Portable Buildings
CALL FREE 0508 31 32 33
www.portablebuildings.net.nz

To pack awning away:

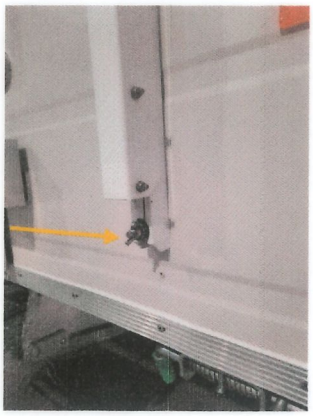
1) Loosen wingnuts
2) Push awning up using pole hook
3) Lower both latches
4) Re-tighten wingnuts.

1.

2.

3.

4.



NOTE:

This pawl is used to lock out the roller mechanism of the awning. It is only required to be screwed in if the awning requires servicing.

It is stored in the spare parts kit, located in the bench seat locker.

Buildings
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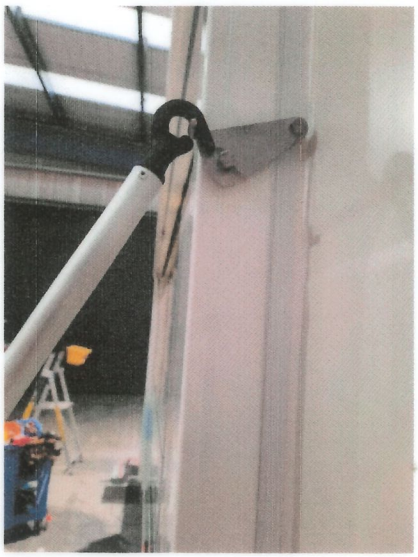
CARAVAN AWNING OPENING/CLOSING INSTRUCTIONS

the wingnut at the bottom of
e vertical arms.

t need to be taken right off,
ugh to allow the arms to slide



ne hook pole (stored in
eat locker), lift the latch on
the vertical arms.

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PBNZ – SITE MATE – LUNCH OFFICE CARAVAN

Operating Manual

Contents

Ian
0274338778

Purpose

The purpose of this manual is to provide guidelines and recommendation for the safe and effective operation of the Lunch Office Caravan.

Scope

This operating manual applies to the Lunch Office Caravan supplied by PBNZ Pty Ltd.

Definitions

PBNZ – PBNZ Pty Ltd (trailer manufacturer)

Unit or Caravan – is used to describe the Lunch Office Caravan

OEM – Operating Equipment Manual

Will, Shall or Must – is used to describe an action, which is compulsory to be completed as stated in this manual or the OEM.

PPE – Refers to Personal Protective Equipment.

Recommended – to describe an action or procedure, this is not compulsory but is in keeping with best practices.

Disclaimer

The contents of this manual are provided for general information purposes and is a guide only. Every effort has been made in the manual to provide accurate information and to encourage PBNZ's customers to use safe work practices in relation to the operation of PBNZ's products. However, you must make and rely on your own assessment of your particular situation to determine the suitability and usefulness of this information.

Accordingly, PBNZ makes no representations, warranties or guaranties, either express or implied, regarding the suitability of usefulness of this information. PBNZ accepts no liability for any loss, damage, claim or expense suffered by you arising from your use of or reliance on the information provided in this manual.

Typical Hazards

Drawbar

Due to the drawbar extending past the main body of the unit, it could become a trip hazard. Ensure you are aware of your surroundings when walking in or around the unit.

Jack Stand and Stabiliser Legs

Ensure your feet are clear from underneath the jack stand before lowering to the ground.

Stairs and handrails

The stairs can be a pinch point if you are not paying attention, ensure your fingers are clear when moving or folding the stairs or ladders. We recommend using the three points of contact rule.

Doors

Take care when opening or awnings and doors, your fingers may be caught in the door frames if you are not paying attention. We also recommend you approach doors with caution, remember there may be someone about to open the door from the inside.

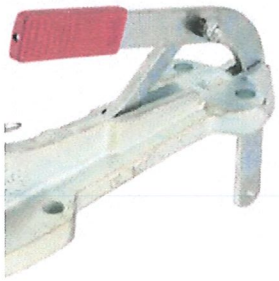
Electric Brake Controller

There is an electric brake controller fitted to the drawbar of the caravan. This allows you to adjust the braking force of the caravan brakes.

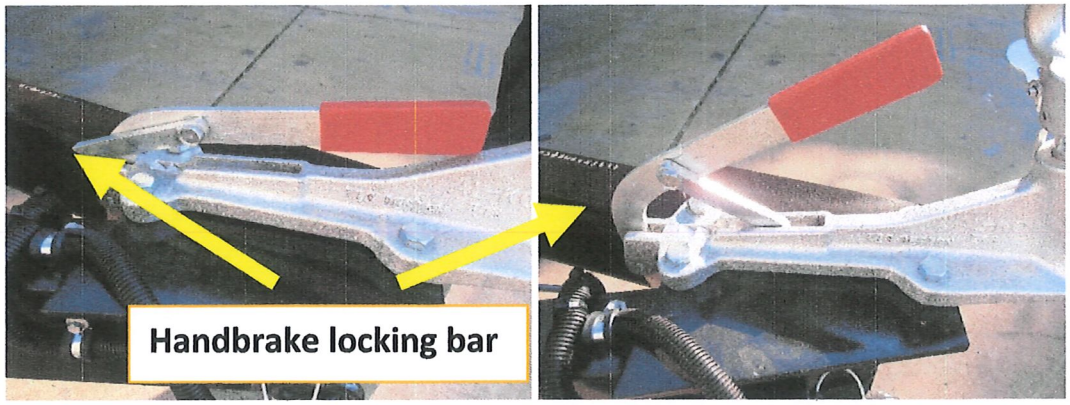
It is advisable to first have the brake controller set to the 10 o'clock position, drive around the block and test to see if there is enough braking force on the caravan when you brake. If no, adjust and re-test until you are satisfied with the amount of braking on the caravan.

Ensure in-line fuse is in place for brake lights to function. Walk around caravan while someone sits in tow vehicle and tests park lights, brake lights and indicators.

Handbrake



1. While the unit is connected to the tow vehicle, engage the handbrake by fipping over the handbrake locking bar and pull brake up so the bar locks into place.



Note. Ensure the handbrake locking bar is flipped over towards the body of the caravan before transit, if this is not done it will cause premature wear to the brakes.

Jockey Wheel

When unit is in final place and still attached to the tow vehicle, follow these steps to remove from tow vehicle.

1. Pull the blue handle on the jockey wheel to all the jockey wheel to swivel down towards the ground.


2. Turn the handle on the top of the jockey wheel to lower the wheel to the ground so the wheel just touches the ground.
3. Ensure handbrake is engaged and wheel chocks are in place.
4. The 50mm ball hitch can be disengaged ready to remove the caravan from the tow vehicle.
5. Wind the handle on the jockey wheel either clockwise or anticlockwise depending on if you need to raise the jockey wheel or lower it. The unit can now be unhooked from the tow vehicle. tow vehicle and can be relocated.

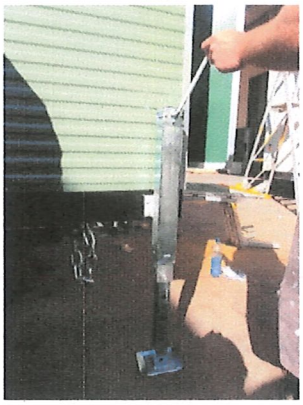
- **Don't attempt to lift the unit or drawbar by hand.**
- **Be mindful of pinch points and crush points in and around the jack stand when raising or lowering.**
- **Do not over crank the jockey wheel, this may cause damage to the internal gears.**

Stabiliser Legs

Please note. These stabiliser legs are stabilisers only, they are not designed to lift the unit or its wheels from the ground.

1. Pull the pin from the stabiliser leg. Drop the leg extension down to the last pin hole.

2. Wind the stabiliser leg handle clockwise or anticlockwise depending on if you want to raise or lower the leg.



3. Repeat steps 1 & 2 for the remaining stabiliser legs.

Note. Some units may have a removable handle that is required to operate the stabiliser legs.

- **Be mindful of pinch points and crush points in and around the jack stand when raising or lowering.**
- **Ensure appropriate PPE is used.**

Fold Stairs

1. Lift the stairs up as you pull them out.

2. Once the stairs are pulled out, fold out the step.

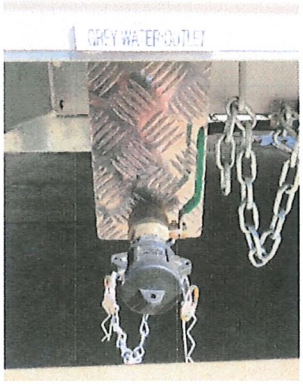

- **Be mindful of pinch points and crush points when deploying or stowing the stairs.**
- **Ensure you have a good footing and not rely on your body weight to deploy the stairs.**
- **Ensure you fold and slide the stairs back into their brackets before transporting the unit.**
- **Ensure appropriate PPE is used.**
-

Water Tank Refill

1. Unlock water refill cap with supplied key. Open cap.
2. Fill tank/s to required level.

- **When the tank/s are full, water will begin to overflow from the breathers located on top of the tank/s. If you see water leaking from beneath the unit, stop filling immediately.**

Grey Water Removal



1. Connect grey water hose to camlock fitting or simply remove cap.
2. Turn ball valve to the open position to empty tank.

Note. If there is no ball valve fitted to the grey water outlet, the camlock cap simply has to be removed in order for the grey water to flow.

- **If a drain hose is not connected to the camlock when the unit is in operation, it may cause a slip hazard around the unit. It is recommended that a drain hose be connected to prevent this.**

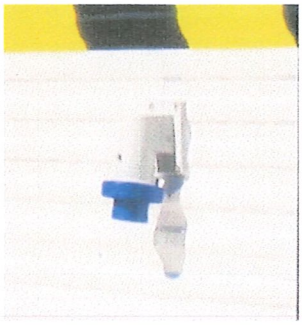
Potable Water Removal/ Drain Tanks

1. To drain the potable water tank, ensure power is available to the caravan, run tap until tank runs dry.
2. Ensure water pump is switched off and taps are not used until water tank is refilled.

- **If the trailer is to be left in storage for a long period of time, the water tanks should be emptied. For day to day maintenance of the tanks, water purifying tablets or liquid can be used. These products can be purchased from most camping shops or Bunnings.**
- **There is no water filter fitted to the unit so it is recommended that the water quality be kept to a high standard if it to be ingested.**

240v Electrical Connection

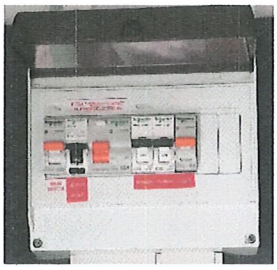
1. Plug in the 15amp lead to the outlet on the generator or 240v mains power and plug into the inlet on the caravan.



Picture may differ from actual supplied.

2. The generator can now be started, or switch switched on if connected to 240v mains power.

3. Turn on all breakers and switches as needed. The caravan will now be operational.



Follow the manufacturer's recommendations for maintenance of the generator if one is fitted.

- **As stated above, all circuit breakers both in the caravan and on the generator (if fitted) must be switched off before starting the generator or plugging in 15a supply leads.**
- **The generator enclosure (if fitted) must be open when the generator in in operation.**
- **Ensure appropriate PPE is used.**

Lighting & Electrical Appliances

Morning & Evening Lighting for Setup of Caravan

There is standalone battery-operated lighting available on this unit that is to be used to aid when setting up the caravan and connecting to mains power or a generator when its dark.

The light switch is located inside the entry door to the right-hand side. The switch is closest to the door at the top. See below.

Once the unit is connected to mains power or generator and 240v lights are in use (single left switch), ensure the battery powered light switch is turned off to conserve battery for the next day's use. Leaving the switch on all day may flatten the battery.

Standard 240v Lighting

There is standard 240v lighting in the unit that operates when the unit is connected to mains power or a generator.

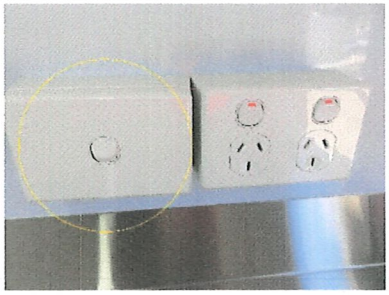
Water Pump

The caravan is fitted with the following water services; External basin, internal sink and tap.

To ensure the plumbing system is operational, follow these steps.

1. Ensure water tank is full
2. Ensure 240v power is available to the caravan.
3. Ensure power supply underneath bench seat is plugged in and switched on.

4. Switch on pump switch above the bench.



5. All taps will now have water pressure supplied from the water tank.

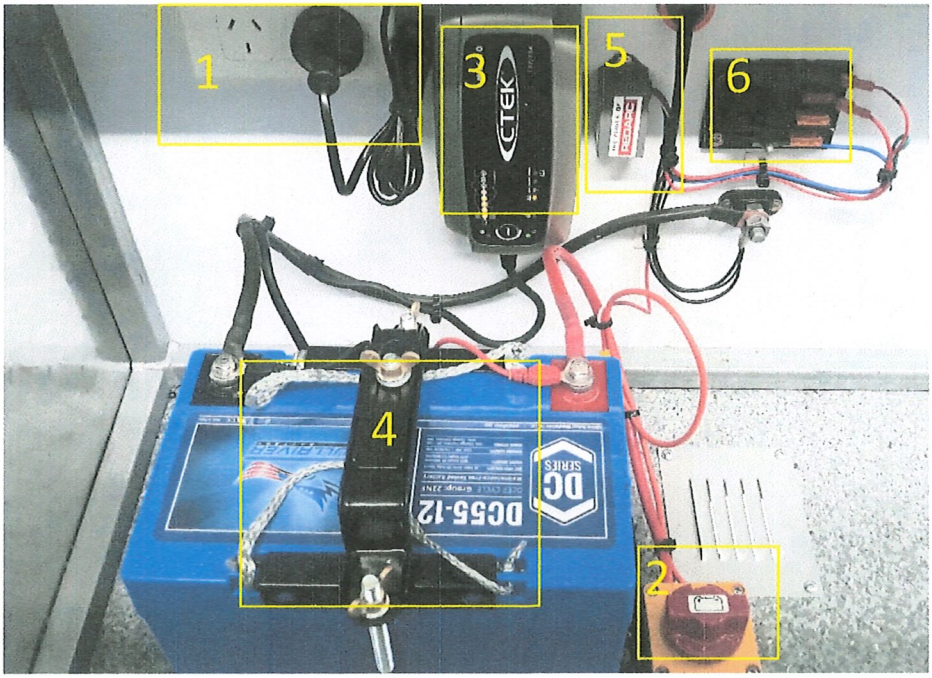
Note. If the water tank runs dry, switch of pump and the switch noted in step 4.

Fridge

The 240v electric fridge must be plugged in and switched on. The caravan is also required to have 240v power available for the fridge to operate.

12v Battery & Battery Charger System

The 12v battery system requires the battery charger to always be plugged in and switched on to maintain battery charge levels. The battery charger is fully automatic, and the battery is maintenance free. There is also a low voltage disconnect wired into the circuit, which cuts power to the circuit to protect the life of the battery. If the low voltage disconnects cuts power to the circuit, simply switch off the battery isolator and keep the battery charger running.



1. Power Outlet: Items 3 and 4 must be plugged in and switched on always.

2. Battery Isolator Switch: Ensure this switch remains in the on position, unless the low voltage disconnect has cut power and battery charging only is required.

3. Battery Charger: Battery charger must remain on to maintain battery charge levels.

4. 12v Battery: Sealed type, maintenance free deep cycle battery.

5. Low Voltage Disconnect: Disconnects 12v battery power when battery charge is low.

6. Fuse Box (from battery): Fuse for 12v battery powered lights. Centre of lunchroom, front toilet light and main entry door bunker light.

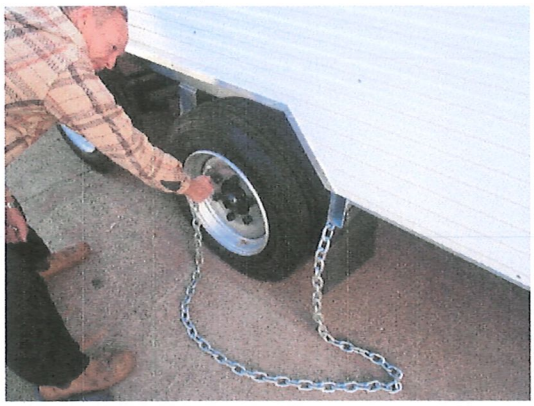
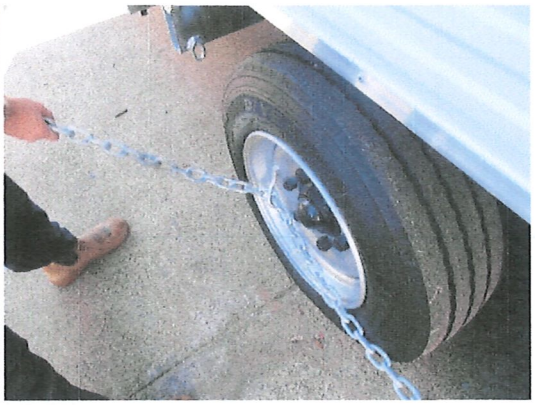
Door Security Lock Boxes

1. Once door is closed, a padlock can be used to lock both lock boxes.

Wheel Security Chains

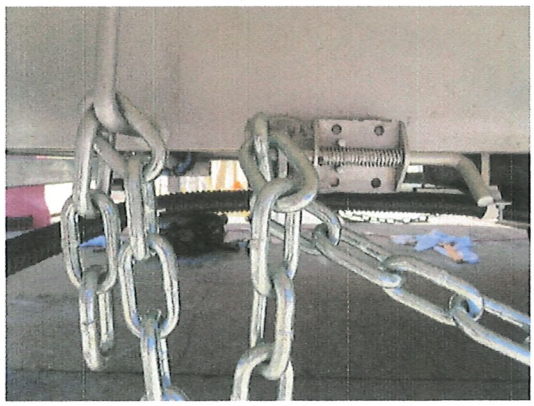
1. Pull the spring-bolt to release the chain from the caravan, also remove the excess chain slack from the holder, as pictured below.

2. Feed the security chain through the welded loops on the wheels.

3. Padlock the security chain to the welded chain link in front of the wheels, ensure the security chain has passed through both of the welded loops on the wheels.

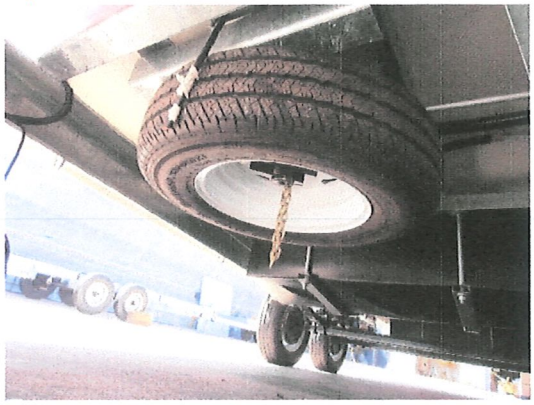
4. Before transporting the unit, ensure that the chains have been removed from the wheels, the slack had been picked up and resecured with the spring-bolt to avoid damage to the unit.



Before travel, ensure all wheel security chains have been removed from the wheels and chain slack has been grouped together as per the picture above and secured with the spring-bolt

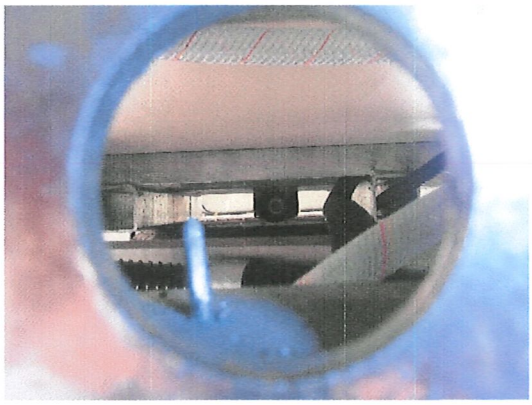
Never attempt to move the caravan with the wheel chains through the wheels!

Spare Wheel Carrier

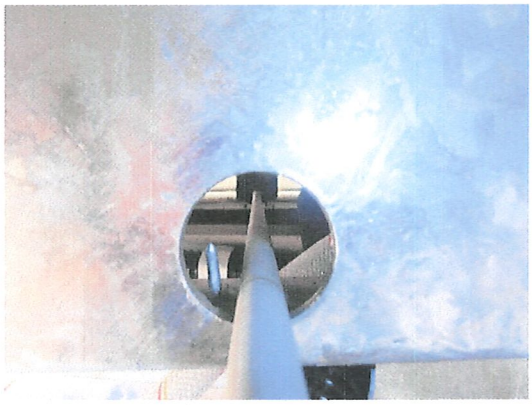


The spare wheel carrier is located underneath the front of the unit.

1. Locate the hole in the drawbar for the winder handle to be inserted.



2. Insert the spare wheel winder handle and insert through the hole and into the spare wheel carrier.



3. Wind the handle either clockwise or anticlockwise depending on if you are wanting to extend or retract the spare wheel from the carrier.

- **Be mindful of pinch points and crush points when lowering or raising the spare wheel.**
- **Ensure spare wheel is secure before transit.**
- **Ensure appropriate PPE is used.**

Parts & Maintenance – Running Gear

GENERAL MAINTENANCE

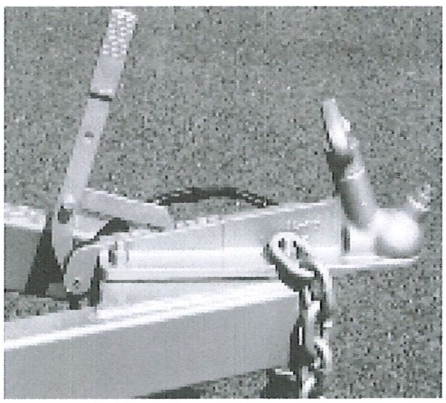
In order to maintain the safe reliable stopping power of your AL-KO brake system it is recommended that the brakes be serviced at regular intervals. Contact your local AL-KO International Service Centre or brake specialist for assistance.

The following list of general maintenance items should be carried out as a periodic maintenance check. **These are service functions, not warranty items.**

1. Brake Adjustment Procedure

The brakes fitted to an axle or independent rubber suspension system supplied by AL-KO International are adjusted prior to supply. A brake clean and adjustment should be carried out between the first 300 to 1000 kilometres and then at the service intervals recommended on Page 8.
Located in the back of the brake backing plate is a small opening covered by a protective plug. With the trailer wheels off the ground, rotation of the star wheel, (as shown in the diagram below), will result in correct brake adjustment. With a screw driver rotate the star wheel until the brake drag makes it difficult to turn the wheel. The star wheel can then be turned in the opposite direction to allow the trailer wheel to turn 3/4 to 1 revolution freely when spun.

Park Brake Cable Adjustment



In the **laden** condition it is imperative that the park brake lever engages and secures the brakes in, it's recommended, 5th or 6th notch of the coupling from the towball end – not closer (see photo).

Failure to adjust the cable tension in this manner will, through suspension movement on both independent suspension and beam axle with leaf springs, cause the brake shoes to be partially actuated and excessive heating of the brake and drums to occur. Prolonged use, if incorrectly adjusted, will cause initially the back (secondary shoe) to overheat to the extent of disintegration of the brake lining and will result in deterioration of brake performance until eventual brake failure.

4

2. Brake Drum / Hub

The brake drum should be checked for excessive wear in accordance with the periodic maintenance check list on page 8.

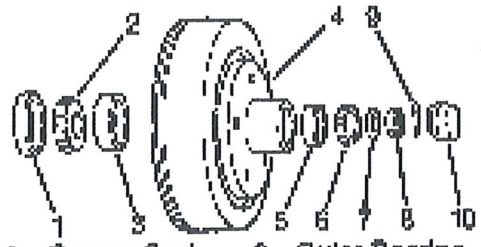
- If the drum has heavy scoring, or has a run out that exceeds 0.5mm it should be machined by your local AL-KO International Service Centre.
- If the bore of the drum exceeds the maximum diameter cast on the drum, it should be replaced.
- Brake drums that have been machined must be thoroughly cleaned and checked (by AL-KO International) before installation.
- If the magnet wearing surface on the inside of the drum is unevenly worn or badly scored, we suggest that the drum be referred to AL-KO International for machining or replacement.

NOTE: Any time that the drum is replaced a new magnet should also be installed.

3. Wheel Bearings

Bearings must be inspected and lubricated periodically to ensure reliable, safe operation of your trailer. We recommend that your trailer be taken to your local AL-KO International Service Centre where correct wheel bearing service can be undertaken.

If you need to remove a hub drum from your trailer, the diagram below shows the component relationship.



1—Grease Seal
2—Inner Bearing
3—Inner Cup
4—Hub/ Drum
5—Outer Cup
6—Outer Bearing
7—Spindle Washer
8—Spindle Nut
9—Cotter Pin
10—Grease Cap

5

* Seals should be checked and replaced if found to be nicked, torn or worn.

* If the bearings are damaged or worn they should be referred to your local AL-KO International Service Centre where replacement may be recommended.

NOTE: It is recommended to replace the bearings and cups in sets. Manufacturers part numbers are stamped into the bearing cup and cones for identification.

* Always lubricate the bearings on your trailer with high quality wheel-bearing grease.

* Every time the wheel hub is removed, the wheel bearings must be adjusted.

To Adjust the Wheel Bearings

Turn the hub slowly to seat the bearings while tightening the slotted nut until firm.

Loosen the slotted nut and then re-tighten by hand (not with a wrench) to a "finger-tight" condition to align the first notch with the hole in the shaft and insert the split pin. It is recommended that bearing adjustment be carried out by your local AL-KO International Service Centre to ensure that correct bearing adjustment is maintained.

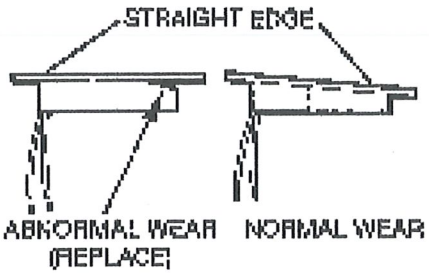
4. Brake Linings

Periodic inspection for lining wear or contamination from oil or grease should be undertaken by your local AL-KO International Service Centre.

* If the lining is worn to within 0.8mm of the rivet or to a minimum thickness of 1.5mm on bonded linings or shows irregular wear or contamination from a foreign substance, shoes should be replaced with original parts from your local AL-KO International Service Centre.

5. Magnet Assembly

The magnet assembly can be inspected for wear without removing it from the brake, by laying a straight edge over the length of the magnet space as shown.



Magnets may be used with normal wear until the white plastic under the friction element is barely visible. For off-road application AL-KO have developed a unique magnet specifically designed to prolong magnet life. This magnet is identified by a special high tech plastic core in the centre of the magnet.

This core should be periodically inspected for wear and the magnet replaced if excessive clearance or wear is evident. As the off-road magnet does not use a magent retaining clip, we suggest it is held in place for service installation by a light rubber band which will disappear on the first brake application.

Replacement magnets are available from your local AL-KO International Service Centre.

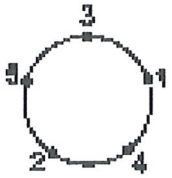
6. Wheel Mounting

It is important to maintain proper torque specifications to provide safe and secure attachment of the wheel to the hub drum.

* Start all nuts by hand to prevent cross threading.
* Tighten nuts in three stages using a cross star pattern.
* Whenever wheels are removed and refitted the wheel nut torque should be checked. Wheel nuts should be tightened to the torque specified by the wheel manufacturer. Please ask the supplier of your caravan or trailer for the correct torque setting. Always use a quality torque wrench to check wheel nut torques.

  It is recommended that the wheel nut tension be checked every 100kms for the first 400kms of your initial trailer use and then as per the periodic maintenance check list on page 8.

* Tighten wheel nuts using a cross star pattern as shown:



7

PERIODIC MAINTENANCE CHECK LIST

CHECK	FUNCTION REQUIRED	DAILY	Every 5000 km or 6 months	Every 10000 km or 12 months	PAGE Number
Trailer Brakes	Test that they are functioning properly.	✓			
Air Pressure	Inflate tyres to manufacturer's specifications.	✓			
Wheel Nuts*	Tighten to proper torque specifications.		✓		7
Wheel Rims	Inspect for dents, damage, or out of round.		✓		
Brake Adjustment**	De-Dust. Inspect for lining wear and adjust.			✓	4
Brake Magnets	Inspect for uneven wear.			✓	7
Wheel bearings and cups	Inspect for wear or damage and lubricate.			✓	5
Hub/Drum	Inspect for heavy scoring or wear.			✓	5
Seals	Inspect for damage or wear.			✓	6
Brake linings	Inspect for lining wear and contamination.			✓	6
Park Brake	Inspect for excessive travel and adjust.			✓	

* Tighten wheel nuts every 100 km for the first 400 km and after every change in wheel mounting. Refer Page 7.

** Adjust brakes and de-dust after first 300 to 1000 km then at above intervals.

8

TROUBLE SHOOTING GUIDE

FAULT	CAUSE	CHECK FOR
No Brakes	No electrical power	Poor connections Break in electrical circuit Blown fuse Controller setting
No Brakes	Worn magnets	Replace with genuine parts from AL-KO
No Brakes	Incorrect brake shoe clearance	Adjust brakes
Weak Brakes	Loose electrical connection	Check all connections
Weak Brakes	Worn out linings	Replace with genuine parts from AL-KO
Weak Brakes	Worn out drum	Remachine or replace if oversize
Weak Brakes	Excessive load	Reduce trailer load
Weak Brakes	Lining contaminated	Replace linings and seals with genuine parts
Intermittent Brakes	Broken magnet wire	Bench check magnets and replace with genuine parts
Intermittent Brakes	Loose wire connections	Check all wire connections
Intermittent Brakes	Out of round drum	Remachine drum
Intermittent Brakes	Loose wheel bearings	Check and adjust wheel bearings
Locking Brakes	Malfunctioning controller	Check and replace if necessary
Locking Brakes	Stop lights connected in brake circuit	Check wiring of controller and trailer
Locking Brakes	Loose brake parts	Check for loose rivets, broken springs etc.
Locking Brakes	Worn wheel bearings	Replace bearings Examine hub
Locking Brakes	Out of round drum	Remachine drum

Maintenance Schedule

	Frequency			
	3 Months	6 Months	12 Months	When Required
Check and Grease				
Coupling head	♦			
Over run piston (if override brakes fitted)	♦			
Breakaway cable (if fitted)	♦			
Corner steadies (if fitted)	♦	♦	♦	
Jockey wheel / Jack stand	♦			
Wheels & Brakes				
Remove the wheels and brake drums. Remove any dust with a stiff bush and check that the brake shoes are in good condition. If they are worn out replace them		♦		
Adjust the brakes as necessary, not forgetting the handbrake mechanism		♦		
Examine the tyres ensuring that they have not perished and are legal		♦		
Check the tyre pressure and inflate as required	♦			♦
Electrical				
Check that the external lights work correctly			♦	
Check that all of the mains and/or battery powered lights work inside the caravan			♦	
Air Conditioning				
Check all seals for damage or leaks		♦		♦
Clean internal vanes and external fins with warm soapy water or specialised air conditioning cleaning aerosol as per manufactures guidelines. Ensure unit is dry before operation	♦			♦
General				
Check and lubricate windows if required			♦	♦
Oil door and cupboard hinges if required			♦	♦
Clean the door and window seals			♦	♦
Check for watermarks and leaks inside around windows and hatches	♦			

General Maintenance

Exterior

The exterior of the unit is sheeted with high tensile colorbond steel. The unit can be cleaned with a soft brush or nonabrasive cloth or soft brush with soapy water. Rinse clean.

Interior

Internal ceiling is sheeted with prefinished painted aluminium, this can be cleaned with a damp non-abrasive cloth.

Internal walls are sheeted with painted aluminium which can be cleaned with a damp non-abrasive cloth.

Vinyl floor

This is a heavy duty commercial product. For daily maintenance the manufacturer recommends any loose dirt to be removed with a broom or vacuum; damp mop with neutral detergent if needed.

Cabinetry

The cabinetry is made with laminated board and can be cleaned with a non-abrasive cloth with soapy water.

Bench tops

The bench tops are made with laminated board and can be cleaned with a non-abrasive cloth with soapy water.

Fire Extinguishers

All extinguishers must be tested and tag by an authorized person in a time frame in accordance with federal and local state laws.

Fridge

For maintenance please see manufactures “owner’s manual”.

Air conditioners

Air conditioners fins can be cleaned with a damp cloth.

For more maintenance information please see manufactures “owner’s manual”.

Parts & Suppliers List

Part	Part #	Supplier	Phone
Coupling - - 50mm ball	614010PL	Alko	
Black door handle / lock	R3 Entry Door Latch	Mcnaughtans	
Alko 45mm square axles – 10" elec brakes w/ slimline bearings (ford 5 stud)	2260mm tip to tip	Alko	
Suspension – Rocker Roller	LH576460 / RH576461	AL-KO	
.8mm Aluminium wall sheets	Vtone White	Ullrich Aluminium	
Push button lock	229.07.606	Hafele	
Jockey Wheel	ARK – HD Swivel		
Microwave – NNST253WQPQ	Panasonic	JBHiFi	
Sink top - Stainless		Mercer Stainless	
Air Conditioner 2.5kW	Mitsubishi Electric		
Redarc Low voltage disconnect	VS12	Ashdown Ingram	
Chairs	Plato PLCH460	Empire Furniture	09 218 9205
CTEK battery charger	MXS10	Ashdown Ingram	
Water inlet - lockable	800-00900	Coast to Coast RV	
Fridge 240v - Tuscany	115lt	Noel Leeming	
Fire extinguisher & bracket	1.5kg Dry powder		
Water tank - 82lt	033423	Camec	
Tyres	185r14c 100/104		
Rims – 5x114.3 Galvanised			
Cabin hooks	142 Chrome	Emro Products	07 5491 3566
Cushion door stop	453 75mm	Emro Products	07 5491 3566
Water Pump - Flowjet	005700	Camec	
Doors		PBNZ	
Jack Stabilisers	Alko	Alko	
Steps – Double pull-out	450-01410	Coast to Coast RV	
Security Screens – 1210x600		Alu-tech	09 273 8212
Windows (series 131 sliding windows)	565 x 1175mm	Alu-tech	09 273 8212

For any appliances not listed here please refer to their respective owners' manuals for details on maintenance.

AL-KO INTERNATIONAL

ABN 96 003 086 813

FOR DETAILS OF YOUR NEAREST AL-KO AUTHORISED SERVICE AGENT PLEASE CONTACT OUR OFFICES AS LISTED BELOW

NEW ZEALAND

NORTH ISLAND

AL-KO NZ – 09 255 5611

Manager: Mark Lovell 021 338 701

SOUTH ISLAND

CM TRAILER PARTS – 0800 933 393

Manager: Graeme Moore – 027 684 1982

Guidelines to tow and site a caravan vehicle safely

Legal requirements Definitions/ abbreviations

GCM (Gross Combination Mass)

GCM is the rating provided by the manufacturer of the tow vehicle. The maximum laden mass of a motor vehicle plus the maximum laden weight of an attached trailer (RV) is not permitted to exceed the GCM rating

ATM (Aggregate Trailer Mass)

The total laden weight of a trailer which includes the tow ball mass and whatever you add as payload (Eg. water, gas, luggage) =ATM. The ATM is specified by the trailer manufacturer which is attached (usually the 'A' frame) and must not be exceeded.

GTM (Gross Trailer Mass)

The total permissible mass which includes whatever you add as payload (eg water, gas and luggage) that can be supported by the wheels of a trailer = GTM. This does not include the mass supported by the tow ball.

Tare Mass

The un-laden weight of the trailer.

Tow ball Mass

The weight imposed on the tow vehicle's tow ball by the trailer or caravan's (RV) coupling.

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Payload

- Payload is specified by the manufacturer, it basically is the items you place in your caravan such as clothing linen etc. It must not be exceeded under any circumstances. Safety, insurance and warranty may be voided if the specified payload is exceeded.

ADR (Australian Design Rule)

This is a Federal regulation which is effective over all vehicles on Australian roads. Within the RV industry these rules govern weights and distances of running gear.(axles/couplings) It also covers the regulation of external lights whilst underway, including the heights and minimum requirements such as indicator lights, stop lights and reflectors etc .

Trailer

The word trailer is often used in towing regulations and throughout the industry. It can substitute for caravan /RV's as the regulations covering caravan industry products also apply to all towable trailers of similar carrying capacity of up to the maximum allowable limits.

Regularity requirements to towing

All vehicles on Australian roads are subject to rules and regulations designed to promote safe road use. However, regulations applying to vehicle towing have sometimes varied between States and Territories, making life for interstate travellers somewhat confusing.
In an attempt to remedy this situation National regulations were introduced in the early nineties that nationalised the speed limits applicable to vehicles towing trailers (RV'S) and also to the maximum ATM (refer above).

Speed Limits

For a motor vehicle and trailer combination that has a GCM of less than 4.5 tonnes, the posted speed limits apply.
When the motor vehicle and trailer combination (GCM) exceeds 4.5 tonne, vehicle users should consult with the appropriate state or territory transport authority regarding speed limits. A safe speed, satisfactory stopping distance and any other requirement imposed by road conditions should also apply. Where signs are posted alerting truck drivers that they 'Must use low gear" it is recommended that you approach such conditions with common sense. Whereas low gear may result in your rig being over restricted, it is suggested that you use one which suits the conditions.

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If the posted speed limit is over 100 km/h and the RV or vehicle and trailer have a GCM over 5 tonnes, or any other vehicle with a GCM over 12 tonnes, the speed limit applying to the driver for the length of road is 100km/h max. (Australian Design Rule 2009)

Maximum Trailer Mass

Throughout Australia the towable maximum mass for the trailer is either the capacity of the tow vehicle's towing attachment or the towing limit specified by the vehicle manufacturer for the towing vehicle, whichever is the least
OR
If the vehicle's manufacturer has not made a recommendation as to the towing mass, then the following rules apply:
A vehicle may tow a laden trailer of up to one and a half times the un-laden mass of the tow vehicle, provided that the towbar is rated accordingly and the trailer is fitted with brakes that comply with the requirements stipulated in the ADR rule ADR38.
If the trailer is not fitted with brakes, then the maximum mass must not exceed the un-laden mass of the motor vehicle. The un-laden mass of the vehicle can be found in the vehicle's handbook or check with the dealer

Tow Vehicle

As mentioned there are national regulations which limit the mass a vehicle can tow. So if you are going to give recommendations it is critical that you give careful consideration and advice to any would be customer. Each Traymark Caravan has a VIN plate affixed to the drawbar, this plate has important information such as GVM, ATM and Manafacture date. As mentioned in the unlikely event of the manufacturer not stipulating tow mass then the vehicle may tow up to one and a half times its un-laden mass if the trailer has brakes. If no brakes are fitted then the one to one ratio applies.

Towbars and towing aids

The trailer' drawbar should preferably be level when being towed. Towing applies a downward force on the vehicle which is referred to as ball weight. This weight will be carried by the rear suspension, which can cause the back of the tow vehicle to sag. In response, the front of the vehicle will rise and the steering will feel lighter. This can cause loss of steering and braking performance and increased wear and tear on the rear suspension and tyre can result.

Weight distribution hitches (WDH) will help return the vehicle to the original dynamics by re-distributing the effects on this ball weight to the original balance between front and rear suspension, thus levelling out the vehicle/trailer combination. Some vehicle manufacturers require the use of a weight distribution hitch to be able to tow their stated maximum capacity. In these cases you are legally obliged to use them in such situations. A few vehicle manufacturers however

prohibit their use. Remember WDH are not a means of lowering the ball weight and you still cannot tow more than the maximum ball weight as set by the vehicle/towbar manufacturer. You should always consult the vehicles owner's manual for the true towing capacities. Fitting of WDH is not recommended with over-ride brakes, as the hitch interferes with the application and release of the brakes and may cause brake malfunction. Neither should WDH be used in extreme off road conditions.

Sway Control

When weight of a loaded caravan/trailer is transferred via the towball connection to tow vehicle suspension, a WDH, matched to the towball weight is the first essential for sway control. This restores the tow vehicle front wheel traction and tow vehicle stability. External forces such as cross winds or overtaking truck and buses create significant side thrust forces that increase in intensity which can be proportional to the caravan size. If these forces are noticeable after fitting an appropriate WDH an added sway control unit could /should be fitted.

Towing Mirrors:

It is the legal requirement that the driver has 'clear and unobstructed view of the road and the trailer at all times 'so mirrors of acceptable length and structure need to be fitted' to accommodate these legal requirements.

Towing (other requirements)

There are a host of other towing devices which include which type of electrical connector is the most effective and transmission oil coolers and reversing cameras. In regards electrical connection in some States they use round 7 pin plugs however in Qld you will generally see either 7 or 12 pin flat sockets/plugs. On bigger rigs which may have numerous connections the use of more pins tends to be the most common (12) as you can still use a seven pin inlet should it be required. Always conduct a final check of all electrical connections and ensure that all indicators and stop light and electric brakes are working before the customer drives away. Different plugs deliver different needs however always make sure you use the colour configurations as set down by the manufacturer as it makes life very difficult should you substitute any cabling colours. Also always take into consideration voltage loss especially if such things as power supplied to absorption fridge and long lengths are noted. Be sure to advice any unsuspecting customer that running that type of refrigeration or items of high wattage other than on the move will flatten batteries very quickly.

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Knowing how to tow means knowing how to stop it.

All trailers over 750kgs GTM (irrespective of the towing capacity or laden mass of the tow vehicle) must have an effective brake system fitted. All brakes must be operable from the driver's seat of the tow vehicle except for over-ride brakes. The minimum braking system required for a towed trailer depends on its type and weight, as well as the weight of the tow vehicle:

- Up to 750kgs GTM: No brakes required.
- 751 -2000kgs GTM: There must be a braking system on the wheels of at least one axle and over-ride brakes are permitted. However, for trailers/caravans exceeding 1000kgs, independent brakes are strongly recommend (this has become an industry standard and electric brakes are the most common)
- Over 2000kgs GTM: A brake system operating on all wheels is required. The system must be capable of automatically activating should the trailer become detached from the tow vehicle. Under these circumstances the brakes must remain applied for at least 15 minutes. These 'break away' systems are compulsory requirement over 2000kgs GTM. In some States there may be additional requirements that require an indicator light or audible signal showing that the on-board power caravan supply is sufficiently charged to satisfactorily activate the 'break away' system on all wheels should the trailer detach from the tow vehicle. The indicator light must be visible or heard from the drivers seated position and must operate only whilst this is in the 'engine on' position or whilst the engine is running. Always check with your respective Transport authority in determining the use of voltage indicator in relationship to 'break away' requirements.

Brake Controllers (know the facts)

There are numerous brands of brake controllers to operate electric brakes ranging from solid state to inertia/pendulum type systems. The controller is required to be mounted in a position that is accessible by the driver. As to what brand or type comes down to customer/dealer choice, however suffice to say that given the dollar value of combined vehicle and trailer and the safety of all concerned, reputable brands should be the preferred choice and work on the basis of "You pay for what you get" You need to be aware brake controllers that are sometimes fitted to hire tandem trailers do not meet the legal requirements of "must be operable from the driver's seat" and they do not allow manual application of brakes from the tow vehicle should the trailer develop a pronounced sway.

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Couplings and Safety Chains and Tow ball

Towball, suitable for weights of up to 3500kgs must be 50 mm in diameter and must comply with standards 4177-2 (ADR). The ball must be a one piece element and the shank should be 29mm in dia. The top face should be clearly stamped with the capacity eg 3.5t. The tow ball must be fitted to the bar via an appropriately sized nut and locking washer. Shank type tow balls should measure 50mm from the mounting face to the centre of the ball. Extended type balls with thicker/higher mounting faces that raise the height of the ball itself DO NOT COMPLY with Australian standards and you should not mount it and should advice the customer. If you need to raise the height an adjustable tow hitch overcomes the problem. The name or trade mark of the manufacturer must also be stamped on the ball. It's worth reminding all that should a non-compliant ball fail and the chains not hold the trailer these are grounds for legal and insurance issues.

Safety chains are an effective and important safety device. They are compulsory in all States and Territories of Australia and should prevent the trailers drawbar from touching the ground should the coupling fail or become disconnected. Trailers less than 2500kgs must be fitted with at least one safety chain of at least 9.5 mm diameter. Trailers over 2500kgs ATM and up to 3500kgs must have two safety chains. Chains must comply with AS4177-4 (rated) and have a size at least equal to the trailer ATM. The attachment must be made with 'D' shackles of equal strength to the chains (rated) It is vital that the chains are attached to the main towbar framework and not to the detachable ball mount or tongue. Safety chains *'Must be stamped with the chains capacity and the manufacturer's identification and the digits 4177'.*
The chains should be as short as possible leaving only enough slack to permit tight turns. If two chains are required they should be crisscrossed under the tongue to prevent the forward end of the drawbar from hitting the ground should the coupling become disconnected.
Safety Cables: Cables of equivalent capacity to safety chains are also allowed on tow vehicles up to 3500kgs ATM.

Couplings are produced by a number of manufacturers and usually range from 750kgs to 3500kgs. They must be marked with their capacity, as well as the manufacturers name and the size of the tow ball for which they are suitable. It is important to ensure that the coupling body capacity exceeds or is at least equal to the fully laden weight of the trailer. Usually the coupling body is attached with rated bolts nuts and locking washers. Welding the coupling is also permitted on trailers under 1000kgs provided the manufacturer has specified that this is suitable and has provided welding instructions.
The 'A 'frame or drawbars is required under ADR to be of sufficient strength for the specified trailer ATM, and must be able to be proven to do so by engineering calculation. It is therefore not advisable to add additional items to any draw bar as you are altering what is technically the engineering specifications of that

- Engage a lower gear in both manual and automatic vehicles to increase vehicle control and reduce brake fade when travelling downhill;
- Allow more time and distance in which to overtake;
- If possible, reverse with an observer watching the surroundings. (This is especially important when manoeuvring a customer's van in a service facility)
- Where areas are provided, pull off the road to allow traffic to pass if traffic is building up behind you;
- Be aware that concentration levels are higher when you are towing a heavy trailer and plan and allow for more rest stops.

Caravan Sway

Should the towed trailer/caravan begin to sway or snake (usually caused by the trailer pushing the car eg downhill) remain calm and avoid the urge to apply the towing vehicles brakes. Do not try to steer your way out as you invariably pronounce the effect. Alternatively hold the vehicle steady and try to stay within your lane. Gently apply the caravan's brakes using the manual override within the vehicle. Otherwise, where conditions permit continue at a steady speed or accelerate slightly so you are pulling the van straight as opposed to the caravan pushing the car.

When a condition of sway has been corrected slow down and pull over when safe to do so. Check that your load is correctly distributed within the trailer, making sure that heavier items are placed over the axles of the trailer.

Loading up for the trip: requires common sense and realistic understanding that whilst it may be the home on wheels you/your customer can't carry an excess of food and luggage. Apart from complying with the many legal requirements, the fuel costs escalate the more you carry. For safety and ease of towing the ball mass (the mass towards the front of the trailer carried on the ball of the towing vehicle) should be about 10 % of the total laden trailer weight. The ball mass can be carried out at most dealerships via a specific device. Alternatively you could locate weighbridge and by resting only the jockey wheel on the scales you can note the weight. Depending on the capacity, bathroom scales can also be used.

Tyres : are obviously the only contact the trailer has with the road so make sure they are in good order properly inflated and are designed for the intended use. As tyres age, the surface compound can deteriorate, tyre manufacturers recommend that tyres are replaced after six years even if they appear to be in good condition. Remember that the tyre manufacturers know more about their product than so called experts so fit or advise the customer to fit only what is prescribed and use their recommended pressures for the intended use. For safety and optimum life, inflation pressures should be adjusted in accordance with the placard recommendations and conditions. In addition to the vehicle placard a