• Inspect condition and torque to 125Nm (12mm studs). (140Nm 14mm studs alloy rims), (200Nm 14mm studs steel rims).	
Tyres	• Inspect for abnormal wear, damage, and pressure.	
Lights	• Check all lights are functioning.	
Battery	• Check terminals and voltage at full charge.	
Seals	• Check condition and correct latch/lock adjustment for correct 30-50% compression.	
General fixings	• Check all structural fixing are secure.	
Seals & Latches	• Check all seals on doors and hatches compress 30-50%. All seals are in serviceable condition and free of damage.	
Suspension	• Grease bushes and check for play. • Check torque on suspension hanger bolts (190Nm) • Check retaining chain shackles tight.	

Service Centre:	Notes: _____ _____ _____ _____ _____ _____

12 MONTHS / 10,000KM SERVICE		CHECKED
Chassis and Suspension		
Hitch	• Inspect for damage and lubricate. Check bolt Torque to 90Nm.	
Jockey Wheel	• Inspect for condition and operation.	
Breakaway	• Check for correct operation. • Inspect the lanyard and clip.	
Drawbar	• Inspect wiring grommets and general condition.	
Suspension	• Torque bolts to 190Nm. • Grease bushes and check for play. • Check torque on suspension hanger bolts (190Nm). • Check retaining chain shackles tight. • Inspect shock absorber for condition. • Inspect shock absorber bushes.	
Brakes	• Inspect and adjust. Check lining thickness and drum wear.	
Wheel bearings	• Replace bearings, seals and lubricate. Check stub axle condition and wear. Replace split pin.	
Wheel Nuts	• Inspect condition and torque to 125Nm (12mm studs). (140Nm 14mm studs alloy rims) (200Nm 14mm studs steel rims).	
Tyres	• Inspect for abnormal wear, damage, and pressure. • Check manufacturing date less than 5 years. • Check sidewalls for perishing and damage.	
12V Electrical		
Lights	• Check all trailer lights are functioning. • Check plug pins have gap. • Check for corrosion.	
Battery	• Check terminals and voltage at full charge. • Check batteries are secure in cradles.	
Charging	• Check battery charger settings are correct. • Check DC to DC charger settings are correct.	
Solar Panels	• Check panels are free of damage. • Inspect sealants on cable penetrations and junction boxes.	
Cables	• Inspect cables under body for damage to conduits. • Inspect cable glands and sealants on penetrations through floor.	
240V Electrical		
RCD Unit	• Check the operation of RCD via the test button.	
Mains Input	• Inspect mains input plug and cover are free of damage.	
Earthing	• Carry out resistance check.	
Caravan Body		
Hatches & Doors	• Check and lubricate locks.	
Seals	• Check condition and correct latch/lock adjustment for correct 30-50% compression.	
Body	• Inspect joint sealants inside and out. • Ensuite joints checked for damage and adhesion. • Inspect for soft spots on floor.	
General fixings	• Check all structural fixing are secure.	
Ventilation	• Inspect for obstruction and vents operating correctly.	
Fire Extinguisher	• Inspect extinguisher is charged and within service date.	

Smoke Alarm	• Test and inspect. • Replace battery.	
Window Blinds	• Inspect and adjust tension where necessary.	
Damp Check	• Inspect caravan for any dampness.	
Plumbing		
Hot Water System	• De-scale hot water service.	
Water Tanks	• Treat tanks and entire system with bacteria killing tank cleaner and flush.	
Grey Water Tank	• Treat with tank cleaner and flush.	
Drain Fittings	• Check all metal drain fittings for corrosion.	
Water System	• Inspect for leaks. Turn on pump and ensure it does not start due to loss of pressure.	

Service Centre:	Notes: _____ _____ _____ _____ _____ _____

18 MONTHS / 15,000KM SERVICE		CHECKED
Hitch	• Check hitch bolts to 90Nm.	
Handbrake	• Check the cable and adjust if necessary.	
Hand winch	• Check brake function and webbing.	
Suspension	• Lubricate and check bushes for excess movement. • Torque bolts to 190Nm.	
Brakes	• Inspect and adjust. Check lining thickness and drum wear.	
Wheel bearings	• Remove, clean and re-lubricate. Inspect for wear and replace if necessary.	
Wheel Nuts	• Inspect condition and torque to 125Nm (12mm studs). (140Nm 14mm studs alloy rims), (200Nm 14mm studs steel rims).	
Tyres	• Inspect for abnormal wear, damage, and pressure.	
Lights	• Check all lights are functioning.	
Battery	• Check terminals and voltage at full charge.	
Seals	• Check condition and correct latch/lock adjustment for correct 30-50% compression.	
General fixings	• Check all structural fixing are secure.	
Seals & Latches	• Check all seals on doors and hatches compress 30-50%. All seals are in serviceable condition and free of damage.	
Suspension	• Grease bushes and check for play. • Check torque on suspension hanger bolts (190Nm) • Check retaining chain shackles tight.	

Service Centre:	Notes: _____ _____ _____ _____ _____ _____

24 MONTHS / 20,000KM SERVICE		CHECKED
Chassis and Suspension		
Hitch	• Inspect for damage and lubricate. Check bolt Torque to 90Nm.	
Jockey Wheel	• Inspect for condition and operation.	
Breakaway	• Check for correct operation. • Inspect the lanyard and clip.	
Drawbar	• Inspect wiring grommets and general condition.	
Suspension	• Torque bolts to 190Nm. • Grease bushes and check for play. • Check torque on suspension hanger bolts (190Nm). • Check retaining chain shackles tight. • Inspect shock absorber for condition. • Inspect shock absorber bushes.	
Brakes	• Inspect and adjust. Check lining thickness and drum wear.	
Wheel bearings	• Replace bearings, seals and lubricate. Check stub axle condition and wear. Replace split pin.	
Wheel Nuts	• Inspect condition and torque to 125Nm (12mm studs). (140Nm 14mm studs alloy rims) (200Nm 14mm studs steel rims).	
Tyres	• Inspect for abnormal wear, damage, and pressure. • Check manufacturing date less than 5 years. • Check sidewalls for perishing and damage	
12V Electrical		
Lights	• Check all trailer lights are functioning. • Check plug pins have gap. • Check for corrosion	
Battery	• Check terminals and voltage at full charge. • Check batteries are secure in cradles	
Charging	• Check battery charger settings are correct. • Check DC to DC charger settings are correct	
Solar Panels	• Check panels are free of damage. • Inspect sealants on cable penetrations and junction boxes	
Cables	• Inspect cables under body for damage to conduits. • Inspect cable glands and sealants on penetrations through floor.	
240V Electrical		
RCD Unit	• Check operation of RCD via test button	
Mains Input	• Inspect mains input plug and cover are free of damage	
Earthing	• Carry out resistance check	
Caravan Body		
Hatches & Doors	• Check and lubricate locks.	
Seals	• Check condition and correct latch/lock adjustment for correct 30-50% compression.	
Body	• Inspect joint sealants inside and out. • Ensuite joints checked for damage and adhesion. • Inspect for soft spots on floor.	
General fixings	• Check all structural fixing are secure.	
Ventilation	• Inspect for obstruction and vents operating correctly.	
Fire Extinguisher	• Inspect extinguisher is charged and within service date.	

Smoke Alarm	• Test and inspect. • Replace battery.	
Window Blinds	• Inspect and adjust tension where necessary.	
Damp Check	• Inspect caravan for any dampness.	
Plumbing		
Hot Water System	• De-scale hot water service	
Water Tanks	• Treat tanks and entire system with bacteria killing tank cleaner and flush.	
Grey Water Tank	• Treat with tank cleaner and flush.	
Drain Fittings	• Check all metal drain fittings for corrosion.	
Water System	• Inspect for leaks. Turn on pump and ensure it does not start due to loss of pressure.	

Service Centre:	Notes: _____ _____ _____ _____ _____ _____

30 MONTHS / 25,000KM SERVICE		CHECKED
Hitch	• Check hitch bolts to 90Nm.	
Handbrake	• Check the cable and adjust if necessary.	
Hand winch	• Check brake function and webbing.	
Suspension	• Lubricate and check bushes for excess movement. • Torque bolts to 190Nm.	
Brakes	• Inspect and adjust. Check lining thickness and drum wear.	
Wheel bearings	• Remove, clean and re-lubricate. Inspect for wear and replace if necessary.	
Wheel Nuts	• Inspect condition and torque to 125Nm (12mm studs). (140Nm 14mm studs alloy rims), (200Nm 14mm studs steel rims).	
Tyres	• Inspect for abnormal wear, damage, and pressure.	
Lights	• Check all lights are functioning.	
Battery	• Check terminals and voltage at full charge.	
Seals	• Check condition and correct latch/lock adjustment for correct 30-50% compression.	
General fixings	• Check all structural fixing are secure.	
Seals & Latches	• Check all seals on doors and hatches compress 30-50%. All seals are in serviceable condition and free of damage.	
Suspension	• Grease bushes and check for play. • Check torque on suspension hanger bolts (190Nm). • Check retaining chain shackles tight.	

Service Centre:	Notes: _____ _____ _____ _____ _____ _____

36 MONTHS / 30,000KM SERVICE		CHECKED
Chassis and Suspension		
Hitch	• Inspect for damage and lubricate. Check bolt Torque to 90Nm.	
Jockey Wheel	• Inspect for condition and operation.	
Breakaway	• Check for correct operation. • Inspect the lanyard and clip.	
Drawbar	• Inspect wiring grommets and general condition.	
Suspension	• Torque bolts to 190Nm. • Grease bushes and check for play. • Check torque on suspension hanger bolts (190Nm). • Check retaining chain shackles tight. • Inspect shock absorber for condition. • Inspect shock absorber bushes.	
Brakes	• Inspect and adjust. Check lining thickness and drum wear.	
Wheel bearings	• Replace bearings, seals and lubricate. Check stub axle condition and wear. Replace split pin.	
Wheel Nuts	• Inspect condition and torque to 125Nm (12mm studs). (140Nm 14mm studs alloy rims) (200Nm 14mm studs steel rims).	
Tyres	• Inspect for abnormal wear, damage, and pressure. • Check manufacturing date less than 5 years. • Check sidewalls for perishing and damage.	
12V Electrical		
Lights	• Check all trailer lights are functioning. • Check plug pins have gap. • Check for corrosion.	
Battery	• Check terminals and voltage at full charge. • Check batteries are secure in cradles.	
Charging	• Check battery charger settings are correct. • Check DC to DC charger settings are correct	
Solar Panels	• Check panels are free of damage. • Inspect sealants on cable penetrations and junction boxes.	
Cables	• Inspect cables under body for damage to conduits. • Inspect cable glands and sealants on penetrations through floor.	
240V Electrical		
RCD Unit	• Check the operation of RCD via the test button.	
Mains Input	• Inspect mains input plug and cover are free of damage.	
Earthing	• Carry out resistance check.	
Caravan Body		
Hatches & Doors	• Check and lubricate locks.	
Seals	• Check condition and correct latch/lock adjustment for correct 30-50% compression.	
Body	• Inspect joint sealants inside and out. • Ensuite joints checked for damage and adhesion. • Inspect for soft spots on floor.	
General fixings	• Check all structural fixing are secure.	
Ventilation	• Inspect for obstruction and vents operating correctly.	
Fire Extinguisher	• Inspect extinguisher is charged and within service date.	

Smoke Alarm	• Test and inspect. • Replace battery.	
Window Blinds	• Inspect and adjust tension where necessary.	
Damp Check	• Inspect caravan for any dampness.	
Plumbing		
Hot Water System	• De-scale hot water service.	
Water Tanks	• Treat tanks and entire system with bacteria killing tank cleaner and flush.	
Grey Water Tank	• Treat with tank cleaner and flush.	
Drain Fittings	• Check all metal drain fittings for corrosion.	
Water System	• Inspect for leaks. Turn on pump and ensure it does not start due to loss of pressure.	

Service Centre:	Notes: _____ _____ _____ _____ _____ _____

42 MONTHS / 35,000KM SERVICE		CHECKED
Hitch	• Check hitch bolts to 90Nm.	
Handbrake	• Check the cable and adjust if necessary.	
Hand winch	• Check brake function and webbing.	
Suspension	• Lubricate and check bushes for excess movement. • Torque bolts to 190Nm.	
Brakes	• Inspect and adjust. Check lining thickness and drum wear.	
Wheel bearings	• Remove, clean and re-lubricate. Inspect for wear and replace if necessary.	
Wheel Nuts	• Inspect condition and torque to 125Nm (12mm studs). (140Nm 14mm studs alloy rims), (200Nm 14mm studs steel rims).	
Tyres	• Inspect for abnormal wear, damage, and pressure.	
Lights	• Check all lights are functioning.	
Battery	• Check terminals and voltage at full charge.	
Seals	• Check condition and correct latch/lock adjustment for correct 30-50% compression.	
General fixings	• Check all structural fixing are secure.	
Seals & Latches	• Check all seals on doors and hatches compress 30-50%. All seals are in serviceable condition and free of damage.	
Suspension	• Grease bushes and check for play. • Check torque on suspension hanger bolts (190Nm). • Check retaining chain shackles tight.	

Service Centre:	Notes: _____ _____ _____ _____ _____ _____

48 MONTHS / 40,000KM SERVICE		CHECKED
Chassis and Suspension		
Hitch	• Inspect for damage and lubricate. Check bolt Torque to 90Nm.	
Jockey Wheel	• Inspect for condition and operation.	
Breakaway	• Check for correct operation. • Inspect the lanyard and clip.	
Drawbar	• Inspect wiring grommets and general condition.	
Suspension	• Torque bolts to 190Nm. • Grease bushes and check for play. • Check torque on suspension hanger bolts (190Nm). • Check retaining chain shackles tight. • Inspect shock absorber for condition. • Inspect shock absorber bushes.	
Brakes	• Inspect and adjust. Check lining thickness and drum wear.	
Wheel bearings	• Replace bearings, seals and lubricate. Check stub axle condition and wear. Replace split pin.	
Wheel Nuts	• Inspect condition and torque to 125Nm (12mm studs). (140Nm 14mm studs alloy rims) (200Nm 14mm studs steel rims).	
Tyres	• Inspect for abnormal wear, damage, and pressure. • Check manufacturing date less than 5 years. • Check sidewalls for perishing and damage.	
12V Electrical		
Lights	• Check all trailer lights are functioning. • Check plug pins have gap. • Check for corrosion.	
Battery	• Check terminals and voltage at full charge. • Check batteries are secure in cradles.	
Charging	• Check battery charger settings are correct. • Check DC to DC charger settings are correct.	
Solar Panels	• Check panels are free of damage. • Inspect sealants on cable penetrations and junction boxes.	
Cables	• Inspect cables under body for damage to conduits. • Inspect cable glands and sealants on penetrations through floor.	
240V Electrical		
RCD Unit	• Check the operation of RCD via the test button.	
Mains Input	• Inspect mains input plug and cover are free of damage.	
Earthing	• Carry out resistance check.	
Caravan Body		
Hatches & Doors	• Check and lubricate locks.	
Seals	• Check condition and correct latch/lock adjustment for correct 30-50% compression.	
Body	• Inspect joint sealants inside and out. • Ensuite joints checked for damage and adhesion. • Inspect for soft spots on floor.	
General fixings	• Check all structural fixing are secure.	
Ventilation	• Inspect for obstruction and vents operating correctly.	
Fire Extinguisher	• Inspect extinguisher is charged and within service date.	

Smoke Alarm	• Test and inspect. • Replace battery.	
Window Blinds	• Inspect and adjust tension where necessary.	
Damp Check	• Inspect caravan for any dampness.	
Plumbing		
Hot Water System	• De-scale hot water service.	
Water Tanks	• Treat tanks and entire system with bacteria killing tank cleaner and flush.	
Grey Water Tank	• Treat with tank cleaner and flush.	
Drain Fittings	• Check all metal drain fittings for corrosion.	
Water System	• Inspect for leaks. Turn on pump and ensure it does not start due to loss of pressure.	

Service Centre:	Notes: _____ _____ _____ _____ _____ _____

54 MONTHS / 45,000KM SERVICE		CHECKED
Hitch	• Check hitch bolts to 90Nm.	
Handbrake	• Check the cable and adjust if necessary.	
Hand winch	• Check brake function and webbing.	
Suspension	• Lubricate and check bushes for excess movement. • Torque bolts to 190Nm.	
Brakes	• Inspect and adjust. Check lining thickness and drum wear.	
Wheel bearings	• Remove, clean and re-lubricate. Inspect for wear and replace if necessary.	
Wheel Nuts	• Inspect condition and torque to 125Nm (12mm studs) (140Nm 14mm studs alloy rims), (200Nm 14mm studs steel rims)	
Tyres	• Inspect for abnormal wear, damage, and pressure.	
Lights	• Check all lights are functioning.	
Battery	• Check terminals and voltage at full charge.	
Seals	• Check condition and correct latch/lock adjustment for correct 30-50% compression.	
General fixings	• Check all structural fixing are secure.	
Seals & Latches	• Check all seals on doors and hatches compress 30-50%. All seals are in serviceable condition and free of damage.	
Suspension	• Grease bushes and check for play. • Check torque on suspension hanger bolts (190Nm). • Check retaining chain shackles tight.	

Service Centre:	Notes: _____ _____ _____ _____ _____ _____

60 MONTHS / 50,000KM SERVICE		CHECKED
Chassis and Suspension		
Hitch	• Inspect for damage and lubricate. Check bolt Torque to 90Nm.	
Jockey Wheel	• Inspect for condition and operation.	
Breakaway	• Check for correct operation. • Inspect the lanyard and clip.	
Drawbar	• Inspect wiring grommets and general condition.	
Suspension	• Torque bolts to 190Nm. • Grease bushes and check for play. • Check torque on suspension hanger bolts (190Nm). • Check retaining chain shackles tight. • Inspect shock absorber for condition. • Inspect shock absorber bushes.	
Brakes	• Inspect and adjust. Check lining thickness and drum wear.	
Wheel bearings	• Replace bearings, seals and lubricate. Check stub axle condition and wear. Replace split pin.	
Wheel Nuts	• Inspect condition and torque to 125Nm (12mm studs). (140Nm 14mm studs alloy rims) (200Nm 14mm studs steel rims).	
Tyres	• Inspect for abnormal wear, damage, and pressure. • Check manufacturing date less than 5 years. • Check sidewalls for perishing and damage.	
12V Electrical		
Lights	• Check all trailer lights are functioning. • Check plug pins have gap. • Check for corrosion.	
Battery	• Check terminals and voltage at full charge. • Check batteries are secure in cradles.	
Charging	• Check battery charger settings are correct. • Check DC to DC charger settings are correct.	
Solar Panels	• Check panels are free of damage. • Inspect sealants on cable penetrations and junction boxes.	
Cables	• Inspect cables under body for damage to conduits. • Inspect cable glands and sealants on penetrations through floor.	
240V Electrical		
RCD Unit	• Check the operation of RCD via the test button.	
Mains Input	• Inspect mains input plug and cover are free of damage.	
Earthing	• Carry out resistance check.	
Caravan Body		
Hatches & Doors	• Check and lubricate locks.	
Seals	• Check condition and correct latch/lock adjustment for correct 30-50% compression.	
Body	• Inspect joint sealants inside and out. • Ensuite joints checked for damage and adhesion. • Inspect for soft spots on floor.	
General fixings	• Check all structural fixing are secure.	
Ventilation	• Inspect for obstruction and vents operating correctly.	
Fire Extinguisher	• Inspect extinguisher is charged and within service date.	

Smoke Alarm	• Test and inspect. • Replace battery.	
Window Blinds	• Inspect and adjust tension where necessary.	
Damp Check	• Inspect caravan for any dampness.	
Plumbing		
Hot Water System	• De-scale hot water service.	
Water Tanks	• Treat tanks and entire system with bacteria killing tank cleaner and flush.	
Grey Water Tank	• Treat with tank cleaner and flush.	
Drain Fittings	• Check all metal drain fittings for corrosion.	
Water System	• Inspect for leaks. Turn on pump and ensure it does not start due to loss of pressure.	

Service Centre:	Notes: _____ _____ _____ _____ _____ _____

66 MONTHS / 55,000KM SERVICE		CHECKED
Hitch	• Check hitch bolts to 90Nm.	
Handbrake	• Check the cable and adjust if necessary.	
Hand winch	• Check brake function and webbing.	
Suspension	• Lubricate and check bushes for excess movement. • Torque bolts to 190Nm.	
Brakes	• Inspect and adjust. Check lining thickness and drum wear.	
Wheel bearings	• Remove, clean and re-lubricate. Inspect for wear and replace if necessary.	
Wheel Nuts	• Inspect condition and torque to 125Nm (12mm studs). (140Nm 14mm studs alloy rims), (200Nm 14mm studs steel rims).	
Tyres	• Inspect for abnormal wear, damage, and pressure.	
Lights	• Check all lights are functioning.	
Battery	• Check terminals and voltage at full charge.	
Seals	• Check condition and correct latch/lock adjustment for correct 30-50% compression.	
General fixings	• Check all structural fixing are secure.	
Seals & Latches	• Check all seals on doors and hatches compress 30-50%. All seals are in serviceable condition and free of damage.	
Suspension	• Grease bushes and check for play. • Check torque on suspension hanger bolts (190Nm). • Check retaining chain shackles tight.	

Service Centre:	Notes: _____ _____ _____ _____ _____ _____

72 MONTHS / 60,000KM SERVICE		CHECKED
Chassis and Suspension		
Hitch	• Inspect for damage and lubricate. Check bolt Torque to 90Nm.	
Jockey Wheel	• Inspect for condition and operation.	
Breakaway	• Check for correct operation. • Inspect the lanyard and clip.	
Drawbar	• Inspect wiring grommets and general condition.	
Suspension	• Torque bolts to 190Nm. • Grease bushes and check for play. • Check torque on suspension hanger bolts (190Nm). • Check retaining chain shackles tight. • Inspect shock absorber for condition. • Inspect shock absorber bushes.	
Brakes	• Inspect and adjust. Check lining thickness and drum wear.	
Wheel bearings	• Replace bearings, seals and lubricate. Check stub axle condition and wear. Replace split pin.	
Wheel Nuts	• Inspect condition and torque to 125Nm (12mm studs). (140Nm 14mm studs alloy rims) (200Nm 14mm studs steel rims).	
Tyres	• Inspect for abnormal wear, damage, and pressure. • Check manufacturing date less than 5 years. • Check sidewalls for perishing and damage.	
12V Electrical		
Lights	• Check all trailer lights are functioning. • Check plug pins have gap. • Check for corrosion.	
Battery	• Check terminals and voltage at full charge. • Check batteries are secure in cradles.	
Charging	• Check battery charger settings are correct. • Check DC to DC charger settings are correct.	
Solar Panels	• Check panels are free of damage. • Inspect sealants on cable penetrations and junction boxes.	
Cables	• Inspect cables under body for damage to conduits. • Inspect cable glands and sealants on penetrations through floor.	
240V Electrical		
RCD Unit	• Check the operation of RCD via the test button.	
Mains Input	• Inspect mains input plug and cover are free of damage.	
Earthing	• Carry out resistance check.	
Caravan Body		
Hatches & Doors	• Check and lubricate locks.	
Seals	• Check condition and correct latch/lock adjustment for correct 30-50% compression.	
Body	• Inspect joint sealants inside and out. • Ensuite joints checked for damage and adhesion. • Inspect for soft spots on floor.	
General fixings	• Check all structural fixing are secure.	
Ventilation	• Inspect for obstruction and vents operating correctly.	
Fire Extinguisher	• Inspect extinguisher is charged and within service date.	

Smoke Alarm	• Test and inspect. • Replace battery.	
Window Blinds	• Inspect and adjust tension where necessary.	
Damp Check	• Inspect caravan for any dampness.	
Plumbing		
Hot Water System	• De-scale hot water service.	
Water Tanks	• Treat tanks and entire system with bacteria killing tank cleaner and flush.	
Grey Water Tank	• Treat with tank cleaner and flush.	
Drain Fittings	• Check all metal drain fittings for corrosion.	
Water System	• Inspect for leaks. Turn on pump and ensure it does not start due to loss of pressure.	
Service Centre:	Notes: _____ _____ _____ _____ _____ _____	

78 MONTHS / 65,000KM SERVICE		CHECKED
Hitch	• Check hitch bolts to 90Nm.	
Handbrake	• Check the cable and adjust if necessary.	
Hand winch	• Check brake function and webbing.	
Suspension	• Lubricate and check bushes for excess movement. • Torque bolts to 190Nm.	
Brakes	• Inspect and adjust. Check lining thickness and drum wear.	
Wheel bearings	• Remove, clean and re-lubricate. Inspect for wear and replace if necessary.	
Wheel Nuts	• Inspect condition and torque to 125Nm (12mm studs). (140Nm 14mm studs alloy rims), (200Nm 14mm studs steel rims).	
Tyres	• Inspect for abnormal wear, damage, and pressure.	
Lights	• Check all lights are functioning.	
Battery	• Check terminals and voltage at full charge.	
Seals	• Check condition and correct latch/lock adjustment for correct 30-50% compression.	
General fixings	• Check all structural fixing are secure.	
Seals & Latches	• Check all seals on doors and hatches compress 30-50%. All seals are in serviceable condition and free of damage.	
Suspension	• Grease bushes and check for play. • Check torque on suspension hanger bolts (190Nm). • Check retaining chain shackles tight.	

Service Centre:	Notes:
	_____ _____ _____ _____ _____ _____

84 MONTHS / 70,000KM SERVICE		CHECKED
Chassis and Suspension		
Hitch	• Inspect for damage and lubricate. Check bolt Torque to 90Nm	
Jockey Wheel	• Inspect for condition and operation.	
Breakaway	• Check for correct operation. • Inspect the lanyard and clip.	
Drawbar	• Inspect wiring grommets and general condition.	
Suspension	• Torque bolts to 190Nm. • Grease bushes and check for play. • Check torque on suspension hanger bolts (190nm). • Check retaining chain shackles tight. • Inspect shock absorber for condition. • Inspect shock absorber bushes.	
Brakes	• Inspect and adjust. Check lining thickness and drum wear.	
Wheel bearings	• Replace bearings, seals and lubricate. Check stub axle condition and wear. Replace split pin.	
Wheel Nuts	• Inspect condition and torque to 125Nm (12mm studs) (140Nm 14mm studs alloy rims) (200Nm 14mm studs steel rims)	
Tyres	• Inspect for abnormal wear, damage, and pressure. • Check manufacturing date less than 5 years. • Check sidewalls for perishing and damage	
12V electrical		
Lights	• Check all trailer lights are functioning. • Check plug pins have gap. • Check for corrosion	
Battery	• Check terminals and voltage at full charge. • Check batteries are secure in cradles.	
Charging	• Check battery charger settings are correct. • Check DC to DC charger settings are correct.	
Solar Panels	• Check panels are free of damage. • Inspect sealants on cable penetrations and junction boxes	
Cables	• Inspect cables under body for damage to conduits. • Inspect cable glands and sealants on penetrations through floor.	
240V Electrical		
RCD Unit	• Check the operation of RCD via the test button.	
Mains Input	• Inspect mains input plug and cover are free of damage.	
Earthing	• Carry out resistance check.	
Caravan Body		
Hatches & Doors	• Check and lubricate locks.	
Seals	• Check condition and correct latch/lock adjustment for correct 30-50% compression.	
Body	• Inspect joint sealants inside and out. • Ensuite joints checked for damage and adhesion. • Inspect for soft spots on floor.	
General fixings	• Check all structural fixing are secure.	
Ventilation	• Inspect for obstruction and vents operating correctly.	
Fire Extinguisher	• Inspect extinguisher is charged and within service date.	
Smoke Alarm	• Test and inspect. • Replace battery.	

Window Blinds	• Inspect and adjust tension where necessary.	
Damp Check	• Inspect caravan for any dampness.	
Plumbing		
Hot Water System	• De-scale hot water service.	
Water Tanks	• Treat tanks and entire system with bacteria killing tank cleaner and flush.	
Grey Water Tank	• Treat with tank cleaner and flush.	
Drain Fittings	• Check all metal drain fittings for corrosion.	
Water System	• Inspect for leaks. Turn on pump and ensure it does not start due to loss of pressure.	

Service Centre:	Notes: _____ _____ _____ _____ _____ _____

Supplier Contact Details

Dometic https://www.dometic.com/en-au/au/contact-us	**Thetford Australia** **Address:** 41 Lara Way, Campbellfield VIC 3061 **Phone:** (03) 9358 0700 Email: infoaus@thetford.com.au
Cruisemaster Address: 352B Bilsen Road, Geebung QLD 4034 Phone: (07) 3624 3800 Email: sales@cruisemaster.com.au	**Leisure-Tec Australia Pty Ltd** (Truma Hot Water) 50 Metrolink Circuit Campbellfield VIC 3061 Phone: 1300 072018

Statewide Bearings

Coopers Plains Address: 902 Beaudesert Rd Coopers Plains QLD 4108 Phone: (07) 3717 4444 Email: coopersplains@statewidebearings.com.au	**Cairns** Unit3, 49 Cook St Cairns QLD 4870 Phone: (07) 4035 1800 Email: cairns@statewidebearings.com.au	**Wangara** 70 Distinction Road, Wangara, WA 6065 Ph: (08) 9303 6900 Email: wangara@statewidebearings.com.au
Virginia Unit 2, 90 Pritchard Rd Virginia QLD 4014 Phone: (07) 3265 2666 Email: virginia@statewidebearings.com.au	**Mackay** 59 Central Park Drive, Paget QLD 4740 Ph: (07) 4952 6660 Email: mackay@statewidebearings.com.au	**Dandenong South** 84 Greens Road, Dandenong South VIC 3175 Ph: (03) 8710 9777 Email: dandenong@statewidebearings.com.au
Rockhampton 67 Denham Street Rockhampton, QLD 4700 Ph: (07) 4927 2677 Email: rockhampton@statewidebearings.com.au	**Townsville** Unit 2, 502 Woolcock Street, Garbutt QLD 4814 Ph: (07) 4758 8855 Email: townsville@statewidebearings.com.au	**Traralgon** Unit 7, 4-14 Rocla Road, Traralgon VIC, 3844 Ph: (03) 5172 3000 Email: traralgon@statewidebearings.com.au
Beresfield 11 Yilen Close, Beresfield NSW 2322 Ph: (02) 4041 6444 Email: beresfield@statewidebearings.com.au	**Smithfield** Unit 4, 8 Cooper Street Smithfield, NSW 2164 Ph: 02 9616 0000 Email: smithfield@statewidebearings.com.au	**Wingfield** Grand Jct Rd & South Rd Wingfield SA 5013 Ph: (08) 8260 6299 Email: wingfield@statewidebearings.com.au
Wollongong Unit 4, 222 Berkeley Road, Unanderra NSW 2526 Ph: (02) 4272 2377 Email: wollongong@statewidebearings.com.au	**Kewdale** 67 Kewdale Road, Kewdale WA 6105 Ph: (08) 9352 2200 Email: kewdale@statewidebearings.com.au	**Somerton** 15-17 Somerton Road, Somerton VIC 3061 Ph: (03) 9308 0055 Email: somerton@statewidebearings.com.au
Albany 80 Chester Pass Road, Albany WA 6330 Ph: (08) 9842 2488 Email: albany@statewidebearings.com.au	**Bibra Lake** Unit 6, 30 Salpietro Street, Bibra Lake WA 6163 Ph: (08) 9434 9555 Email: bibralake@statewidebearings.com.au	**Hobart** 39 Sunderland Street, Derwent Park TAS 7009 Ph: (03) 6216 6999 Email: Hobart@statewidebearings.com.au
Belmont 5 Hargreaves Street, Belmont WA 6104 Ph: (08) 9478 2444 Email: belmont@statewidebearings.com.au	**Bunbury** 42 McCombe Road, Davenport, WA 6230 Ph: (08) 9724 9100 Email: bunbury@statewidebearings.com.au	**Kalgoorlie** 5 Darcy Lane, Kalgoorlie WA 6430 Ph: (08) 9091 4111 Email: kalgoorlie@statewidebearings.com.au
Collie 96 Forrest Street, Collie WA 6225 Ph: (08) 9734 1624 Email: collie@statewidebearings.com.au	**Geraldton** Unit 1, 75 Flores Road, Geraldton WA 6530 Ph: (08) 9964 4655 Email: geraldton@statewidebearings.com.au	**Karratha** 51 Orkney Road, Karratha WA 6714 Ph: (08) 9144 2333 Email: karratha@statewidebearings.com.au

Guide to Video Tutorials

Setup Tutorial

View this video for correct setup procedure.

Scan the code or go to https://youtu.be/-L93Z0LDNNg

External Ensuite Setup Tutorial

View this video to set up external ensuite tent.

Scan the code or go to https://youtu.be/aYTs6_sd08M

Annex Setup Tutorial

View this video to setup the under-awning annex.

Scan the code or go to https://youtu.be/Zd4-ob3hdko

Pack Down Video Tutorial

View this video to pack down your caravan.

Scan the code or go to https://youtu.be/JhDpZPUraBM

THIS PAGE IS INTENTIONALLY LEFT BLANK