

A TRAILERING GUIDE

*International*TM

AE

AIRSTREAM
EUROPE

AIRSTREAM[®]

SEE MORE DO MORE LIVE MORE

This Owners Manual has been prepared to help you use and enjoy your new European specification Airstream to the full, from the first time you take it on the road.

Many European Airstream customers are new to towing and possess limited experience of caravans/ trailer systems. For this reason this manual sets out information in the order you will need to assimilate it.

First we set out the information you need when choosing your Airstream and matching it with a suitable tow car, then at the time of the handover/ your first journey. Subsequent sections guide you step by step through the procedures for departure & arrival, explain how to plan maintenance and how to operate the systems and appliances.

You also need to read and refer to the appliance manufacturer's manuals contained in your Owner's Pack. Keep these to hand in the Airstream, with this manual.



Throughout this manual **! CAUTION** and **! WARNING** notations are used. Failing to observe **! CAUTION** can damage equipment. **! WARNING** highlights the possibility of personal and/ or fatal injury if not observed.

Enjoy your new Airstream!

Notes: All information, illustrations and specifications in this Manual are based on the latest product information available at the time of publication approval.

If and when new materials and production techniques are developed which can improve the quality of its product, or material substitutions are necessary due to availability, Airstream reserves the right to make such changes.

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Section A – Outfit matching



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Read this section when choosing your Airstream and matching it with a suitable tow car.

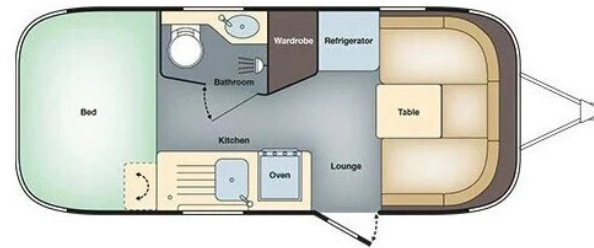
A1 - Trailer models & specifications

Airstream European specification trailer models

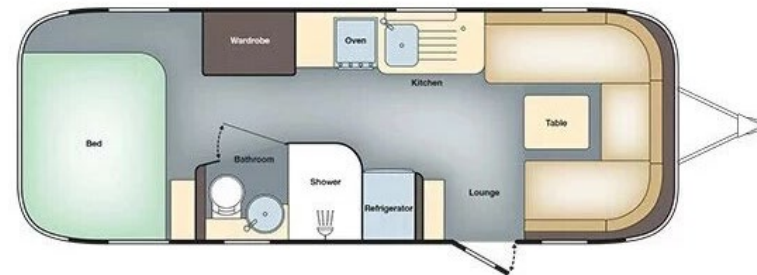
EXTERIOR:

FLOORPLAN:

534 International



684 International



251B International



A1 - Trailer models & specifications

	534	684	251B
MASS IN RUNNING ORDER, includes MRO items*	1580kg	2165kg	2475kg
ACTUAL MASS, includes **	1800kg	2500kg	2800kg
Noseweight (laden)	100-120kg	130-150kg	130-150kg
Coupling ball size	50mm	50mm	50mm
Coupling height	est 46cm when loaded	est 46cm when loaded	est 46cm when loaded
MTPLM Lower limit	1830kg	2500kg	2800kg
MTPLM Upper limit	1900kg	2920kg	3500kg
Shipping length	686cm (22' 6")	829cm (27' 2")	829cm (27' 2")
External height, with AC fitted	270cm (8' 10 1/2 ")	275cm (9' 1/2")	284cm (9' 4")
External width	228cm (7' 6")	249cm incl 1.5" CS/ 0.875" RS	249cm incl 1.5" CS/ 0.875" RS
External length (body shell), incl. grab rails	547cm (17' 11")	697cm (22' 10")	697cm (22' 10")
Internal length	530cm (17' 4")	674cm (22' 1")	674cm (22' 1")
Internal width, max	213cm (7')	233cm (7' 6")	233cm (7' 6")
Internal height, max	198cm (6' 6")	201cm (6' 7")	201cm (6' 7")
Ground clearance lowest point (A frame or tanks)	20cm under chassis rail	24cm under chassis rail	29cm under A frame
Departure angle	7 degrees	7 degrees	8 degrees
Seating, converts to bed	132 x 200cm (52" x 79")	140 x 180cm (55" x 71")	145 x 185cm (57" x 73")
Fixed bed	140 x 211cm (55" x 83")	142 x 183cm (56" x 72")	142 x 183cm (56" x 72")
Sleeping berths	4	4	4
Fresh water tank	45 litres	45 litres	104 litres (27.5 US gal)
Grey water tank	N/A	N/A	121 litres (32 US gal)
Toilet type	Cassette	Cassette	Cassette
Solar, max wattage permissible	150 watts	150 watts	420 watts
Alde wet central heating	Yes, STD	Yes, STD	Yes, STD

* Essential habitation payload, included in MRO: LP, 2 x 6kg incl. contents, Alde boiler hot water tank, Fresh water tank – full, 15amp electrical hook up cable. Note: contents of any grey water tank not included.

** Included in ACTUAL MASS:

FACTORY fitted options: Zipdee patio awning, 100w rigid solar panel (251B only)

Typical DEALER fit options: Airconditioning, Motor mover, TV's

USER PAYLOAD: Batteries, 2 x 30kg, Personal effects, 10kg per berth, Personal effects, 10 x interior length in metres.

NOTE; All product information and specifications listed are as accurate as possible at the time of printing. Since we continually strive to improve our products, all specifications are subject to change without notice. All capacities are approximate and dimensions are nominal and are checked and updated throughout the model year.

A2 - Trailer dimensions & weight

DIMENSION LIMITS

Restrictions on the size of trailer (length and width) that can be towed by different vehicles vary from country to country.

Check the towing laws in your country before purchasing your Airstream.

WIDTH

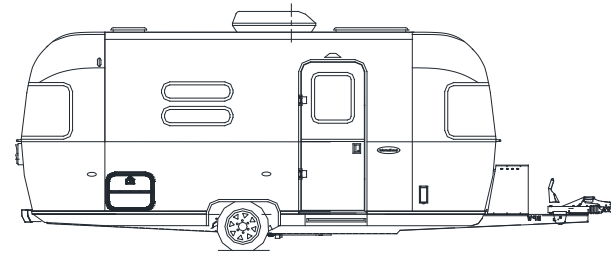
European models are available in a choice of 2 widths, loosely described as 2.3m (7ft 6") and 2.5m (8ft).

LENGTH

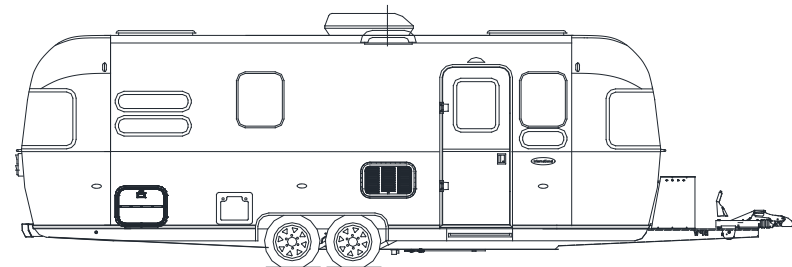
European models are available in the following lengths:

<u>Internal Length</u>	<u>Shipping Length, approx</u>
5.3m (single axle)	6.8m
6.8m (twin axle)	8.3m

The quoted internal length is the measured length in metres under the front/ rear windows, where the trailer is longest.



5.3m (534 model)



6.8m (684 and 251B models)

DEFINITIONS

Caravan manufacturers in Europe are required to quote the following weights. These terms are quoted in specifications in the Airstream sales brochure and on VIN/ weight plates fixed to the trailers:

Mass in Running Order (MRO) *

Mass of the Airstream equipped to the manufacturer's standard specification.

This INCLUDES the Essential Habitation items, shown below for the 534 & 684:

- LPG bottles, 6kg (4.5kg empty x 2)
- LPG contents x 90% (6kg x 2 x 90% = 10.8kg)
- Alde boiler hot water tank
- Alde boiler reservoir (Glycol/ water mix)
- Glycol/ water mix in Alde expansion tank, radiators & piping
- Onboard fresh water tank (90% full = 45 litre/ 45kg x 90%)
- 15amp main electricity hook up cable

Note: fresh water tank capacity for the 251B model is greater @ 104 litres.

Maximum Technically Permissible Laden Mass (MTPLM)

This mass takes into account the strength of materials, loading capacity of the tyres, axle rating, brake capacity etc. The loaded Airstream must not exceed this limit.

User Payload

This is the difference between the MTPLM and MRO. Payload is made up of 2 categories: Personal effects and Optional equipment.

PAYLOAD BREAKDOWN

<p><i>Personal effects –</i></p> <p>Those items which a user can choose to carry in a caravan and which are not included as essential habitation equipment or optional equipment</p>	<p>The minimum mass allowance in kg is:</p> <p>$M = 10N + 10L + 50$, where</p> <p>L = the overall length of the caravan in metres, excluding draw gear as given in 6.1.2 of ISO 612:1978</p> <p>N = the sum of all standard and optional berths</p> <p>Thus a 6 metre 6 berth EU Airstream will require a minimum personal effects allowance of 150kg (330lbs).</p>
<p><i>Optional equipment –</i></p> <p>Items made available by the manufacturer over and above the standard specification for the caravan</p>	<p>The mass of each item should include any fluids required for their safe and proper functioning</p> <p><i>Examples for an EU Airstream might be:</i></p> <ul style="list-style-type: none"> Air conditioning Fitted 'Zipdee' awning

A2 – Trailer dimensions & weight

SPECIFICATIONS

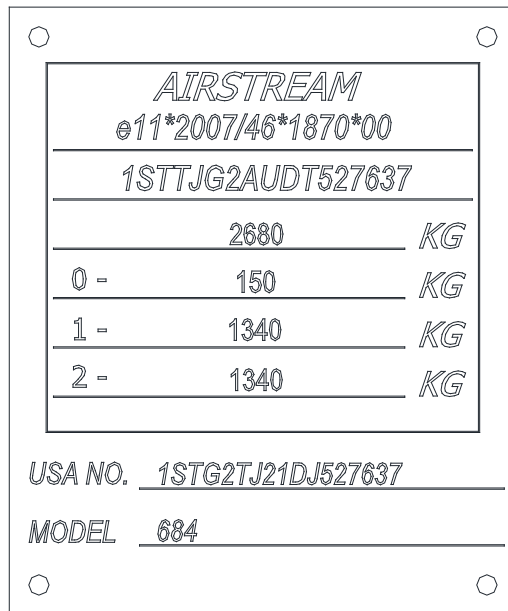
Specifications given in Airstream printed sales brochures or on the website state weight information, which is useful for initial guidance and assessment of different floorplans.

As the MRO for a production model can be subject to change, we recommend you confirm key items of data with your Airstream dealer, such as the MRO and MTPLM, for your preferred production model before relying on this information.

VIN AND WEIGHT PLATES

The MTPLM and MRO of any particular European specification Airstream is best confirmed by inspection of the Airstream itself.

All models have a VIN plate fixed externally to the front panel behind the LPG housing, this displays the design maximum masses. See example below.

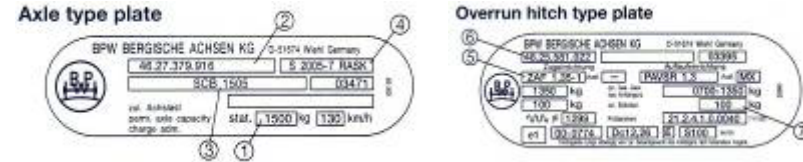


VIN plate, example

- ← Homologation #
- ← EU VIN
- ← MTPLM (Design Maximum)
- ← Max noseweight
- ← Max weight axle 1
- ← Max weight axle 2
- ← US No.
- ← Model

CHASSIS TYPE PLATES

In addition, there are type plates giving weight information for the axle(s) and hitch fixed to the axle(s) and drawbar respectively. These were fitted at the date of manufacture of the chassis. Examples below:



Inspection of these type plates will verify the axle and hitch ratings, highlighted using numbers 1 and 7 in the above examples. These ratings are summarized in the chassis component table in Section E11 of this Manual.

A2 – Trailer dimensions & weight

LADEN NOSEWEIGHT

Noseweight is the weight imposed by the trailer coupling on the towball of the tow car.

Noseweight will change depending on which options are fitted to the Airstream and how you load the Airstream with personal effects.

Any items placed to the front or rear will increase or decrease noseweight respectively – the axle(s) in the middle of the Airstream act as a central pivot point.



If items of optional equipment are not positioned centrally along the length of the Airstream, this will affect noseweight.

Other options have minimal effect on noseweight, for example air conditioning, Zipdee awning, or Mover device, because the weight is positioned centrally or evenly forward/ aft of the axle(s).

Similarly, the position of the boiler and fresh water tank can affect noseweight, when full. The boiler and fresh water tank positions vary in different Airstreams. If the positions are forward of the axle(s) and you wish to minimise noseweight, to suit a particular towcar, then you may choose to elect to empty the fresh water tank prior to travel.

The type and size of the LPG bottles used and whether they are full or empty will also have a noticeable effect on noseweight, as the LPG compartment is at the very front of the Airstream.

For this reason some LPG suppliers have introduced lighter weight bottles which are popular as they result in lower noseweight.

The sales brochure may give an indication of likely noseweight. This figure is given in a range, for example 100-120kg, to take into account the effect of the fresh water tank being empty or full and variances in the way you load your personal effects.

ACTUAL LADEN WEIGHT AND NOSEWEIGHT

Once you start using your car/ Airstream outfit, the actual laden weight and noseweight of the Airstream should be verified, when the Airstream is loaded as you would normally load it for a trip. See Section C3 for advice on how to weigh the trailer.

The Actual Laden Weight must under no circumstances exceed the Airstream's stated MTPLM.

A3 – Towcar weight & suitability

Whether you choose to buy a new or different vehicle to tow your Airstream trailer, or use an existing vehicle you already have, it is important for your safety and the safety of other road users to assess that your proposed tow vehicle and the Airstream are a suitable match and together will form a stable outfit that is legal on the road in the countries you plan to travel to.

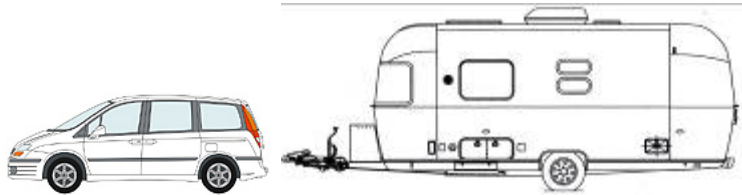
This issue is best considered prior to purchase.

Before reading this section, you need to have considered what the Laden Weight of your Airstream is likely to be when packed ready for the road and secondly, what its predicted Noseweight will be, again in the laden state.

Next, the following information should be considered and discussed with your Airstream dealer:

GENERAL GUIDANCE ON TOW CARS FOR EUROPEAN SPEC AIRSTREAMS

The single axle model -(depending on options fitted) can be within the capabilities of saloon cars, large estate cars, MPV's, crew cab pick ups and mid sized 4x4's:



The largest twin axle model - will require a large to extra large 4x4:



The engine size of the car will affect choice - the larger engine models have higher kerbweights.

The options fitted to the Airstream, plus the way you load the Airstream, will affect its actual laden weight and noseweight and will therefore also have an effect.

To be sure the car and Airstream are well matched, the issues below need to be checked in more detail:

TOWCAR WEIGHT DEFINITIONS

Kerb weight (as defined by EU Directive 95/48/EC)

Weight of a vehicle as it leaves the manufacturer with its fuel tank 90% full, all the necessary fluids for normal operation (see above), a nominal driver weight of 68kg and 7kg of luggage.

Gross Train Weight

The maximum allowable weight of the laden towing vehicle plus the laden trailer in total, the "train" weight. This is defined/ set by the tow vehicle manufacturer and can normally be found in the vehicle handbook. See Section A3 for further advice.

Noseweight

The weight imposed by the caravan coupling on the towball of the tow car. Noseweight limits are stated by the vehicle and towball manufacturer. Most are in the region of 50-100kg, with a few going up to 150KG, notably the larger 4x4's.

TOW RATINGS

Many customers ask: 'My car has a tow rating of 3000kg, can I not therefore tow any of the EU Airstreams?'

The often quoted "tow rating" is a recommendation set by the tow car manufacturer, which refers to the ability of the vehicle's power, cooling and transmission systems to handle load - typically what it can pull up a 1 in 12 gradient at a standing start.

This is not necessarily what it is suited in reality to tow under a wide variety of conditions, not least speed.

Real life towing conditions impose greater demands on the tow vehicle than this theoretical test. Hence, whilst some EU tow cars have tow ratings up to 3500KG, this does not necessarily mean caravans of this weight can be safely towed, thus tow ratings can be misleading (but should nonetheless not be exceeded).

A caravan is a high sided object. When towed behind a car, it behaves aerodynamically in a different way from say a flat bed trailer carrying cargo. Hence recommendations for caravan towed weights in some countries may be lower.

KERBWEIGHT RATIO

Check whether the predicted laden weight of the Airstream is a match for the kerbweight of your proposed tow car.

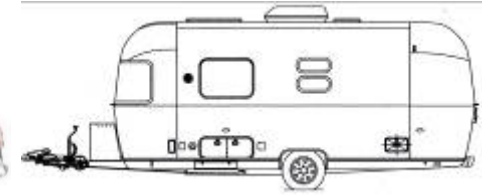
Look in the car handbook or on the car manufacturer's website, or speak to your local car dealer to check the kerbweight of the car.

Check the kerbweight ratio recommended by any caravan clubs in your country.



Kerbweight of towcar

100%



Actual laden weight of Airstream

85%

MTPLM of TOWING VEHICLE

For type approval reasons, the maximum permissible mass of the towing vehicle shall not exceed 22,000kg.

NOSEWEIGHT CAPACITY

Check that the brochure stated noseweight range of the Airstream does not exceed the lower of the noseweight limit of your proposed tow car, or the towbar fitted to it.

ALLOWING FOR PERSONAL PAYLOAD

Please take care to ensure that you have allowed for the masses of all items you intend to carry in the caravan. e.g. optional equipment, and personal effects such as clothing, food, pets, bicycles, sailboards, sports equipment etc.

! WARNING Under no circumstances should the MTPLM of the caravan be exceeded.

The mass of the caravan in running order contains provision for the masses of liquids, gas etc. (see Mass in Running Order in section E11). Part of this provision can also be utilised as additional payload, if for example, you wish to travel with no gas cylinders.

A4 – Towcar & trailer combined weight

GROSS TRAIN WEIGHT (GTW) – TOWCAR LIMIT

The Gross Train Weight is defined/ set by the tow vehicle manufacturer and can normally be found in the vehicle handbook.

The Gross Train Weight is the maximum allowable weight of the laden towing vehicle plus the laden trailer in total, the “train” weight.

Gross Train Weight = Laden towcar + Laden trailer

It is usually the simple sum of the vehicle’s gross vehicle weight plus its towing limit, but check the vehicle handbook, as it can be less than the simple total.

It is a legal offence to exceed the Gross Train Weight, if stopped by the police and found to be exceeding the gross train weight, you risk prosecution, or your insurance may be invalidated.

Hence, check what the Gross Train Weight is for your proposed towcar when considering its suitability to tow the Airstream. This should be at least the sum of the gross weight of the car (as stated in the car handbook) and the Predicted Laden Weight of the Airstream (see Section A1).

Soon after purchasing the Airstream and periodically thereafter, take your towcar and Airstream when both are loaded for travel to a weighbridge, to check their combined actual laden weights. Keep the weighbridge print out in your car in case you are stopped by the Police as evidence that your outfit does not exceed weight limits.

DRIVER’S LICENCE – TOWING ENTITLEMENTS

The legal position as regards driver’s licences may vary from country to country.

We recommend that you check the law with the driving licence issuing authority in the country you live in.

You may need to take an additional towing course and if the sum of the trailer MTPLM and car gross weight exceeds a certain amount, which is often 3500kg.

TOWBARS

Towbars fitted to EU cars first registered after 1 August 1998 must be type approved under Directive 94/20/EC or UN ECE R55 (except off road vehicles and light commercial vehicles do not yet have to comply with the EC Directive). The hitch ball is 50mm diameter.

Type approved towbars are stamped with an S value – the maximum vertical static load on the towball or eye, measured in kg (noseweight). This tends to mirror the noseweight capacity of the vehicle it is fitted to.

Before having a new towbar fitted, contact an industry association for advice on selection and fitting.

You should ask what the S value will be (maximum load in kg) and what the coupling height will be when fitted to your car.

COUPLING HEIGHT

The coupling height or hitch height, is equal to the height from the ground to the centre of the towball, or from the ground to the centre of the trailer coupling when the trailer is level and loaded to the MTPLM. The coupling height will vary for different Airstreams and from car to car. This should ideally be considered at the 'outfit matching' stage, because for stability the trailer should be towed level, or slightly 'nose down'.

The ideal is for the towball height on the car to be slightly less than, but not more than, the coupling height on the trailer.

Measure the height of the towball on the towbar on your car, if already fitted, or consult your car dealer to ascertain what the coupling height will be when the towball is fitted. Some towbars have adjustable heights, for example those fitted to some 4x4's. Then compare the actual/ likely towball height on your car to the coupling height on the trailer.



The requirements affecting coupling heights for EU tow vehicles and trailers are:

- Tow vehicle - EC Directive 94/20 or UN ECE R55 requires vehicles registered since 1/8/98 (except off road vehicles which are exempt) to have a type approved tow bar with centre of ball between 350-420mm above ground when the vehicle is conventionally 'loaded'.
- Trailer – the same EC Directive 94/20 or UN ECE R55 requires the coupling point of the trailer coupling to be 430mm +/- 35mm from ground – with the trailer laden to permitted axle load and the trailer horizontal. In the UK, BS 6765 requires trailers in the UK to be at 415mm +/-30mm, but this is likely to be revised to come into line with the EC Directive.

In Europe, the same trailer could therefore be connected up to a vehicle with a tow ball height between 350-465mm, or even higher if that vehicle is classed as an 'off road' vehicle. Estate cars have a typical towball height of 385/390mm, whereas a 4x4 towball is typically in the range 420/450mm.

This variance in coupling height is less critical (in terms of stability) for single axle models, which are best towed slightly 'nose down'.

A twin axle caravan with standard axles working independently of each other needs to be towed level, not nose down (or worse still nose up), or one axle & set of wheels/ tyres may be taking more than its designated maximum loading. The tyre contact with the road also changes, affecting stability.

TYRES

The rear tyres of the car must be inflated to the car manufacturer's recommended pressures for towing, please refer to your car handbook or car dealer and adjust the rear tyre pressures accordingly.

When driving in winter, in countries where there is a high risk of snow or ice conditions during winter months, it is recommended – particularly when towing – that winter tyres are fitted to all 4 wheels of the towcar to give better grip. This is a legal requirement in some countries – check before travelling.

A winter tyre is made of special silica rubber compounds, which are better adapted to the cold and enable better braking. The tyre has a deeper tread and is designed to displace the water passing under the tyre and give better grip on snow.

A5 – Towing equipment

TOWING ELECTRICS

Towing electrics allow the trailer's road lights and other internal auxiliary equipment to be powered by the tow car's 12v system. To ensure the required connections are made in a correct and safe manner, the towing electrics are best installed by a specialist, typically the same company that fits the towbar.

Choose a company belonging to a recognised Association that gives some assurance of quality. Question the company you intend to use on their knowledge of your particular car, as wiring varies from car to car. Ensure the fitter's work will be fully guaranteed and approved by the car manufacturer.

13 PIN CONNECTION

When using the 13 pin connector system for the first time it is worth taking a few minutes to familiarise yourself with the basic features of the connectors.

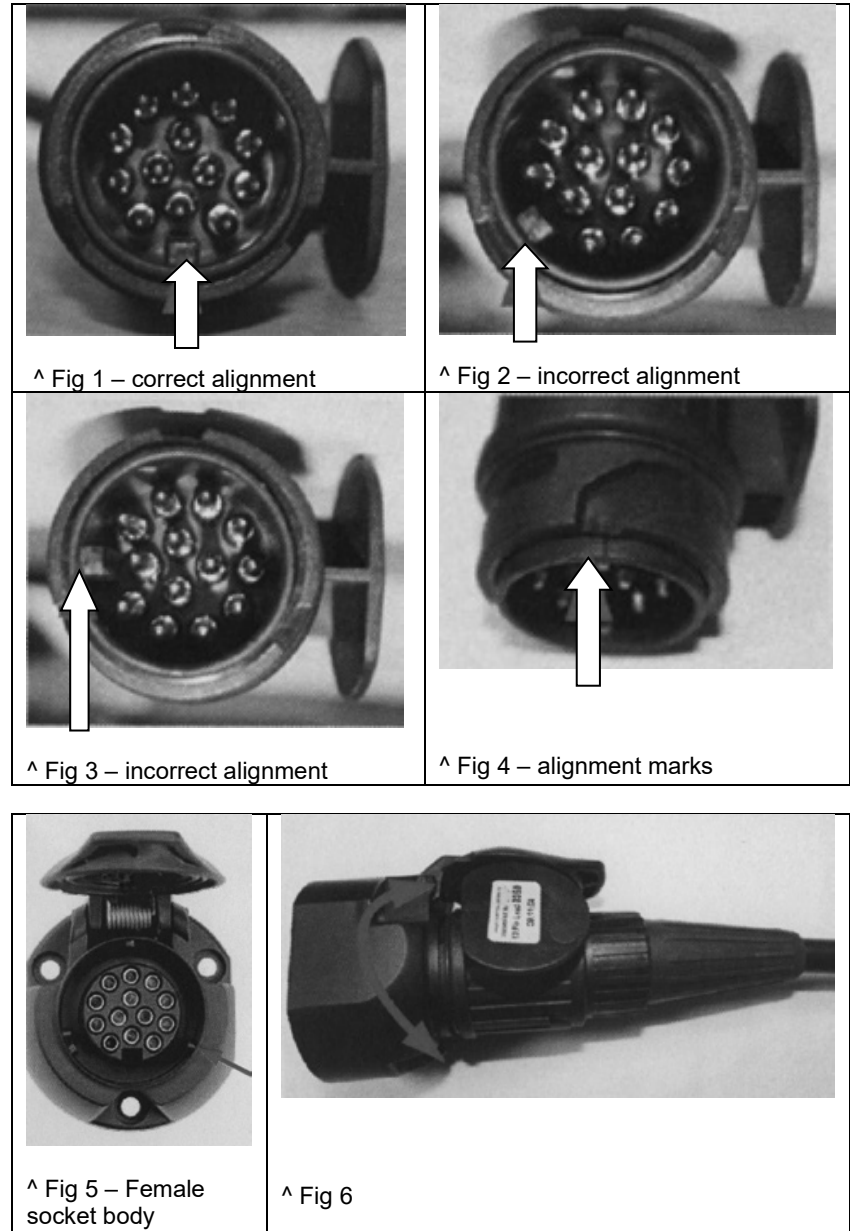
The important difference with the 13 pin plug, when compared to the older 12N/S type, is that the plug has an inner ring assembly that is independent from the outer body. Under normal circumstances the inner ring and the outer body will be locked in one position (see **Fig 1**)

When the plug is first inserted in the socket body, ensure that the locating protrusion (key) matches the groove (keyway) in the socket body. The outer body can then rotate a full 90 degrees clockwise until a click is felt or heard. At this point the cover flap can be allowed to fall over the circular surface of the plug top (**Fig 6 & 7**).

To remove the plug, it is important to rotate the outer body a full 90 degrees anti-clockwise, again until a click is heard or felt before withdrawing the plug from the socket. This will ensure that the inner and outer parts of the plug are returned to a locked condition.

If the connector is not fully rotated anti-clockwise prior to removing it from the socket, it is possible that the inner ring will become 'floating' and may result in a condition where the protrusion will be incorrectly aligned (**Fig 2 & 3**).

If this situation does occur then it can be corrected, by inserting the edge of the protrusion on the plug into the groove in the socket (**Fig 8**) and rotating the plug body anti-clockwise until a click is felt. This process will re-establish the lock between the inner and outer parts, allowing the correct insertion of the plug into the socket.





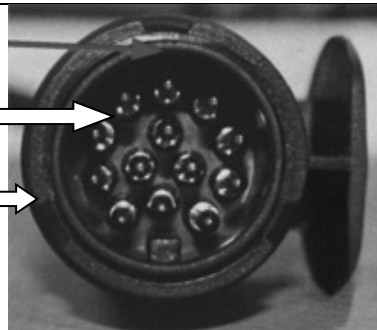
< Fig 7



< Fig 8

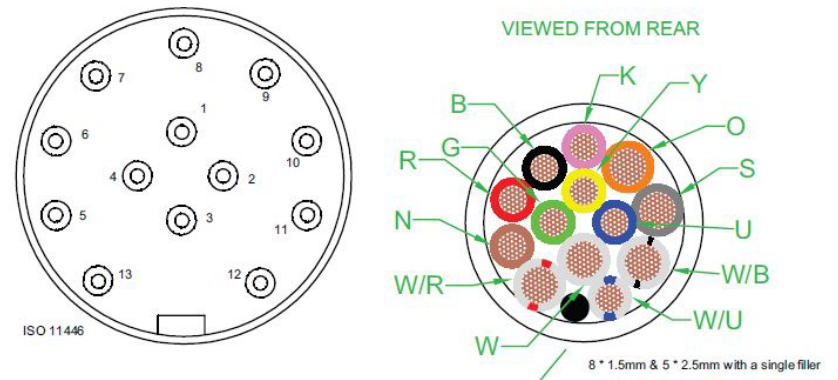
Plug inner ring (containing male pin terminals fitted to the caravan)

Plug outer body (with locating groove and hood fitted to the caravan)



WIRING THE JAEGER 13 PIN PLUG

The wiring pin out for the Jaeger 13 pin socket is shown below:



PIN NO	COLOUR	DESCRIPTION	12n/s	N	S	HARNES COL
1	YELLOW	LEFT INDICATOR	YELLOW	*		YELLOW
2	BLUE	FOG HAZARD LIGHT	BLUE	*		BLUE
3	WHITE	EARTH FOR 1-8	WHITE	*		WHITE
4	GREEN	RIGHT INDICATOR	GREEN	*		GREEN
5	BROWN	RIGHT TAIL LIGHT	BROWN	*		BROWN
6	RED	STOP LIGHTS	RED	*		RED
7	BLACK	LEFT TAIL LIGHT	BLACK	*		BLACK
8	PINK	REVERSE LIGHTS	YELLOW		*	ORANGE
9	ORANGE	CAR +	GREEN		*	BROWN/GREEN
10	GREY	FRIDGE +	RED		*	RED/YELLOW
11	WHITE/BLACK	EARTH FOR 10	BLACK		*	WHITE/BLACK
12	WHITE/BLUE	NOT YET ALLOCATED				
13	WHITE/RED	EARTH FOR 9	WHITE		*	WHITE/ORANGE

A5 – Towing equipment

TOWING MIRRORS

The addition of a trailer behind a car, like an Airstream, reduces rear visibility from the car. The internal car mirror may still provide some views through the Airstream, depending on the floorplan and whether internal doors/ curtains in the Airstream are left open (recommended for night towing, when headlights of vehicles behind will shine through).

Most towcars will not be as wide as the Airstream, thus visibility using the external mirrors of the car will also be reduced, more so with the wider 2.5m wide models.

For these reasons, we recommend additional mirrors are fitted to the nearside and offside when towing (these should be removed when driving solo), to provide an adequate view to the rear when towing.



Models that clip onto the existing car mirror are generally quick and easy to fit, methods of attachment vary. A choice of types should be available from your local caravan accessory shop.

SUSPENSION AIDS

Adding the noseweight of a trailer with a relatively high noseweight to the rear of your towcar can cause problems with the rear suspension, if the additional weight on the rear of the car results in the car no longer riding level.

Some cars offer self levelling suspension to cope with this, for example some 4x4's have air suspension, which adjusts to load placed in the rear boot and on the towbar, to keep the car level.

Those without suspension aids may suffer problems of reduced ground clearance, headlights tilted up too high and impaired handling. Front wheel drive cars may find traction, as well as steering affected.

After market suspension aids fall into 2 categories, those which are replacement shock absorbers and those which affect the car's suspension. This is a specialist area and expert advice should always be sought.

Before considering rear suspension aids, first check with your car dealer that the car's normal suspension and shock absorbers are working at near 100% efficiency.

STABILISER COUPLINGS

Stabiliser couplings are designed to reduce/ dampen snaking and pitching between the towcar and trailer, by 'gripping' the towball.

Some consider stabilisers dangerous as they disguise early warning signs that would otherwise alert the driver to taking the right action (slowing down!).

Most importantly therefore, the use of aids such as stabilisers that help reduce snaking should not be seen as a substitute for a well matched tow vehicle/ trailer combination that is correctly set up (hitch height, tyre inflation etc.), properly loaded and driven at sensible speeds.

Section B – Before/ at handover



Safety advice
Fire
Ventilation
Children
Insurance
Security
Warranty

B1
B2
B3
B4
B5
B6
B7

Review this section with all drivers and family members before you collect the Airstream, especially if you are new to towing.

B1 – Safety advice

SAFETY PRECAUTIONS

Many things can be construed as safety related, but the most important is your common sense. If you are careless with matches, cigarettes, flammable material, or any other hazardous material, you surely realize your potential for accidents is greatly increased. You will find many safety recommendations in this section and throughout the manual. The following recommendations are the ones we consider to be the most important.

TRANSPORTING OF PASSENGERS

The transporting of people in the trailer puts their lives at risk and may be illegal. The trailer does not have seat belts, therefore, it is not designed to carry passengers.

! WARNING Never transport passengers inside a trailer. Towing a trailer with passengers inside is unsafe and could result in death or serious injury.

TOWING V'S DRIVING SOLO

Towing a trailer is different from driving solo. Most accidents are due to mis-use – either driving at excess speeds, bad loading of the caravan, sudden direction change etc.

The following four key issues will determine whether your outfit is safe and comfortable to tow, you need:

- 1) A properly matched outfit, hitched at the correct height – see Section A
- 2) Properly distributed equipment in the Airstream and towcar – see Section C
- 3) Timely effective maintenance – see Section E
- 4) To drive the outfit correctly.

The next sections below give some advice in relation to point 4) above, how to drive the outfit correctly.

SPEED

Know and observe speed limits, these vary from country to country, but tend to be lower for cars towing trailers.

Aside from risking fines, speeding when towing increases the risk of accidents. Remember that the maximum permissible speed is not the same thing as a safe speed. The safe speed for a particular stretch of road is determined by the actual conditions.

Your outfit is longer, slower, takes longer to accelerate and brake and handles very differently from a solo vehicle. Generally, a safe speed is a slower one when towing!

! WARNING The faster you go, the greater the risk of losing control of your outfit, the less chance of taking avoiding action and the greater your risk of having an accident.

! WARNING The maximum design speed of the Airstream is limited by the brakes and tyres to 81mph (130kph)



STOPPING DISTANCES

Driving too close to the vehicle in front is one of the commonest causes of accidents.

There is a greater risk for drivers towing a trailer because of the reduced braking efficiency of outfits. The additional load of a trailer means the tow car will take longer to stop at speeds, hence it is all the more important to observe safe stopping distances.

If the driver behind you is too close, increase the distance between yourself and the vehicle in front. It will allow you to brake more gently, giving the vehicle behind more time to stop.

USE OF MOTORWAY LANES

Laws vary from country to country, know the laws for the countries you will be travelling in.

SWAY AND SNAKING

There is a natural tendency for a trailer to sway slightly due to its own momentum & external forces. Snaking is the worsening development of sway.

The rounded nature of the Airstream travel trailer helps reduce the extent to which the slipstream of large overtaking vehicles will affect your outfit, but there are a number of preventative guidelines you should follow to maximise your safety and reduce the risk of sway developing:

- 1) First, follow guidelines for outfit matching (Section A) and loading (Section C), keep within the towcar and Airstream's permitted weight limits. A fundamental cause is an ill matched outfit.
- 2) Ensure the towcar and Airstream's tyres are kept inflated at the correct pressures.
- 3) Listen to weather forecasts and avoid if possible travelling when towing in high wind conditions.
- 4) Drive at a speed appropriate for the outfit and conditions – reduce speed doing down hills and in windy conditions.
- 5) Watch your mirrors for fast moving large vehicles coming up behind and preparing to overtake.
- 6) Maximise the gap between your outfit and an overtaking vehicle by keeping well to the inside (left side in the UK) of your carriageway. The most effective time to take action is just before the overtaking vehicle comes level with your outfit. If you can move over as far as safely possible at this point, then the disturbance on your outfit will be less.
- 7) If you see the Airstream rear end sway in your rear view mirror, take your foot off the accelerator and slow down on the overrun of the engine.
- 8) Realise if you have seen a rear end sway, that your outfit is not as stable as it could be and you risk encouraging a snake. The sway will get worse at higher speeds or under more severe buffeting.
- 9) Rectify the outfit loading at the first safe available opportunity to stop and in the meantime SLOW DOWN. When you can stop, reconsider the outfit matching - examine and rearrange your loads, check your tyre pressures and noseweight.
- 10) If you have applied all the above and a sway develops into a snake, then:
 - Steer in as straight a line as possible without forcing your will on the steering wheel by sudden or sharp corrections; these worsen the pendulum effect
 - Let the steering wheel twitch in your hands – it will – until the snake ends.
 - Take your foot off the accelerator and let the engine slow the outfit until the snake disappears.

In a snake occurring travelling downhill only, do – but VERY VERY GENTLY – apply the brakes; sharp braking worsens the pendulum effect.

! WARNING DO NOT attempt to power out of a snake by accelerating, DO NOT see-saw the steering wheel, DO NOT slam on the brakes.

REST STOPS

A rest stop every two hours is recommended, both for drivers and passengers and for your towcar, which has been working harder than when driving solo.

You should take the opportunity whenever you stop to look around the outfit and check that everything looks normal.

Do not unhitch the Airstream at a rest stop. This will prevent the Airstream tipping back if one person enters inside and walks to the rear (for example to use the bathroom on rear bathroom models). One or two rear corner steadies should be lowered if the stop is to be more prolonged, for example a lunch stop, during which all the family may enter the Airstream.

Whenever possible, choose locations for rest stops that are set back from the road. If stops have to be made by the side of the road, either in a lay-by or on the side of the road in emergencies, please observe the following:

! WARNING The Airstream entry door may not be on the kerbside of the road, depending which trailer model you have and whether you are using it in left or right hand drive countries. Care must be taken if entering or exiting the Airstream by the side of the road. Children in particular may not appreciate the dangers of exiting onto the road side, where cars may be passing. Always supervise any persons entering or exiting the Airstream if the entry door is on the road side. It is particularly hard to see oncoming traffic if the door is hinged on the rear side.

TIP: Keep a small hand held mirror in the Airstream to use to check for approaching cars if you have to stop and enter/ exit from the Airstream with the entry door on the road side.

FOULING

Care must be taken to prevent fouling when traversing ramps or other ground obstacles. Try to avoid very steep driveways and always leave plenty of room between the Airstream and pavement kerb when parking.

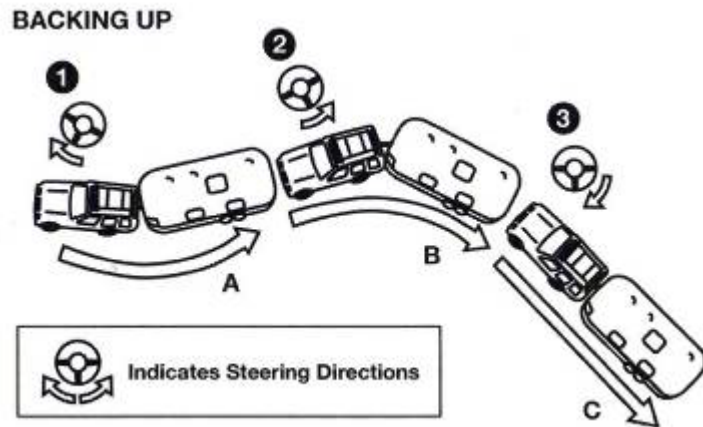
B1 – Safety advice

REVERSING PRACTICE

Straight line reversing and reversing around corners should be practiced in a large empty car park, on a number of occasions, until you feel confident of technique and able to repeat this in real situations, like reversing into campground pitches or onto ferries. Practice will make perfect!

Start by drawing forward until car and Airstream are in a straight line. Then start to reverse very slowly. All movements in reverse are best done slowly, so the trailer does not turn quickly, for if it does, it is more difficult to correct.

Different instructors give different tips for knowing which way to turn the steering wheel. Our recommendation is to hold the steering wheel with one hand at the bottom, look in the rear view mirror and turn the wheel a little in the direction you want the rear of the Airstream to go.



As the rear of the Airstream starts to move that way, the image of the Airstream will begin to fill the mirror. If the Airstream turns too much, turn the steering wheel the other way to correct. Don't hesitate to pull forwards to straighten up the outfit and try again.

Small corrections at the steering wheel as you move slowly backwards is the best strategy. The straight line reverse is simply a series of small corrections at the steering wheel.

! CAUTION The reversing light on the rear of the Airstream will not operate unless the 13pin towing electrics connector on the Airstream is plugged into a matching connector on the towcar, or an adapter is used so the reversing lamp circuit is connected.

REAL REVERSING SITUATIONS

Follow the advice below to help you successfully reverse in real situations:

- First scan the area. This is best done by foot (i.e. get out of the car to inspect the area you need to reverse into, ensuring the car handbrake is applied first). Check for obstructions – both at low level (such as posts or bollards, bushes, high kerbs) and at high level (street signs or trees which may overhang into the road etc.).

If you are reversing on your own without any other aids, you may need to get out of the car several times during the manoeuvre to check your position. Don't hesitate to do this if you are unsure how much room there is behind the Airstream. Don't allow others to make you feel rushed and take risks.

- If you have a companion, ask them to stand where they can clearly see both the rear of the Airstream and any obstructions as you reverse, to direct your reversing and give you proximity warnings. However do not allow your companion to stand in a position where there is a risk of injury to them.
- Consider fitting a reversing aid, such as a reversing camera to the rear of the Airstream.
- If you are reversing at night, a large torch which can be placed on the ground marking the point where the rear of the Airstream should finish and illuminating any obstructions along the side of the Airstream, is a useful aid. Turn the porch light and offside service light on the Airstream on, which will also help illuminate obstructions down either side.
- If a Mover device is fitted, uncouple the towcar, stand where you can see both the rear of the Airstream and any obstructions and operate the remote controls of the mover device to reverse the Airstream into position.

! CAUTION Whilst the Airstream has a rear bumper, this protects the low level areas only. The bumper does NOT project past the outer most extremity of the rear of the Airstream (the grab rail and LED light clusters), hence the rear remains vulnerable to damage if reversing against taller objects, such as a vertical wall. Always take care when reversing and manoeuvring the trailer.

DRIVING IN MUD OR ON WET GRASS

Mud and even wet grass on a slight slope can be a problem on a site, even for solo vehicles.

If the weather is doubtful, ask if a hard pitch (tarmac or gravel) is available.

If only a soft pitch is available, park with the front of the Airstream as close as possible to a hard surface. Also try and park so when you leave, you are driving down any slope.

When moving off, keep engine revs low and steer as straight as possible.

STOPPING ON A HILL

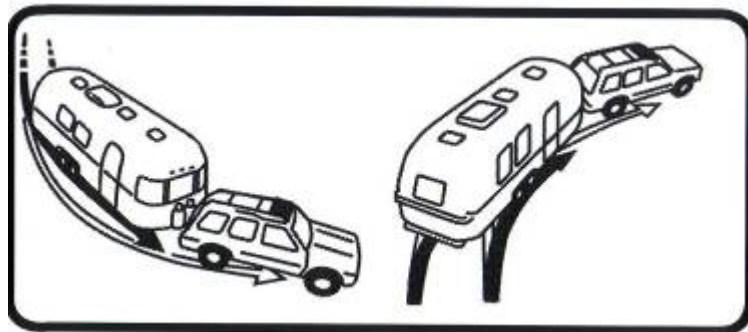
When stopping on a hill or slope, leaving your tow vehicle in gear is not enough for standstill safety.

Do not rely on the towcar or Airstream parking brakes. **CHOCK THE TRAILER WHEELS** to be double sure.



TRACKING

When turning corners, remember that the trailer wheels will not follow the path of the towcar wheels – you need to make wider turns when towing to ensure that the trailer wheels clear any corner obstructions, but not so wide as to swing out into oncoming traffic.



OTHER TOWING SAFETY ISSUES

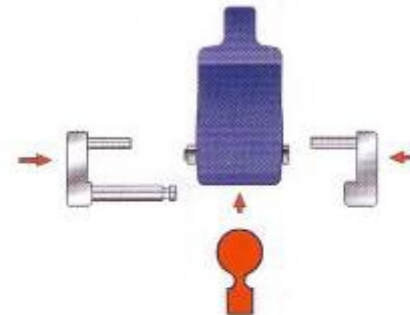
Do not tow the Airstream whilst it is occupied.

Do not carry LPG bottles loose in your towcar or the Airstream, portable cylinders must be secured in a vertical position in the locker provided on the front of the Airstream.

Turn off gas appliances before travelling, except those heating appliances designed to function while the vehicle is in motion (the Alde 3020 boiler is designed to be usable on gas operation whilst the vehicle is in motion).

Hitchlocks

Hitchlocks are available to suit the different couplings used (example below for the WS 3000 coupling). These can be purchased from your Airstream dealer.



To fit the Robstop hitchlock, first place the plastic ball sharply into the underside of the coupling head. This will allow the stabiliser handle to be lowered to the horizontal (closed) position.



Then place the 2 cast metal parts of the hitchlock either side of the coupling head and turn the key to lock.

FIRE PREVENTION

! WARNING

- Do not smoke in bed
- Never use portable cooking or heating appliances inside the Airstream, other than electrical heaters that are of the radiant type, as it is a fire and asphyxiation hazard.
- Never use the fitted cooking equipment as space heating.
- Keep matches out of reach of small children!
- Don't clean with flammable materials!
- Keep flammable material away from open flame!

We have all heard these warnings many times, but they are still among the leading causes of fires.

FIRE DETECTION - SMOKE ALARM

A smoke alarm when fitted has an alarm silence/ hush feature and is approved for use in vehicles such as travel trailers.

DO NOT disconnect the battery, the smoke alarm is provided for your safety. To stop a false alarm, press the button on the unit (same as the test button). The alarm will go into Hush mode for 10 minutes, then automatically reset. While in Hush mode, the alarm will still detect, but sensitivity is decreased. Always determine why the alarm has been triggered before pressing the button.

The 9v battery lasts approximately one year. About a month before the battery is completely flat, the alarm emits a short signal once a minute. This is the signal that the battery needs changing. Test the alarm after changing the battery.

! WARNING Ensure a new battery is correctly installed with +ve terminal to +ve contact (marked +), negative terminal to negative contact.

Under the test button, there is a red control lamp which flashes once a minute. This shows the battery is correctly connected.

! WARNING Test the alarm weekly, or after prolonged storage periods, by pressing the test button for at least 10 seconds until the alarm sounds.

FIRE ESCAPE

In the case of fire:

1. Get everyone out of the Airstream as quickly as possible using whichever exit is the quickest. Do not stop to collect any personal items.
2. Raise the alarm. Call the Fire Emergency Service.
3. Turn off the gas supply using the valves on the cylinders, if it is safe to do so.
4. Turn off the electricity supply at the supply point.

Purchase & keep a dry powder fire extinguisher of at least 1kg capacity by the exit door & a fire blanket next to the cooker.

! WARNING Read the directions carefully on the fire extinguisher. If there is any doubt on the operation, you and your family should practice, then replace or recharge the extinguisher.

Familiarise yourself with local fire precaution, if staying on a campsite.

ESCAPE WINDOW OPERATION

Make sure you and everyone travelling with you can operate the main door and emergency exit window(s) rapidly without light. Contemplate other means of escape in case the designated exits are blocked. Run emergency drills.

The escape window(s) are identified by red release handles and are opened by lifting up both handles, then turning the latches towards the centre. A loop is provided in the SCREEN RETAINING SPLINE so it can be rapidly removed. Take hold of the loop and pull the rubber spline out of the screen frame. Then push out on the window glazing and the window will swing clear.

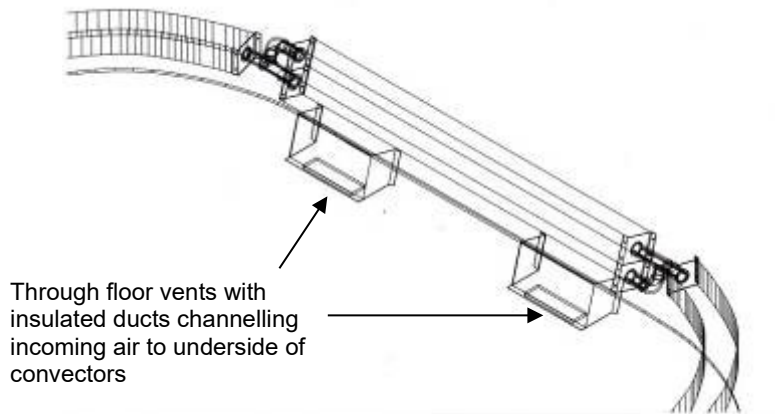
! WARNING Learn and practice the entrance door and escape window operations, so you and your family can escape even in total darkness.

! WARNING Check the emergency escape route outside your escape window at every stop, make sure you have not parked in such a manner as to block the operation of the escape window by being too close to trees, fences, steep drops etc. Never park your trailer so the escape windows cannot be easily used for emergency exits.

VENTILATION

European Airstreams comply with the safety ventilation requirements of the European Standard BS EN 721. The fixed ventilation points are provided for your own safety. They should not be obstructed and should be checked and cleaned periodically as necessary.

There are 2 No. rectangular vents through the floor at the very front, allowing air to flow up to the doubled front convectors. This ensures that cool air entering at floor level, which is necessary for safe ventilation, is pre-heated before entering the Airstream.



On larger twin axle models there are similar rectangular through floor vents to the rear under the fixed beds, also with insulated ducts.

These larger rectangular ducts are protected from road spray by protective cowls fitted to the underside of the floor. These should be inspected periodically from below to ensure they remain unobstructed, clean and free from debris and dust.

Additional low level ventilation is provided by gas drop holes under the fridge and cooker.

High level ventilation is provided by ventilation grilles in the Midi Heki rooflights.

Under no circumstances should any of these safety vents be blocked or obstructed.

When cooking, open windows to provide additional ventilation and use the extract fan provided over the cooking hob.

CHILDREN

Do not leave children alone in the Airstream.

Keep potentially dangerous items like matches, drugs etc. out of reach, as at home.

Care must be taken against the risk of falling out when beds (especially any upper bunks) are used by children, particularly under 6 years of age. Upper bunks if provided are not suitable for use by infants without supervision.

! WARNING The Airstream entry door may not be on the kerb side of the road, depending which trailer model you have and whether you are using it in left or right hand drive countries. Care must be taken if entering or exiting the Airstream by the side of the road. Children in particular may not appreciate the dangers of exiting onto the road side, where cars may be passing. Always supervise any persons entering or exiting the Airstream if the entry door is on the road side. It is particularly hard to see oncoming traffic if the door is hinged on the rear side.

B5 – Insurance

INSURANCE

Ensure you take out adequate insurance for the car and caravan from the moment you collect or will take delivery of the Airstream.

Insurers vary from country to country. Speak to your Airstream dealer for local information.

Airstream insurance – Ask your Airstream dealer for contact details for insurance companies who can offer quotes and terms for insuring the Airstream.

When contacting insurers, you need to state the model of Airstream and retail value including optional equipment.

Tracker installation - The fitting of a tracker device may be required by some insurers.

Car insurance – Please confirm with your car insurers that your car insurance policy has no unusual exclusions regarding towing a caravan.

Breakdown cover – Compare cover available from different breakdown assist companies for towed outfits, including recovery of the Airstream (some companies place limits on length of caravan).

TRACKER

The fitting of a tracker is recommended, as the best means to recover the Airstream should it be stolen. A tracker device utilises globally positioned satellites - a number of which are always 'overhead'.

The location of the Airstream is transmitted using current mobile phone technology back to a call centre. The position is then used in conjunction with mapping software to produce a street level map pinpointing the location to within thirty feet, subject to a mobile phone signal being available.

WHEEL AND HITCH LOCKS

Mechanical devices such as wheel locks and hitch locks do help deter theft, by all but the most determined thieves.

A variety of wheel locks are available.



Caravan theft is common, please take precautions to deter theft of your Airstream.

Always secure all windows and doors when leaving the Airstream unattended.

SECURE STORAGE

If the Airstream is hidden and not readily visible to passers by, the risk of theft reduces.

If you choose to store the Airstream at home, consider screening measures to hide it from view and devices such as removeable posts to improve security of your driveway.

Alternatively, store the Airstream at a secure storage facility.

CHASSIS VIN STAMPING

All European models are allocated a unique 17 character VIN (vehicle identification number) which complies with the numbering sequence used in Europe.

All EU models have this 'European VIN' stamped (2nd line down) on the VIN plate fixed to the exterior of the Airstream.

This European VIN is also stamped on the chassis (to the front of the right side chassis rail) to provide visible identification.

B7 – Warranty

WARRANTY

Warranty Coverage

When you buy a new Airstream Travel Trailer from an authorized Airstream dealer, Airstream, Inc., warrants the trailer from defects in material and workmanship as follows:

Basic Warranty Period

This warranty extends for a period of 2 years from the date of original retail purchase, subject to the conditions, terms and exclusions below.

Items covered

Any part of the trailer or any component equipment installed by the factory in the USA is covered by the basic warranty except the following items, which are not covered:

Tyres & batteries – these are not covered by the basic warranty.

This limited warranty does not include failure caused by accident, abuse, normal wear, overload or any cause not attributable to a defect in original material or workmanship of the trailer or component equipment as installed by the factory or distributor as described above.

Limitation of implied warranties

All warranties of merchantability and fitness for a particular purpose, whether written or oral, expressed or implied, shall extend only for a period of two years from the date of original purchase. There are no other warranties, which extend beyond those described on the face hereof and which expressly excludes conditions resulting from normal wear, accident, abuse, exposure or overload.

Airstream's responsibility

The basic Airstream Limited Warranty applies for a period of two years from the date of original purchase and the application date of all warranties is that indicated on the owner's Limited Warranty.

Defects in items covered under this Warranty will be corrected without cost upon the return, at the owner's expense, of the trailer or defective part to an authorised Airstream dealer in Europe.

Owner care and maintenance

This warranty covers only defective material and/ or workmanship; adjustments are made at the factory in the USA prior to shipment, and rechecked by the dealer prior to delivery to the customer. Adjustments made thereafter become a customer responsibility.

Each Airstream exterior (not including the underside) is clear coated to prevent oxidation. This application is covered by a two year warranty against peeling. Prolonged exposure to salt air or corrosive air borne pollutants will permit penetration through the coating material, causing damage to the exterior finish. Since Airstream Inc. has no control over these conditions, it is necessary for the owner to wash and maintain their trailer as instructed in this Owner's Manual.

The owner is responsible for following all maintenance recommendations, instructions and precautions contained in this Owner's Manual and the individual operation and use manuals furnished by the chassis, appliance and other manufacturers.

Installations not covered

Airstream Inc. do not accept any responsibility in connection with any of its trailers for additional equipment or accessories installed at any dealership or other place of business, or by any other party. Such installation of equipment or accessories by any other party will not be covered by the terms of this warranty. Recourse should be made to the dealer concerned.

If repairs are needed

If your trailer needs repairs under the terms of the basic Airstream Limited Warranty, you should take your trailer to your selling dealer, or other authorized Airstream dealer.

No work shall be commenced under the terms of the warranty unless prior authorisation is obtained from Airstream Inc..

Airstream Inc or their Appointed Representative reserve the right to inspect the trailer before any works commence. Airstream Inc. reserve the right not to approve a warranty claim if the original construction of the Airstream has been tampered with or repaired by any third party who is not an authorized Airstream repairer or representative.

Should your Airstream repair agent require further technical assistance then they can contact Airstream USA, who will be able to assist further. The following information should be provided:

- The Airstream VIN
- Date of original purchase
- Selling dealer
- Nature of service problem and steps or service performed

Dealer representation excluded

Airstream will not be responsible for additional representations or implied warranties made by any of its dealers or suppliers to the extent those representations are not a part of, or are contrary to, the terms and conditions of the basic Airstream Limited Warranty.

Consequential and Incidental damages

Airstream will not be responsible for any consequential or incidental expenses or damages resulting from a defect. Incidental expenses include, but are not limited to: travel expenses, fuel, oil, road tolls, lodging, meals, telephone bills, loss of work, goodwill and loss of use of the trailer. Some examples of consequential damages would be: loss incurred by accident or fire, stained curtains due to rain leaks or delaminated floor caused by a plumbing leak.

Conditions

You must ensure that your trailer has had an Annual Service within 90 days before or 60 days after each anniversary of the original date of purchase. The Annual Service must be carried out in accordance with the requirements of this handbook. You will be responsible for any charges made for an Annual Service. If the Annual Service is performed by an authorized Airstream Dealer then Airstream warrants that the Annual Service has been performed correctly. If the Annual Service is performed by an unauthorized repairer or service centre Airstream will not be obliged to perform any work under this warranty (insofar as it relates to defective or faulty work or defective Annual Service).

If any repairs are identified as being necessary during an Annual Service or otherwise, Airstream will only pay for Warranty work performed by an authorized Airstream Dealer. The trailer must be made available to an authorized Airstream Dealer within 6 weeks of the date the repair need was identified for the work to be carried out. The cost of transporting, towing or moving the trailer by any means to and from the place of the repair is the responsibility of the owner.

Warranty transfer

All new trailers must be registered with Airstream within 6 weeks of purchase as new.

What to do if you require assistance

Should you have an enquiry or require assistance with a problem we hope that this guide will be of assistance to you.

1. Check the Owners Handbook, paying particular attention to the fault finding advice at the back of the book.
2. Contact your supplying dealer for assistance.

Service Inspection

In order to comply with the warranty, you must have your trailer inspected and serviced at least once per year. We highly recommend that you have your trailer serviced by an Airstream Dealer. Authorised dealers have the ability to order approved parts and ensure that any product upgrades which may be available for your trailer can be offered to you and carried out as part of the service. In the unfortunate event that an issue requires attention under warranty, then an Airstream Dealer is able to submit a warranty claim for processing, and deal with the issue for you from start to finish.

All of our Airstream Dealers are provided with up to date technical information and have access to current repair methods giving you peace of mind that any defect has been repaired effectively. It is important that the Service Inspection Record is updated. Should proof of service be requested at any time you will need to produce a copy of the service invoice, therefore please keep this for your records.

Failure to provide proof of service may invalidate the warranty and the transfer of the warranty on the change of ownership. The inspection should take approximately 2-4 hours and will cover the areas dealt with in the annual service check list. Any areas requiring service and/or maintenance will be highlighted by your dealer and we recommend that you authorize any necessary work to be carried out. Note: It is essential, to validate the warranty, that an annual inspection be carried out by an authorized Airstream Dealer covering the items listed.

B7 – Warranty

The basic Airstream Limited Warranty is transferable to subsequent owners for the duration of the warranty period.

Changes in design

Airstream Inc. reserves the right to make changes in design and improvements upon its product without imposing any obligation upon itself to install the same upon its products already manufactured.

Explanation of Airstream Limited Warranty

The Airstream Limited Warranty is a separate document, which will be filled out by the dealer and presented to the owner during delivery of a new unit.

The Limited Warranty must be presented to a dealer to obtain warranty service. It should be kept in the trailer during the warranty period.

Exclusions

Normal Wear – Items such as tyres, curtains, upholstery, floor coverings, window door and vent seals will show wear or may even wear out within the two year warranty period depending on the amount of usage, weather and atmospheric conditions.

Accidental damage – Issues arising from accidental damage are not covered under the manufacturer's warranty and subsequently a warranty claim for such would not be authorized.

Abuse – Lack of customer care and/ or improper maintenance will result in early failure for which neither Airstream, or its dealers can be held responsible. No liability will be accepted for damage caused by willful damage, negligence, intrusion of foreign or harmful matter, over-heating, freezing, failure to follow user instructions set out in this manual or alteration or repair of the Airstream without prior approval.

Inappropriate Use - Airstreams covered by this warranty shall not be put out to hire, reward, or any other commercial use, nor be used for any event, race or purpose or subjected to any condition which could reasonably be foreseen to cause or result in damage or excessive wear and tear.

Exposure – Aluminium oxidises if subjected to prolonged exposure to moisture, salt air, or corrosive air-borne pollutants without protection, such as the clear coat lacquer on an Airstream. Extremely hot or direct sunlight will deteriorate rubber and fade curtains and upholstery. Conditions of this nature, although they may be normal for the area, are beyond Airstream's control, hence any damage caused by exposure becomes the responsibility of the owner.

It is the responsibility of the owner to take such preventative measures as are necessary to maintain the exterior caulking and sealer of their trailer, to wash and maintain their trailer as instructed in the Owner's Manual and to store it appropriately to provide shelter from adverse exposure.

It is the responsibility of the owner to use reasonable, prudent care to prevent foreseeable secondary damage from rain, plumbing leaks and the natural accumulation of moisture internally, which can cause delaminated floors, stained upholstery, carpeting, mould formation etc. Mould is a natural growth given certain environmental conditions and is not covered by the terms of the Limited Warranty. Use of the heating system on low setting during winter months as per the heating system manufacturer's operating instructions will reduce the risk of freezing and other moisture related damage.

Overloading – Damage due to loading, either beyond capacity or improper load distribution, is beyond Airstream's responsibility. Do not overload your vehicles (towcar and trailer) in excess of the permitted weights, see Section A of this Owner's Manual. Load distribution in the trailer has a definite effect upon the towing characteristics and safety, refer to the advice given in Section C2. Reasonable cause to believe damage has been caused by improper loading, hitch set up or improper driving of the outfit could void the Airstream warranty.

Warranty jurisdiction

This warranty shall be governed and construed in accordance with the laws of England/ USA and the parties irrevocably submit to the exclusive jurisdiction of the courts of England/ USA.

Section C – Departure & arrival



Entry door operation & locks	C1
Packing lists	C2
Loading	C3
Hitching up	C4
Departure checks	C5
Arrival	C6
Travel abroad	C7

C1 – Entry door operation & locks

SECURING THE ENTRY DOOR

Before towing your Airstream, secure the main door by locking both the door handle and deadbolt from the exterior using the keys. For instructions on how to properly lock the doors, see below.

! WARNING. BEFORE TOWING, the main door handle and deadbolt must both be locked from the exterior using the keys. Never lock them before shutting the door. Failure to fully lock both the handle and deadbolt using the keys may result in the door vibrating open during travel.

MAIN DOOR

Close and lock the door from the exterior using the keys in the following order:

1. DOOR HANDLE: Insert the ROUND KEY and rotate it counterclockwise until it stops and an audible CLICK is heard; rotate the key back approximately 1/4-turn to the vertical position to remove it.
2. DEADBOLT: Insert the SQUARE KEY and rotate it counterclockwise until it stops and an audible CLICK is heard; rotate the key back approximately 1/4-turn to the vertical position to remove it.

Pull on the handle to verify the door is secured.



The orientation of the latch assembly shown in the image to the left may be inverted on your trailer, depending on the direction the door opens.

! CAUTION. To avoid damaging the door jamb and latch assembly, ensure the deadbolt is retracted before closing the door.

The main door has a hold-back that secures it to the side of the trailer when the screen door is in use. To use the hold-back, gently push the door into the spring operated slide to latch it; slide the hold-back to release.

For lubrication and out-of-adjustment issues, see Section D8.

The transporting of people in the trailer puts their lives at risk and is illegal. The trailer does not have seat belts, therefore, it is not designed to carry passengers.

⚠ WARNING

**Never transport passengers inside a trailer.
Towing a trailer with passengers inside is unsafe
and could result in death or serious injury.**

SCREEN DOOR

The screen door is secured to the main door by a slide bolt-type latch. It can be operated independently by releasing the slide bolt and swinging the screen door away from the main door.

! CAUTION. Always reattach the screen door to the main door prior to closing the main door; otherwise, damage may occur.

ON THE ROAD PACK & OPTIONS

*(available from your Airstream dealer,
Equipment needed varies by model)*

- Spare Airstream keys
- LPG cylinder(s) – full
- Leisure battery/ batteries
- Portable fresh water container (* 40litre Aquaroll)
- Portable waste water container (* Wastemaster)
- Spare wheel assembly
- LPG hoses to suit the cylinders you are carrying
- Mains water connection hose
- Submersible water pump for portable water container
- Hose or length of rigid pipe for filling portable water container
- Waste water connection hose
- 25amp electrical site connection cable
- Corner steady winder handle
- Airstream entrance doormat
- 13amp socket adaptors for mains hook up lead
- Polarity changeover lead
- LPG hoses for other European countries you may visit

DOCUMENTS

- This Owner's Manual
- Remainder of Owner's pack, including appliance operating instructions
- Warranty documents
- Weighbridge record slips
- Vehicle registration documents
- Driving licence
- Towcar insurance documents
- Airstream insurance documents
- Breakdown insurance documents
- Passport
- Medical insurance documents
- Pet insurance documents

PERSONAL TOOLKIT & SPARES

(recommended items you will need to purchase)

- Number plate for the rear of the Airstream
- Wheelclamp(s)
- Hitchlock
- Jack
- Axle stand
- Wheel chocks
- Wheel leveling devices
- Torque wrench with **19mm** socket (534 or 684) or **21mm** socket (251B)
- Tyre pressure gauge
- Tyre foot pump
- Towing mirrors
- Fire extinguisher
- Fire blanket
- Small step ladder
- Warning triangle
- Toolkit incl. screw drivers
- First aid kit
- Spirit level
- Spare 12v fuses
- Spare bulbs for road lights – see Section D7
- Spare 12v circulation pump for Alde heating
- 1 litre bottle containing pre-mixed glycol/ water to 50/50 concentration
- Toilet paper – low glue content paper, for caravan use
- Spray silicone and WD40 – for lubrication

DOMESTIC

- Adaptors for 230v , if traveling in other countries
- Chargers for phones, cameras, laptops etc.
- Camera, handycam, film
- Medications and toiletries
- Sunglasses and suncream
- Kitchen equipment and food
- Clothes and other personal effects

Pack so that you can reach documents, tools and other essentials without completely unpacking.

Keep a spare set of keys for the towcar in a separate pocket or secure place.

C3 – Loading

FIRST PRINCIPLES

1. First, check what allowance you have for loading 'personal effects' in the Airstream. This will be stated in the sales brochure.
2. Then compare this to the total weight of the items you wish to take with you. Please take care to ensure that you have allowed for all the masses of items you intend to carry in the Airstream. There is no substitute for weighing everything you wish to take with you, before you start loading, at least the first time you take the Airstream away for a trip.

Personal effects' are defined as everything aside from what is included in the 'essential habitation' allowance. It therefore includes items such as the water and waste water containers, fresh and waste water connection hoses, wheel chocks/ levelling ramps etc.

Commonly the weight of items you wish to take will exceed the personal effects allowance for items you can load in the Airstream. This is the right time to reduce the quantity of items you take, or choose lighter alternatives.

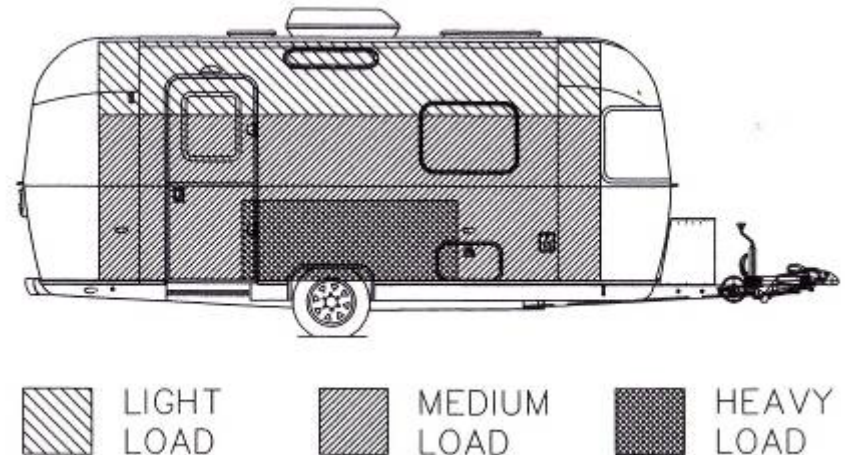
! CAUTION. Exceeding the user payload allowance risks the Airstream being overloaded. **! WARNING.** Under no circumstances should the MTPLM (maximum technically permissible laden mass) be exceeded.

3. Next, consider what scope you have to place items in the tow car, as opposed to the Airstream. Weighty items, like tools/ cases of drinks or books are best carried in the car, preferably forward of the rear axle line, leaving the Airstream to cope with the bulkier items such as clothing, bedding and empty fresh/ waste water containers.

LOADING THE AIRSTREAM

When loading items you have selected for stowage in the Airstream, try to:

- Evenly distribute the weight of the load around the interior, with any heavy items placed low (close to the floor) and as near to the axle(s) as possible. Stability reduces the further away heavy loads are placed from the centre of gravity (the centre of gravity is just forwards of the axles).
- Keep the weight on each side evenly balanced, so each wheel of the Airstream carries approximately the same weight.
- Only put lightweight items in roof lockers.
- If there are large voids beneath fixed beds, fill these with care – if the bed is positioned to the rear, excess load in the under bed storage space will reduce noseweight and could lead to sway problems. 30kg of additional load in a rear under bed storage space is a sensible maximum.
- Make sure all heavy and/or voluminous items and movable items are well secured before travelling.



! CAUTION Damage to your trailer caused by overloading, or mounting heavy objects on the rear is considered abuse and is not covered by warranty.

TRAVELLING WITH FLUIDS IN ONBOARD TANKS

Water weighs 1kg per litre. It is important to consider the location of any tanks before traveling with any fluids in these tanks.

! CAUTION You should travel with tanks either empty, or full. Travelling with water surging around a half filled tank can have a pendulum effect and cause sway and snaking problems and is therefore not recommended.

Fresh and grey water

The 534 & 684 European specification Airstreams have an onboard fresh water tank with capacity of 40 litres, hence when full, the fluid contents will weigh 40kg. These models have no grey water tank.

The 25IB European model has a larger onboard fresh water tank, with capacity of 104 litres, hence when full the fluid contents will weigh 104kg. This model also has a 121litre grey water tank.

The 'essential habitation' allowance, included in the MRO, already assumes that the fresh water tank is full, hence 40kg of fresh water is already included in the 534/ 684 payload calculation (or 104kg for the 25IB).

By emptying the onboard fresh water tank before you travel, using the drain down stopcock provided (position varies, ask your dealer), you can therefore reduce the actual laden weight, by the amounts shown above.

Where there is an onboard grey water tank (25IB model), this is assumed to be empty for the MRO calculation. The grey water tank should be emptied before travel.

Some users with larger tow cars may prefer to travel with the fresh water tank full, so a supply of water is available for rest stops. Before choosing to travel with the fresh water tank full, check the position of the fresh water tank and what effect the additional weight of water may have on noseweight. If the fresh tank is positioned forwards of the axle towards the front of the trailer, travelling with the fresh water tank full will increase noseweight. In this case you should only travel with the fresh water tank full if the resulting noseweight does not exceed the noseweight limit of your towcar or towball.

WC cassette

Generally this is positioned to the rear. This tank is best emptied prior to travel.

C3 – Actual laden weight & nose weight

ACTUAL LADEN WEIGHT

You should visit a weighbridge periodically when loaded for travel to check that the weights of the tow car and Airstream outfit do not exceed the various weight limits.

It is all too easy for other family members to keep adding extra items!

You must not exceed either the MTPLM of the Airstream, the gross vehicle weight of the car, or the gross train weight (laden weight of car and Airstream combined).

Keep a copy of a recent weighbridge ticket in your towcar as proof in case you are stopped by Police.

On shorter weighbridges, you will need to weigh the trailer and car separately to know their combined weight, which should be less than the Gross Train Weight.

Position the Airstream on the weighbridge so the tyres of the axle(s) and the jockey wheel at the front will be on the weighbridge platform.

Then un-hitch the Airstream and drive the car forwards so it is not loading the weighbridge platform.

ACTUAL LADEN NOSE WEIGHT

Once the Airstream is loaded, check the nose weight.

Generally, more nose weight improves stability (weight is better at the front of a trailer than at the rear).

The maximum permitted vertical static loads for the coupling and drawbar for European specification Airstreams is 150kg for the 534/ 684 and 350kg for the 251B.

However the nose weight limits stated by your towcar and towball manufacturer may well be less than this. Check the maximum load permitted by the towball manufacturer, termed the 'S' value, marked on the towball.

The correct nose weight to try and achieve is therefore the lesser of the maximum allowed for the Airstream, or the nose weight limit for your towcar or towball fitted to it.

MEASURING NOSEWEIGHT

The Airstream should be un-hitched from the towcar and standing level on horizontal ground, with corner steadies raised and handbrake applied.

Place bathroom scales under the coupling head, with a piece of wood fitted between the coupling head and the scales. The piece of wood should be of a length so the Airstream is level with the ground.

Place the piece of wood into the underside of the coupling so it is suspended over the scales. Turn the jockey wheel to lower the front of the trailer, so the piece of wood touches the scales. Keep winding until the jockey wheel is clear of the ground. Record the stated weight.

If the measured laden nose weight of the Airstream is too heavy for your towcar, consider reducing or redistributing loads, or considering a car with a higher nose weight capacity.

! WARNING – Never add excess heavy items to the back of the trailer to reduce noseweight, for example under a rear bed locker, or in a rear wardrobe. Weight behind the axle can magnify any sway that may occur when passing trucks or in gusty winds, increasing the risk of snaking developing.



Hitching up is one part of the departure procedure.

Following the same sequence of checks each time you hitch up and depart will help ensure nothing is forgotten, so the outfit is fit for the road.

C4 – Hitching up

CAR POSITIONING

1. Check the parking brake handle on the Airstream is in the vertical (on) position.
2. Check the 4 corner steadies are in the fully wound up position, into the Airstream chassis.

! CAUTION Always raise the corner steadies before starting the coupling up process. Leaving the corner steadies wound down will overstress the jockey wheel and interfere with the stabilizer operation. If the Airstream is towed away with the corner steadies wound down, particularly the rear ones, the resulting leverage would seriously damage the corner steadies and floor.

3. Check your tow ball is the correct size (50mm), undamaged, clean and free of grease. If the towball is new, remove any paint or anti corrosion coating using fine wet and dry paper, or this will accumulate on the coupling friction pads. The towball surface must be 'bright metal'. Use thinner or spirits to wipe it clean.
4. Check that the jockey wheel tyre is facing aft and parallel to the direction of travel. Manoeuvre the Airstream if necessary so the jockey wheel faces aft.
5. Turn the jockey wheel crank handle to raise the Airstream coupling above the height of the towball on your towcar.

If the jockey wheel has been clamped in too high a position, you may not be able to position the coupling above the towball. You will need to lower the front corner steadies, wind the jockey wheel fully up, loosen the jockey wheel clamp, drop the whole jockey wheel assembly so the wheel touches the ground and tighten the clamp. Then you can turn the jockey wheel crank handle and raise the corner steadies.

6. Reverse the tow car up to as near the coupling as possible, with practice you should be able to position the towball on the car within a few inches of the coupling head on the Airstream.
7. Ensure towcar is left in neutral (manual transmission) or park (automatic transmission) and engage the car parking brake.
8. Turn the jockey wheel handle to lower the coupling, so it is just over the towball. You will likely need to manoeuvre either the coupling or towball a small distance to line them up exactly.

9. On smooth ground, you may be able to manoeuvre a single axle Airstream by hand. To do this, first push the parking brake on Airstream down to the horizontal (off) position.
10. Then take hold of the grab handle on the front of the Airstream and manoeuvre the Airstream so the coupling head is directly above the towball. Then re-apply the parking brake on the Airstream.

! CAUTION Do not move the Airstream by pulling on either the stabiliser handle of the coupling, or the parking brake. This can damage the internal components. Manoeuvre the Airstream only using the grab rails fitted to the front and rear of the Airstream.

11. On uneven or soft ground, or if the Airstream is too heavy for you, you may need to manoeuvre the towball by moving the car. Again with practice this will become easy.

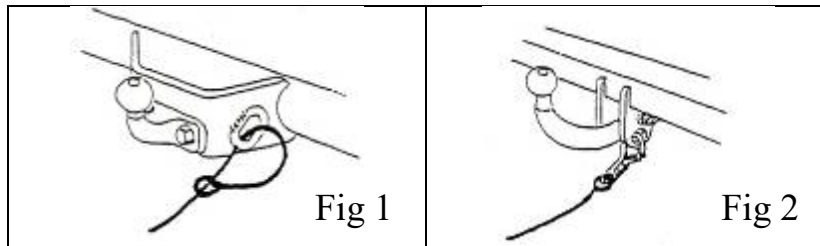
BREAKAWAY CABLE

Once the coupling is positioned just above the towball and the Airstream parking handbrake is applied, you are ready to connect the breakaway cable.

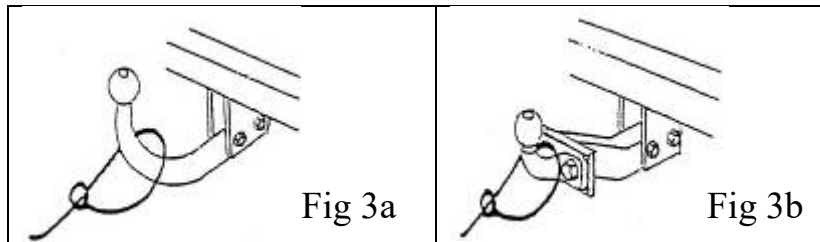
The purpose of a breakaway cable is to apply the trailer's brakes if it becomes separated from its towing vehicle. Having done this, the cable assembly is designed to part, allowing the trailer to come to a halt away from the tow car.

The fitting of a breakaway cable is a legal requirement in many countries, precise requirements may differ in terms of how the cable can be attached and fines may be levied by police. Always check the requirement with your Airstream dealer.

If the towbar has a designated attachment point (first 2 images below), either pass the cable through the attachment point and clip it back on itself, or attach the clip directly to the designated point.



Where there is no designated attachment point, if the towball is fixed, loop the cable around the neck of the towball in a single loop. If the towball is detachable (Fig 3b), you must seek guidance from the towbar manufacturer or supplier.



When the breakaway cable is attached, check that it runs as straight as possible, cannot snag (on the trailer coupling head, jockey wheel, or other accessory) and that it is not excessively slack, so it drags on the ground.

Check that there is sufficient slack in the cable to allow the towcar and trailer to fully articulate without the cable ever becoming taut and applying the brakes.

COUPLING PROCESS

- Once the breakaway cable has been connected, continue with the coupling process.
- Ensure the handle of the coupling on the Airstream is raised to the highest position possible (right hand image below labelled 'open').



- Turn the jockey wheel crank handle to lower the Airstream coupling onto the towball until it fully engages with the towball. This will cause the car rear suspension to drop.

The tow ball head should be no longer visible once the coupling is set correctly.

- Push down on the stabiliser handle to lock the coupling and activate the stabiliser. The stabilizer handle should now be in the down (horizontal) position.

! CAUTION Wind the jockey wheel down slightly at this point (after engaging the stabiliser). Verify that the rear of the towcar starts to rise without the coupling coming off the towball. This verifies that the coupling is locked securely onto the tow ball.

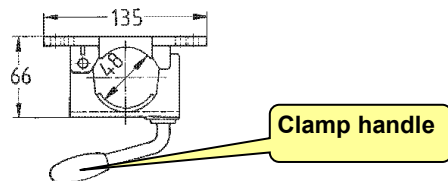
C4 – Hitching up

RAISING THE JOCKEY WHEEL

Turn the jockey wheel winder handle to fully raise the inner tube of the jockey wheel, until the fork arms holding the wheel sit fully within the notches in the outer tube of the jockey wheel.



Then turn the clamp handle to loosen the clamp holding the outer tube of the jockey wheel. When the clamp is loose, lift the entire jockey wheel assembly until the wheel sits tight under the A frame cover, so it is parallel to the direction of travel. Then tighten the jockey wheel clamp handle to lock the jockey wheel in the 'up' position.



! CAUTION. Always raise and secure the jockey wheel before travelling. Travelling with the jockey wheel in the down position so it is in contact with the road will cause excess wear to the tyre of the jockey wheel. It will also transmit stresses down the drawbar which could cause damage to the drawbar where it meets the chassis rails.

RELEASE PARKING BRAKE

Push the parking brake handle down (to horizontal), to release the parking brake.

! CAUTION Leaving the handbrake on will cause the brake hubs to overheat risking wheels locking and failure. Always check the handbrake is off before travel.

ELECTRICS

Connect the 13 pin male plug on the Airstream to the corresponding female socket on the back of your tow car.

! CAUTION The towcar electrical connection cable should not be able to touch the ground. The cable can be looped once over the coupling to take up the slack, but do not coil the cable around the handbrake.

Turn on the road lights on your towcar. Walk all around the Airstream to check the Airstream road lights are operational.

TYRES

Visually check the condition of the tyres, looking particularly for small splits in the tyre side wall.

Then check tyre pressures on the Airstream and tow car, using a hand held tyre pressure gauge (keep this in your towcar, together with a tyre foot pump to add air to the tyres if necessary). See Section E11 for recommended tyre pressures on the Airstream.

WHEEL NUT TORQUE

Checking the tightness of wheel bolts or lug nuts, using a torque wrench, is recommended each time before you travel.

- 534 & 684 models: Use a torque wrench set to 85lbs/ **115 Newton metres** for alloy wheels, fitted with a long carry **19mm** socket.
- 251B model: Torque each lug nut to 110 Ft/ lbs (**149Nm**) for alloy wheels, your torque wrench will need to be fitted with a **21mm** socket.

! CAUTION The torque of the wheel nuts **MUST** be checked again at 10, 25 and 50 miles of travel after wheels have been fitted i.e. on a new trailer, or re-fitted after service (when all wheels are removed to check and clean brake hubs), or if a wheel is removed to replace a tyre.

INTERIOR

- TV antenna lowered
- Locking pin fitted to secure TV bracket(s)
- Satellite dish (if fitted) lowered
- Loose articles securely stowed, incl. glass plate in microwave (remove)
- Cupboard and locker doors closed, drawers closed
- Shower door secured, shower ceiling extract fan closed
- Fridge set to 12v operation and fridge/ freezer door lock(s) engaged
- Table secured and catch to stowage compartment engaged (532 model)
- Windows closed (and latches engaged)
- Rooflights closed
- Fresh water tank drained down, if stopcock internal
- WC cassette emptied
- Bulky items from outside stored inside (like water containers)
- Control panel POWER button turned off (unless Alde heating to be used)

EXTERIOR

- Trailer entrance door locked (both locks)
- Entrance step stowed
- Connecting cables, hoses etc. all stowed and compartment doors locked
- WC cassette emptied
- Gate valve to waste piping opened and left in open position
- Verify Zipdee awning arms are locked for travel
- Verify TV antenna and satellite dish (if fitted) is lowered
- Verify all rooflights and windows are closed and latched
- Corner steadies raised
- Number plate fitted to rear of Airstream
- Visual and inflation pressure check of tyres
- Wheel nuts torque checked following wheel change/ service/ storage etc.

DRAWBAR AREA

- LP cover latch engaged, locked and bungee cords fitted
- Coupling locked with stabiliser handle in the fully down position
- Breakaway cable fitted
- Trailer handbrake in the off (fully down) position
- Jockey wheel fully raised and clamp handle tightened
- 13pin electrical towing connector plug connected to towcar

TOWCAR

- Towing mirrors fitted
- Tyre pressures checked

FINAL CHECKS

- Turn car road lights on, then verify all trailer lights are working
- Walk around Airstream – all windows closed and entrance door locked
- Distant view of Airstream roof – all rooflights & equipment closed/ stowed

MOVING OFF CHECKS

- When satisfied all tasks are complete, proceed to move the outfit off the pitch.
- When onto hard ground, stop to test the brakes.
- Check the ground when the outfit was parked for forgotten objects.

WHEEL NUTS & BRAKES

The torque of the wheel nuts should be re-checked using a torque wrench **after 10, 25 and 50 miles of travel:**

- on your first trip following collection of the Airstream
- after winter storage
- after servicing
- following replacement of a wheel

The brake system should be checked after 500km/ 300 miles when the Airstream is taken on its first run when new, or after annual service.

C6 – Arrival

SUITABILITY OF PITCH

On arrival at the campsite, inspect the allocated pitch for obstructions, the layout of services (proximity to any drainage/ water/ electrical services), the gradient and ground conditions, before positioning/ reversing onto the pitch.

Where possible, choose campsites or camping locations where the Airstream can be parked on level, hard ground. Hard standing is ideal for this reason.

Be wary of positioning the Airstream on uneven or soft ground, for the following reasons:

Uneven ground. Uneven ground can cause problems hitching up, if sloping ground results in the tow ball of the tow car being lower or higher than the normal coupling height. Carry a jack so you can safely lift the front of the Airstream if required.

Soft ground. The nose weight of an Airstream tends to be higher than for a white box type caravan of similar size. Higher nose weights can cause problems with jockey wheel tyres sinking into soft ground. In addition, the wheels of the driven axle(s) of the towcar will tend to spin on soft ground.

Grass sites should be checked to identify possible soft ground before you proceed to take the Airstream onto the site.

After positioning/ reversing onto the pitch, check again that the proximity to any services (drains/ water/ electricity) is acceptable, that hoses & cables will reach.

LEVEL SIDE TO SIDE

Side to side levelling is best achieved by manoeuvring the Airstream onto wheel ramps or similar levelling devices, when it is still connected to the tow car.

For twin axle Airstreams, you will need two small ramps each side. For single axle models, a larger adjustable device can be used.

A spirit level placed on the entrance step is a useful aide when levelling.

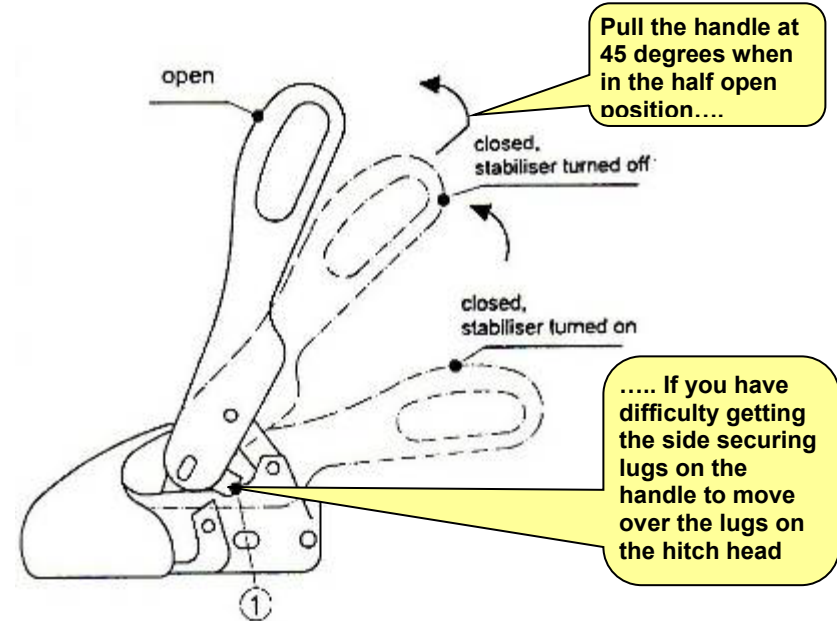


UN-COUPLING

Once the Airstream is in position and levelled side to side, engage the parking handbrake by lifting the parking brake handle to the vertical 'on' position.

Un-couple the electrical 13pin cable and the breakaway cable.

Lift the stabiliser handle to the fully up (open) position before the jockey wheel is wound down fully to the ground. Using one hand, lift and hold the handle of the stabilizer coupling to the highest position possible.



Only when the stabiliser handle is in the fully up/ open position, should you wind the jockey wheel down to touch the ground and start lifting the hitch head off the towball.

If the hitch is being subjected to vertical pressure, before the stabiliser handle is lifted, this can prevent the stabilizer handle lifting and the coupling disengaging.

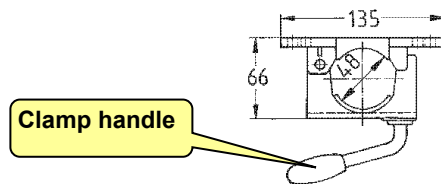
For the same reason, do not lower the front corner steadies until the stabiliser handle has been lifted to the fully up position and the jockey wheel wound down to lift the hitch off the towball.

LOWERING THE JOCKEY WHEEL

Follow the instructions below to lower the jockey wheel, to raise the coupling off the towball, until it is clear of the top of the towball.

Loosen the jockey wheel clamp handle and lower the whole jockey wheel assembly until the jockey wheel tyre is approximately 30-50mm from the ground. Tighten the clamp handle.

! TIP Don't drop the jockey wheel assembly fully to the ground. Stop when the tyre is 30-50mm above the ground. This will make it easier to hitch up again later.



Then turn the jockey wheel winder handle so the inner tube extends down to touch the ground.

Minimise this distance to reduce the risk of damage. The more inner tube of the jockey wheel is wound out, the greater the risk of it bending.



Finally drive the towcar forwards.

C6 – Arrival

LEVEL FRONT TO BACK

Level front to back by using the jockey wheel to raise or lower the front of the Airstream, sighting by eye or using a spirit level if desired.

When the trailer is level, lower the 4 corner steadies using the winder handle provided to 'steady' the levelled Airstream.

UNPACK & SECURE

Unlock external compartment doors to remove equipment including water, waste and electrical hoses and cables.

Open trailer entrance door and pull out the entrance step.

Open windows and roof lights as desired to provide natural through ventilation.

Fit a wheel clamp and hitch lock as a security precaution.

PARKING BRAKE

For periods up to say 2 weeks, which will cover normal use for trips/ holidays etc., the parking handbrake can be left in the 'on' position.

For longer periods, for example when in storage, leaving the parking handbrake in the 'off' position, will keep the brake shoes off the brake drum and prevent any possible corrosion of the brake surface.

However before leaving the Airstream in storage with the parking handbrake in the 'off' position, first ensure that the site is reasonable level, the corner steadies are wound down and the wheels are chocked.

STABILISER HANDLE

When the Airstream is un-coupled and parked, the coupling stabiliser handle should be put in the down (horizontal) position.

This will prevent other well-intending people using the stabiliser handle as a grab point when helping to manoeuvre the Airstream, which risks damaging the stabiliser.

Either push the safety ball firmly into the towball space (**left photo below**) and slowly lower the stabiliser handle.



Alternatively, insert a finger under the coupling head as shown in the **right photo above** and pull the movable hinged jaw of the coupling forwards, whilst lowering the stabiliser handle.

SPEED LIMITS

Research permitted speeds and road laws in the countries you intend to visit before you travel.

OTHER ROAD LAWS

Other common road laws within some EU countries include:

- requirements for use of winter tyres in winter months
- restrictions on use of outside lanes of dual carriageways and motorways when towing
- specific requirements for connection of breakaway cables etc.

Check what other requirements may exist BEFORE you travel, by speaking to your local caravan club helpline.

INSURANCE

If you are travelling outside your country of residence, you should notify insurers prior to departure and confirm if any additional cover is required – the minimum necessary is usually a “green card” covering legal liability to 3rd parties.

Full comprehensive cover is preferable, most insurance companies will charge an extra supplement for this. You may also wish to have a tracker device fitted to your tow car, depending on its value.

BREAKDOWN ASSISTANCE

If travelling outside your country of residence, again normally additional cover is required.

CHOOSING CAMPGROUNDS

When making a booking for a campsite, ask what electrical supply is available (in amps). This will determine what mains electrical equipment can operate, or operate simultaneously, without tripping the campground fuses.

Some private campgrounds have much lower rated electricity supplies, offering only 3-5amps, which may not be sufficient for operating more power hungry devices such as air conditioning.



Section D – Maintenance



Modifications	D1
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D1 - Modifications

Generally, any modifications of the Airstream, by anyone other than an authorized Airstream dealer, are not recommended.

CAUTION. Airstream Inc. reserve the right not to approve a warranty claim if the original construction of the Airstream has been tampered with or repaired other than by Airstream's European distributor or an Airstream dealer or service workshop approved by them.

Never conduct 'do it yourself' modifications on electrical or LPG (liquid petroleum gas) systems.

Do not allow modification of electrical or LPG systems and appliances except by qualified persons.

Any replacement parts for an appliance shall conform to the appliance manufacturer's specifications and should be fitted by him or his authorised agent.

The chassis is designed and built to precise tolerances and must not be drilled or welded. When fitting spare parts to the chassis including the axles, brakes, coupling etc., only genuine parts from the original chassis manufacturer may be used. This is to ensure the type approval retains its validity in accordance with national and international regulations.

Regular washing of the outside of the Airstream is essential to keep it in good condition. You should wash the exterior of the Airstream not less than every month and apply wax in the Spring and Autumn. In coastal areas where the finish is exposed to salt air, or in polluted industrial areas, we recommend more frequent cleaning and waxing.

Ideally however you should wash the exterior after each trip.

This is especially necessary in winter to remove road salt. Salt left on the bodyshell will speed corrosion of sharp edges of aluminium where the clearcoat weathers quickest.

It is also important to remove sap, resin, asphalt and other sticky residues as soon as possible after they appear by washing and waxing. Sunlight and time will bake harden these materials, making them almost impossible to remove without heavy buffing.

Wash the Airstream in the shade, or on a cloudy day when the aluminium is cool.

Pre-rinse. First rinse all grit and large particles of dirt from the surface. Spray all surfaces with fresh water using a hose with spray attachment.

Wash. Then remove oil, grease, dust and dirt by washing. It is best to again use a hose, connected to an auto style broom attachment with soft bristles (preferably with extending handle, for reaching the upper parts of the Airstream shell), thus ensuring a constant supply of fresh water onto the aluminium.

Fill a bucket with non abrasive soap or detergent (diluted according to manufacturer's instructions). Dip the broom in the soapy water as required to keep the broom head soapy and then apply to the Airstream without excessive pressure.

Brush each aluminium panel in the direction of the grain of the metal, this helps prevent any fine scratches that occur being visible. Never rub hard on the coating.

CAUTION: Do not wash the Airstream using a sponge and bucket, each time you return the sponge to the bucket, you will transfer dirt particles into the wash water, which then will be transferred to the sponge and scratch the aluminium as you rub the sponge on the Airstream body. Do not use abrasive polishes or solvents.

Rinse. Next rinse the cleaned trailer thoroughly with clean water, using the hose with spray attachment as per the initial rinse.

Dry. Drying with chamois or soft cloth may prevent streaking and spots, however **CAUTION, if there are any small dirt particles on your cloth, this could scratch the metal panels or window glass.** Therefore, air dry when possible and if you must wipe dry or you want to apply polish, always wipe with the grain of the metal.

Wax. After washing and drying, applying a wax will increase the life of the finish, protect the shell from minor scratches and make subsequent cleaning easier.

The caulking and sealant used in external seams and joints such as end shell segments and around window frames, light bezels, the rub rail (at floor level) etc. should be checked regularly. If this material has dried out and become cracked, or if a portion has fallen out, it should be replaced with fresh materials to prevent possible rain leaks. Caulking and sealants are available from your Airstream dealer.

TIP: Internal inspection following external washing is good practice to check for any possible leaks. Clues would be water running down the internal surfaces or pooling on flat surfaces.

D3 – Maintenance schedule

ISSUE	USER CHECKS		SERVICE ENGINEER Annually
	Each trip/ monthly	Annually	
Tow car	Clean towball - free of paint/ dirt/ grease. Tyre inflation pressures	13pin socket on towcar - inspect pins, spray silicone grease, road light test Towball - visual check for rust/ stress, torque bolt connections	
Tyres	Tyre visual condition & inflation pressure		Remove wheel/ tyre assemblies, including spare wheel. Inspect all tyres closely for uneven wear, cracks, bulges etc. Check tyre inflation pressures. Check tyre age (DOT code).
Wheels	Wheel nut torque		Wheel nut torque
Suspension			Ride height - visual check before wheels removed, then measure drop arm positions after removing wheels to check suspension not reduced Shock absorbers - visual check for oil leakage & evidence of stress Lubricate - grease nipples on torsion axle
Hitch			Hitch damper action - verify hitch head rebounds when pushed in, no evidence of oil leakage. Lubricate - grease nipples top of hitch casing (x 2) and handbrake spindle (x1) Friction pads in hitch head - check wear indicator, visual check for dirt build up, clean with 150 grit/ brake cleaner
Brakes			Bearings. Small brake (up to 1500kg) - check wheel play. Over 1500kg brake - remove, wash & re-pack taper roller bearings in grease. Brake linings. Remove all brake drums and check wear to lining of brake shoes (min 2mm). Replace 'one shot' hub nuts and torque to specified setting. Wheel brake. Adjust wheel brake adjuster nut so each bowden cable pulls out 5mm. Brake rod turn buckle - adjust brakes to remove freeplay, so brake ratio bar just touches back of hitch drawtube. Handbrake. Function test. Breakaway cable. Check for wear.
Chassis			Visible check of bolts where A frame and axle connect to chassis rails. Corner steadies. Clean winder spindles and apply spray silicone.

D3

D3 – Maintenance schedule

ISSUE	USER CHECKS		SERVICE ENGINEER Annually
	Each trip/ monthly	Annually	
Water	Drain down water heater monthly if Airstream in continuous use Drain down if Airstream in storage and risk of freezing		Drain down cold & hot water systems. Clean water filters. Inspect O rings to spigot of water inlet socket. Inspect fresh water tank and clean as required. Remove water tank level sensor and clean metal probes. Air pressure test for leakage. Re-fill system, confirm pump auto shut off when filling onboard tank. Verify no leaks and no pump cycling. Drain down and leave winterised, unless agreed otherwise with customer.
Gas			Inspect LP hose condition. Replace O rings. Check tightness of hose connections. Check expiry dates on LP hoses. Gas soundness test & certificate.
Heating	Heating system fluid level in expansion tank		Heating system fluid level in expansion tank. Test strength of Glycol mixture. Remove boiler lid & visually check housing for signs of corrosion, leaks, over burning, bulging/ frost damage. Boiler flue air inlet and exhaust unobstructed, clean and connections tight. Function test, bleed system as required until hot throughout. Additional works every 5th year: <u>Drain down & replace heating system glycol mix</u>
Electrical	Leisure battery state of charge Smoke alarm function		13pin plug - inspect pins, spray silicone grease, road light test Additional works every 2nd year: Inspection, test & certificate on 230v installation 12v lights - replace any blown bulbs/ defective fittings Smoke alarm - vacuum to remove dust & replace battery
Appliances	Clean & lubricate toilet seal, clean toilet cassette	Clean cooker extractor filter, clean all appliances	Verify toilet flush, clean toilet seal Cooker - hobs, oven and grille ignite on gas. Fridge – Clean gas burner. Verify 230v and gas operation. Aircon – Clean drain holes to external casing, clean filters.
Interior			Drawer, cupboard & locker handles, catches & hinges, none loose. Window & blind operation Damp test at floor level around perimeter and adjacent to all 'wet' systems, shower etc.
Door/ window catches			Trailer entrance door & screen door, adjust fit & lubricate. Check window catch adjustment & lubricate. Lubricate locks to LP cover and compartment doors.

NOTE: The above schedule is provided as an aid to planning maintenance, but should not be relied upon as being all inclusive. Read the remaining sections of this Manual which incorporate more detailed maintenance recommendations for the different major components/ systems/ appliances.

Most owners do not possess expert knowledge of trailer systems and maintenance requirements, or have the time or inclination to undertake effective annual servicing.

It is strongly recommended that the Airstream is serviced not less than once a year by an authorised Airstream dealer.

Servicing should be undertaken annually up to 90 days before, or up to 60 days after the anniversary of the date of registration (purchase).

Your Airstream dealer will be familiar with all aspects of the construction of the Airstream, be able to undertake any works or repairs necessary and have all/ any necessary parts in stock.

A full list of tasks performed during a service can be provided by your Airstream dealer on request. A Service Certificate is usually provided on completion, listing the tasks performed.

Section M1 of this manual allows each service undertaken to be recorded, to build up a service history for you/ a future owner. Example:

<p>SERVICE</p> <p>DATE:</p> <p>Annual service carried out in accordance's with manufacturer's recommendations</p> <p>DEALER STAMP</p>
--

! CAUTION During the service, the wheels will be removed to service the brake hubs and inspect the tyres for splits etc. Customers collecting their Airstream after the service is complete are reminded to carry a torque wrench, as all wheels must be torqued again after 10 minutes/ 10 miles of travel, then again after another 25 minutes/ 25 miles of travel – wheel loss can occur!

Approaching winter brings the risk of frost and freezing temperatures.

Before the end of September, or at the earliest warning of frost, you need to decide how the Airstream is to be used and stored over the winter. You have 2 options:

1. Continued regular winter use. If you intend to use the Airstream regularly during winter months, with the water system filled and ready for immediate use, you will need to:
 - EITHER store the Airstream inside in a heated building,
 - OR it can be stored outside if you provide a permanent 230v electrical mains hook up and set the Alde heating to operate at all times, with the thermostat set to say minimum 5 degrees Centigrade.

This will ensure that the heating comes on if the ambient temperature nears or drops below freezing, to protect the systems freezing. It is also good practice in any event to prevent the accumulation of moisture internally and excess fluctuations in temperature.

If you choose this option, you need to be very confident of the heating remaining on continuously to give freezing protection. Can you be sure that the heating will not be tampered with - for example someone pulling out an electrical plug or similar?

2. Occasional or no winter use. If you intend to use the Airstream only occasionally in winter, or not at all, or do not have the ability to store the Airstream inside or provide a permanent 230v electrical supply, then you will need to winterise the trailer.

You will then need to re-commission the fresh water, waste water and 12v electrical systems each time you wish to use the trailer in winter months.

If you are in any doubt as to which option to choose, we would recommend you drain down the water system and follow the other precautions for winterising the trailer.

! CAUTION Failure to adequately protect against freezing, either by draining down the water and waste systems and removing the battery/ batteries, or setting the heating system to provide permanent freezing protection, risks damage to the systems and consequential damage to the trailer and this is not covered by warranty. Frost protection is the owner's responsibility.

DRAINING DOWN THE WATER SYSTEM

Disconnect the water supply externally (if connected).

Drain the internal cold water tank. Locate drain down lever below or above floor and turn through 90 degrees.

Drain the domestic hot water tank in the Alde boiler. Lift the yellow lever to the drain down point, which is usually positioned close to the Alde boiler.

Turn ON the water pump at the 12v digital control panel.

Open all taps in turn until no water flow. In the case of single lever taps, move the tap to midway between hot and cold and lift to the open position, then leave tap in open position.

Open all showers to 'on' position. Un-clip shower heads to internal and external showers (including pull out shower heads to wet baths, which should be pulled out fully).

Depress any hand spray levers while holding down into the shower tray/ onto the ground respectively, until there is no further water flow. Remove shower heads, shake water out and store.

Flush the WC until water flow into the bowl ceases.

Access the internal water pump(s). Remove caps to filter(s) near pumps and allow water to drain out. If there is no water pump tray fitted, you will need to place a shallow container under the filter first to catch the water. Leave the filter cap(s) off (ready to replace in Spring when re-commissioning).

Access the waste water bellypan compartment. Pull gate valve and leave in fully out (open) position, to drain any water from waste water piping.

Toilet: Remove WC cassette, empty completely, flush with clean water, leave to drain and then return to the trailer, or store indoors.

Fill P traps to galley sink, bathroom wash hand basin and shower tray with antifreeze, diluted to manufacturer's instructions.

! CAUTION If water is allowed to freeze in the system, serious damage to the water heater, pipework and pump will occur.

OTHER WINTERISING PRECAUTIONS

Remove the leisure battery/ batteries and store indoors in a cool dry place where there is no risk of freezing. Connect the battery/ batteries to a trickle charger during the winter storage period, to keep them fully charged.

! CAUTION Removing the leisure battery may trigger the satellite tracking system, if fitted, depending on the type fitted.

Clean out fridge and leave fridge door wedged open to ensure circulation.

Leave furniture doors and lockers open to allow air to circulate fully.

Remove soft furnishings including seat cushions, mattress, curtains and store inside in a heated space. If this is not possible, stand the cushions/ mattress on their edges to improve circulation of air.

EFFECTS OF PROLONGED OCCUPANCY

Your trailer was designed primarily for recreational use and short-term occupancy. If you expect to occupy the trailer for an extended period, be prepared to deal with condensation and humid conditions that may be encountered.

Moisture can condense on the inside surfaces of the trailer during cold weather when the relative humidity of the interior air is high. This condition is increased because the insulated walls of a recreation vehicle are much thinner than house walls. Also, the relatively small volume and tight, compact construction of modern recreational vehicles means that the normal living activities of even a few occupants will lead to rapid moisture saturation. Estimates indicate that a family of four can vaporize up to three gallons of water daily through breathing, cooking, bathing, and washing.

Unless the water vapor is carried outside by ventilation or condensed by a dehumidifier, it will condense on the inside of the windows and walls as moisture or as frost or ice in cold weather. It may also condense out of sight, within the walls or the ceiling, where it manifests as warped or stained panels.

The appearance of these conditions may indicate a serious problem. When you recognize the signs of excessive moisture and condensation in the trailer, action should be taken to minimize their effects.

D7 – Condensation and mold

TIPS TO CONTROLLING CONDENSATION

- Allow excess moisture to escape to the outside when:
 - Bathing, washing dishes, hair drying, etc.
 - Laundering, and using appliances and non-vented gas burners.
 - Cooking (always use the stove vent hood).
- Avoid dead air spaces by:
 - Use a fan to keep air circulating.
 - Leave closet and cabinet doors partially open.
- To help alleviate cold weather condensation:
 - Keep the temperature as reasonably cool during cold weather as possible.
 - Allow your trailer to breathe; do not make it airtight.
 - Allow some warm air to be removed and some cool outside air in.
 - Do not allow the furnace to recycle humid interior; provide reasonable ventilation.
 - In hot weather, start the air conditioner early on. This will help remove excess humidity while lowering temperatures.

NOTICE: Your trailer is not designed, nor intended, for permanent housing. Use of this product for long-term or permanent occupancy may lead to premature deterioration of structure, interior finishes, fabrics, carpeting, and drapes.

Damage or deterioration due to long-term occupancy may not be considered normal. Under the terms of the warranty, it may constitute misuse, abuse, or neglect and may, therefore, reduce the warranty protection.

MOLDS

Molds are microscopic organisms that naturally occur in virtually every environment, indoors and out. Outdoor mold growth is important in the decomposition of plants. Indoor mold growth is unfavorable and carries health risks. When left unaddressed, mold can deteriorate natural materials like wood and fabric. Protect your investment by understanding the risks.

Contributing Factors To Mold Growth

Mold growth can happen indoors and outdoors, but it requires a temperature range of 40°F to 100°F and a source of moisture like humidity, standing water, or damp materials. The most rapid mold growth occurs indoors when the environment is warm and humid.

Inhibiting Mold Growth

By controlling relative humidity, the growth of mold and mildew can be inhibited. In warm climates, using the air conditioner will reduce the relative humidity. Vents are in the bathing and cooking areas. Constant use of these vents is advised during food preparation and bathing, even during colder weather. Additionally, opening a window during these activities will assist in ventilation. In extremely humid conditions, the use of a dehumidifier can be helpful.

An important preventive measure is regular cleaning. Spills should be wiped up quickly and dried as soon as possible. Avoid leaving damp items lying about. On safe surfaces, use mold or mildew-killing cleaning products. Check sealants regularly and reseal when necessary to avoid water leaks. Proper preventive maintenance of the trailer and its accessories, as described in this manual and any accompanying literature, will provide the best protection for the trailer.

NOTICE: If using a dehumidifier, please read and follow all manufacturer instructions and recommendations for the use and cleaning of the dehumidifier.

ENTRY DOOR LUBRICATION

Apply a little paraffin or grease to the striker pockets and a slight amount of household oil to the lock mechanisms to keep the locks operating smoothly. Also, lubricate the hinge pins periodically with household oil. Use the lubricant sparingly and remove any excess from exterior skin immediately.

ENTRY DOOR ADJUSTMENT

Main door adjustment can be affected by:

- The trailer being improperly leveled (causing twisting of trailer body/shell).*
- Striker bolt alignment being out of adjustment, (striker bolt is adjustable).
- Screen door being out of adjustment, resulting in a situation of the door rubbing the frame, or not closing flush (which will create pressure on the door).
- Main door has come open at some point introducing a change to the contour of the door frame (check for sheared rivets on interior skin of door).

* When using the stabilizers (for eliminating movement, not leveling) on your Airstream be sure to check the fit of your main door before and after extending the stabilizers. The fit of the main door can be affected if the trailer is not level side to side and front to back.

STICKING WINDOWS

Forcing the window open may cause the window to shatter.

Always follow the guidelines below for releasing a stuck window.

1. Unlatch the window latches securing the windows on the interior.
2. Apply some 303 Aerospace Protectant to a nylon wedge window tool.
3. Starting in the corner, tuck the end of the nylon tool under the glass and gently slide to opposite end.
4. Once the window is released, wash the gasket with a mild soap and water solution, and dry.
5. Apply 303 Aerospace Protectant (Airstream part # 44845WR-01) to the window gasket. To apply, spray/pour 303 onto a soft rag or sponge and apply a generous coating directly to the gasket. Remove any residue that comes in contact with the exterior aluminum skin. This may be ordered through the Airstream Parts Department or at the Airstream online store.

! WARNING Prying up or applying pressure to the window may cause the window to shatter, resulting in personal injury or unit damage.



^ **DO..** lubricate window stay mechanisms regularly with WD40



^ **DO..** Adjust nuts of turn catches so they pull glass tight to the seals



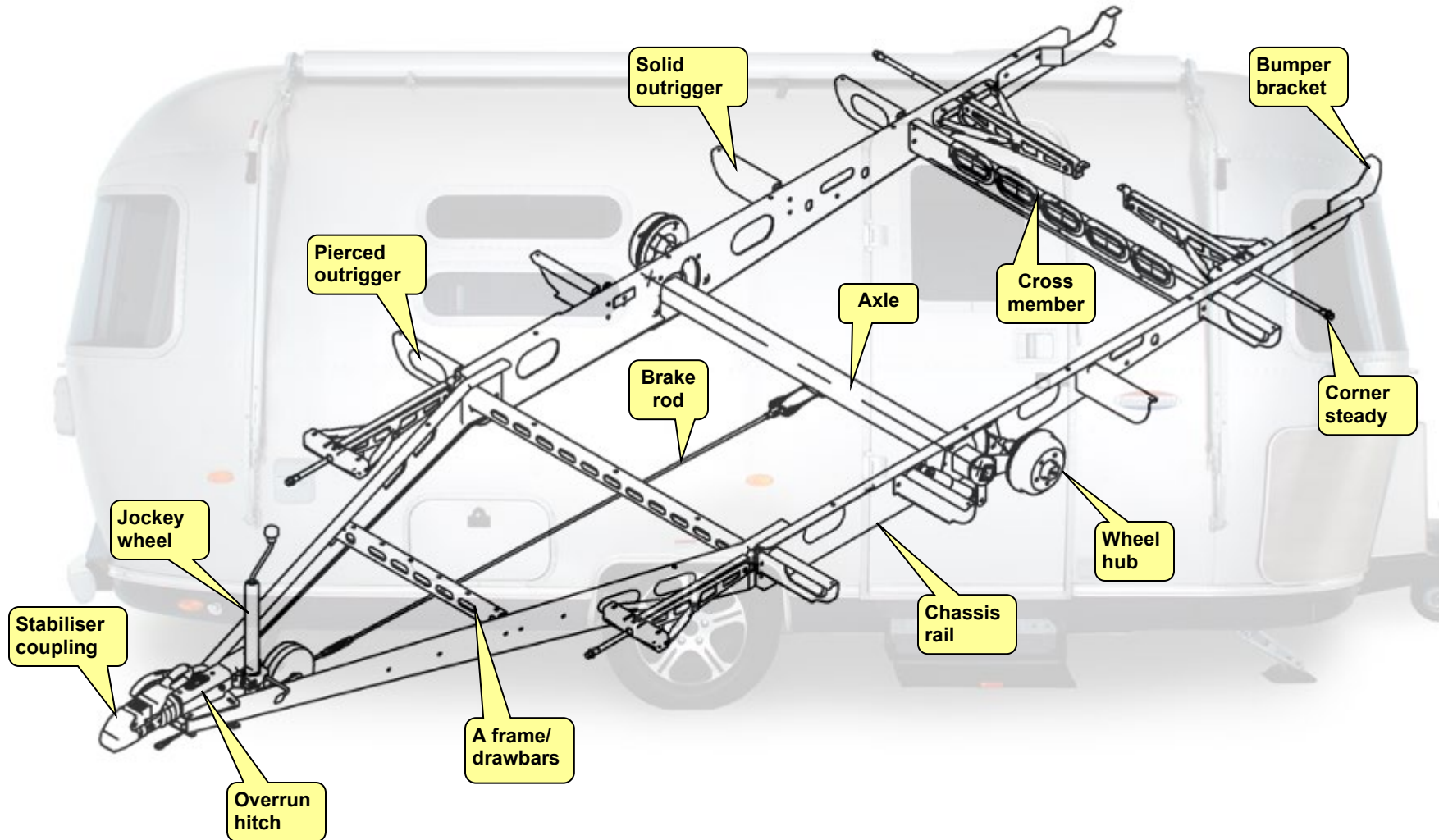
Section E – Chassis & running gear



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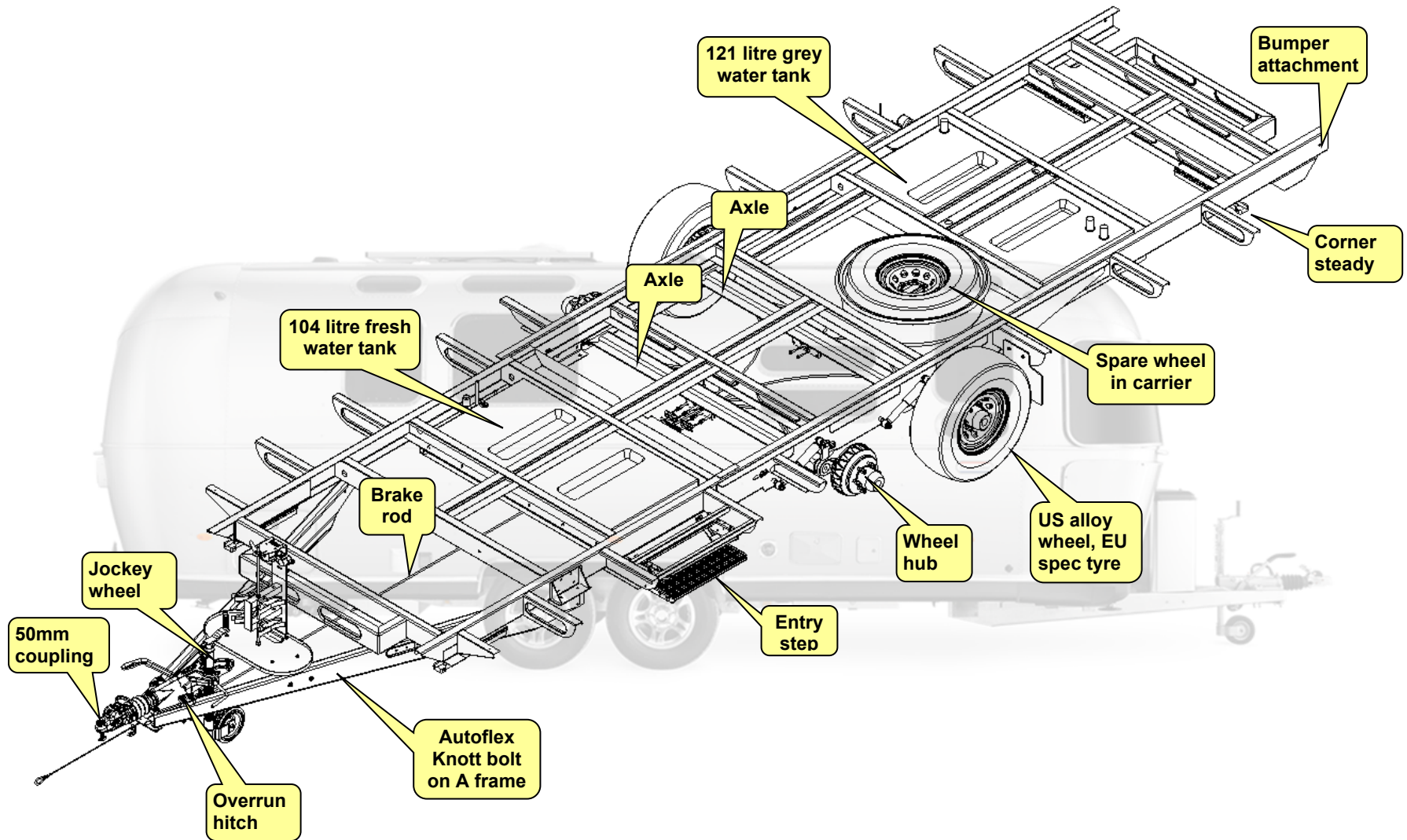
E1 - Overview

European specification Airstream – 534 & 684 models with Al-Ko chassis and running gear:



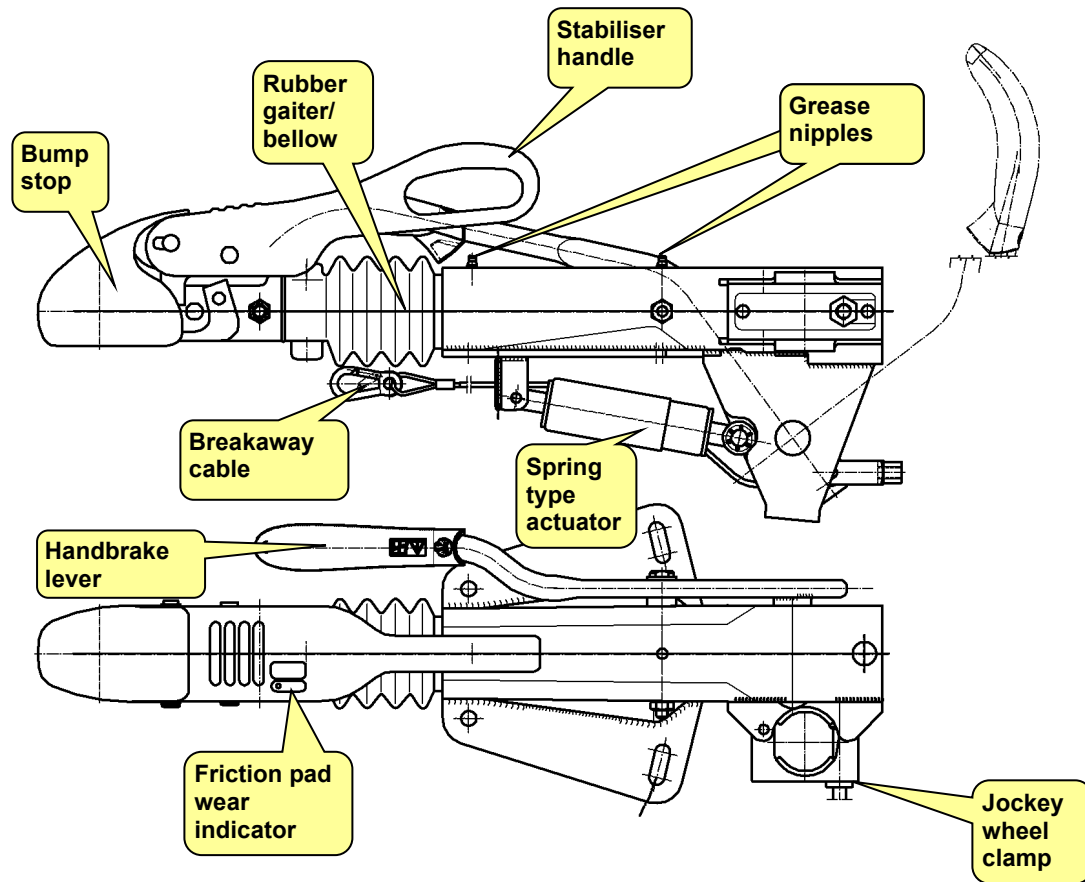
E1

European specification Airstream – 25IB model with welded chassis frame and Autoflex Knott running gear:

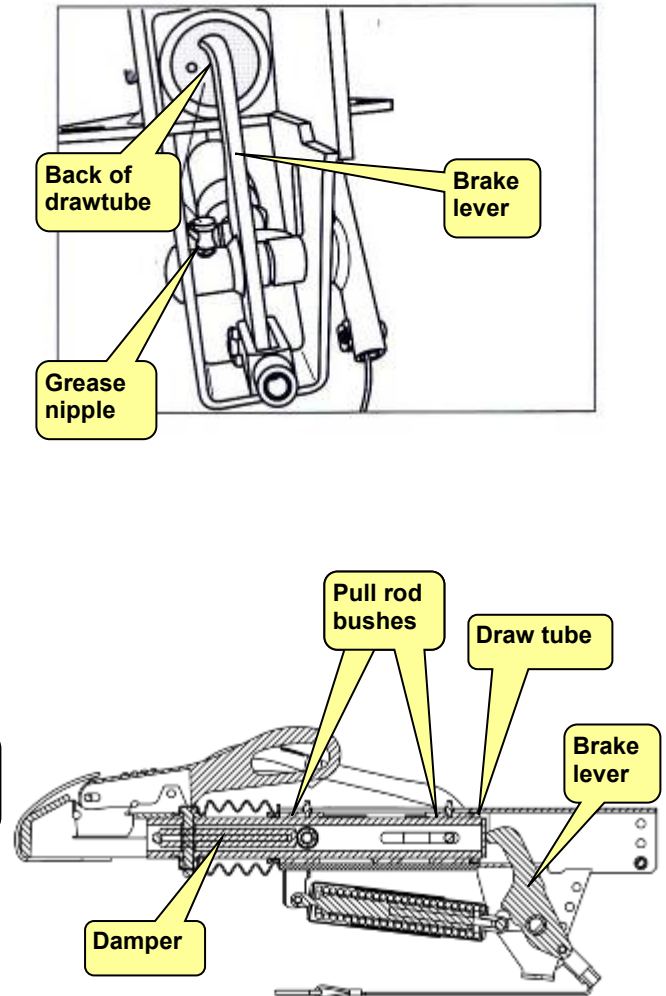


E2 – Hitch & coupling

OVER RUN HITCH WITH STABILISER COUPLING



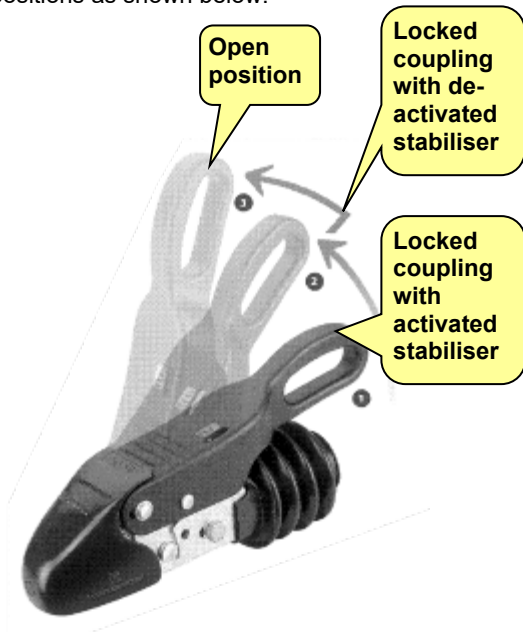
OTHER VIEWS



E2

STABILISER COUPLING

The handle of the stabiliser coupling, if fitted, has 3 positions as shown below:



CAUTION! The stabiliser handle must **ONLY** be used for releasing and applying the coupling. **Do not use it as a grab point when manoeuvring the Airstream.** This will break the springs and/ or the plastic handle and this damage is not covered by warranty. Similarly the handbrake lever must not be used as a manoeuvring aid.

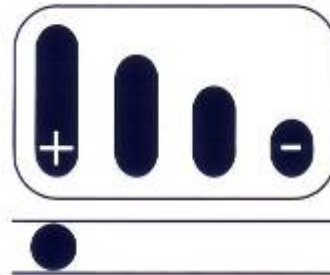
The stabiliser coupling is fitted with spring-loaded friction pads which enclose the towball from the front and rear. This reduces pitching and snaking movements of the trailer. Optimal damping is achieved with new friction pads after a certain run-in period.

FRICTION PADS

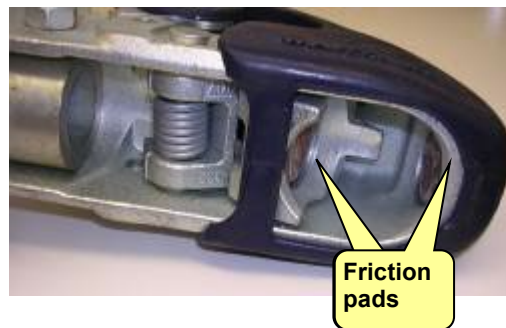
When the handle of the stabiliser coupling is pushed down, springs in the coupling create pressure forces on friction pads set into the coupling head, which grip the towball.

These friction pads require periodic replacement. Inspect the wear indicator on top of the stabiliser handle (example image below).

This is best done when the Airstream is coupled to the towcar and the stabiliser handle is in the fully down position, so the stabiliser is activated.



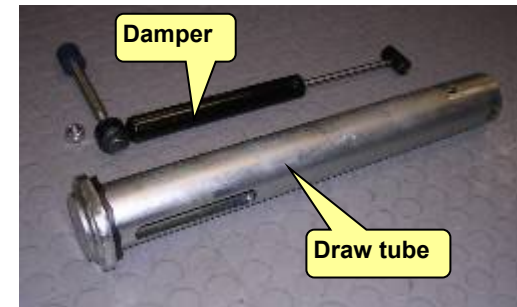
The coupling is factory set so the pin visible in the oblong hole is positioned under the + symbol when new friction pads have been fitted. When the pin moves to the - symbol, the friction pads should be replaced.



HITCH DAMPER

The damper is a key component of the hitch. The damper absorbs the shunting loads during normal slow braking and emergency stops.

The damper is located inside the draw tube. Both parts are contained/ concealed in the hitch casing.



Typical life of the damper is approximately 7 years. Over time, the seals will fail, which then allows the oil or nitrogen gas in the damper to escape.

If when the hitch head is pushed aft, it does not return/ rebound, this is a sign that the damper may need replacing.

Oil leaking at the front of the hitch would also indicate deterioration of the damper and the need for service attention by a trained technician.

PARKING HANDBRAKE

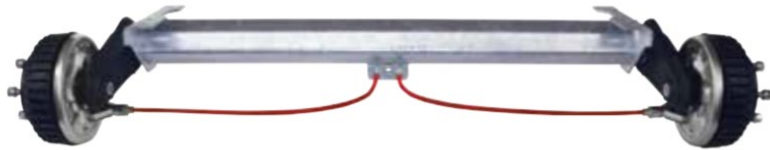
To apply the parking handbrake, lift the handbrake lever from the horizontal (down) position to the vertical (up) position.

CAUTION! With the parking brake activated, the Airstream can roll back about 30cm until the braking force takes full effect. Hence, do not park too close to obstacles.

E4 – Axle & brakes

RUBBER SUSPENSION AXLES

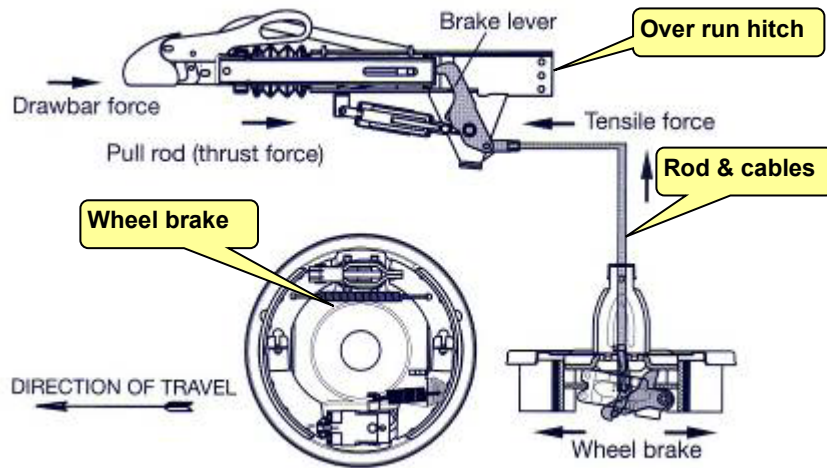
The 534 & 684 models use rubber suspension axles from Al-Ko, the 251B model uses rubber suspension axles from Autoflex Knott.



The braking system is made up of several components:

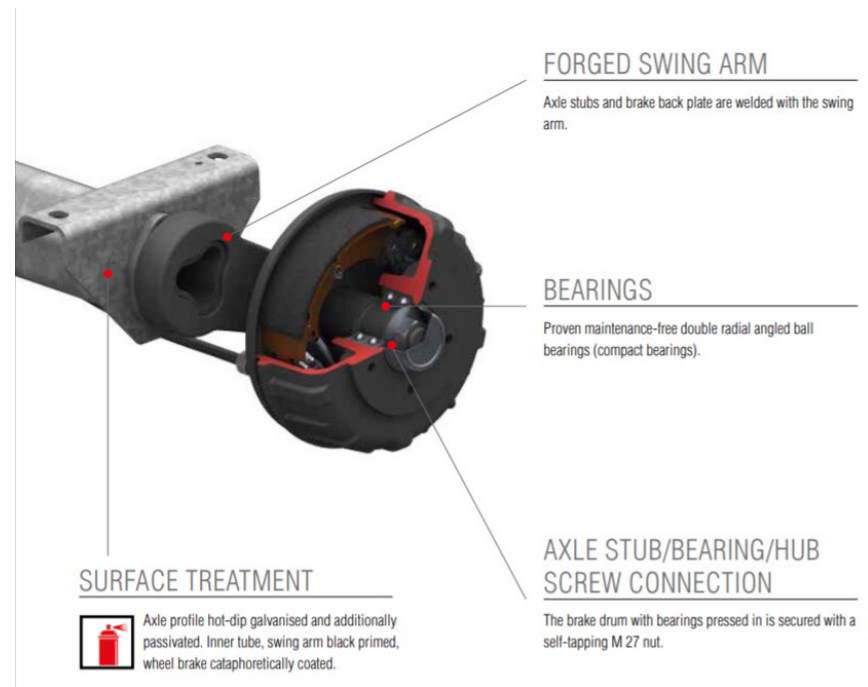
- Over run hitch
- Transmission rod and cables
- Wheel brake (drum brake).

The axles for the 534 & 684 Airstream chassis do not have the AAA (Al-Ko Automatic Adjustment) wheel brake.



Linings to brake shoes need inspection at the annual service, to check that there is at least 2mm of wear remaining.

BRAKE HUBS



All the axles used on the Airstream models 534 & 684 have wheel brakes fitted with a maintenance free compact bearing. This bearing is greased and sealed for life and the bearing itself requires no maintenance at service, other than to check for wheel play, which would indicate the bearings are worn.

CAUTION! Brake inspection, maintenance and adjustment should be undertaken only by a trained service technician. It is essential that the maintenance intervals are complied with:

- Initial brake maintenance is due at a mileage of 1,500 km..
- Thereafter, full brake maintenance must be performed every **10,000 km or every 12 months.**

JOCKEY WHEEL

The type of jockey wheel fitted may vary, 2015 and later models have a jockey wheel with ribbed shaft which passes through a clamp, which is tightened with a turn handle.



E6 - Tyres

VISUAL CHECK

At the beginning of the season and at regular intervals during it, carefully examine the Airstream tyres to ensure that the sidewalls are sound (no small cracks, cuts, lumps or bulges) and that the tread meets legal requirements in your country.

Remember that the sidewalls of trailer tyres can easily sustain impact damage on pavement kerbs etc. through trailer cut-in on corners.

As a rule of thumb, tyres are unlikely to last more than 5 years with careful use.

Tyre life will be maximized by removing wheels in winter and storing inside and running tyres at correct inflation pressures. If you have any doubt about the suitability of any tyre, it is safest to change it.

TYRE CARE AT END OF SEASON

At the end of the season, place the Airstream on axle stands so its weight does not rest on the tyres.

Better still, remove the wheels completely, store them flat in cool and dry conditions away from sunlight. Removing the wheels also reduces the risk of the Airstream being stolen. If this is not possible, then wheels should at least be rotated every few months to reduce un-even tyre distortion.

TYRE INFLATION PRESSURES

The correct tyre pressure is important both for safety and for a long tyre life. Tyre pressures on the Airstream and towcar must be checked regularly when the tyres are cold, at least once every 2 weeks, but preferably prior to each journey.

A drop in tyre pressure can be caused by:

- the natural leakage of air through the walls of a tyre
- drops in ambient temperature
- small perforations that, in a tubeless tyre, may not lead to immediate deflation but rather deflation over time (a slow leak). This in turn can lead to irreversible damage due to the tyre running in an under inflated condition.

Do not check pressures when the tyres are warm (EG in the middle of a journey), as a misleading reading will be obtained.

To check inflation pressure, purchase a gauge and check tyre pressures each time before you set off.

After checking each tyre, check that the valve is fully tightened and not leaking (applying a smear of saliva over the end of the valve after inflation is a good indicator). Fit a valve cap as protection against harmful grit or dust.

CAUTION! Remember to check the tow car tyre pressures as well. The rear tyres of the tow car must be inflated to the car manufacturer's recommended pressures for towing, please refer to your car handbook or dealer.

The tyres of the Airstream must be inflated to the recommended pressures shown in the table at the end of this Section.

REPLACING TYRES & WHEELS

CAUTION! When replacing tyres or wheels, the replacement wheels & tyres must be of the same type of construction & size as the ones being replaced, to be sure they have the necessary load rating.

Some tyres are reinforced and designed to withstand higher pressure for carrying extra weight (for example 195/70R15 C 104P). The 'C' marking denotes a reinforced tyre. This type of tyre should NOT be replaced with a standard tyre of the same size, without the 'C' marking.

For the 534 & 684 models, use only M12 conical wheel bolts supplied by your Airstream dealer.



Spherical bolt

Conical bolt

Conical bolts can be used for both alloy wheels and the steel spare wheel. Tensile strength of wheel bolts varies and the same type should be used as originally specified.

For the 251B model, use only lug nuts supplied by your Airstream dealer (Airstream part # 400923).

SPARE WHEEL ASSEMBLY

Your Airstream is supplied with a spare wheel assembly, as part of the 'On the Road' pack. This will be fitted to the spare wheel carrier prior to handover.

The spare wheel assembly consists of a steel wheel, fitted with the same tyre as used for the alloy wheels on the Airstream.

The steel spare wheel can be mounted on the wheel hubs using the same conical wheel bolts (534 & 684 models) or lug nuts (251B model), used for fitting the alloy wheels.

SPARE WHEEL CARRIER

534 & 684 models – the spare wheel carrier is fitted below floor. Check the spare wheel carrier orientation at the time of purchase and consider its suitability for the countries you will be travelling in most often.

The spare wheel carrier pulls out from under the chassis. At the time of manufacture it is fitted so the orientation suits the destination country, to pull out on the kerb side of the road (left side of the road for UK, right side of the road for other European countries).

The carrier may need handing (removing and re-fitting turned through 180 degrees) to pull out on the kerb side, if you travel in countries different from that which the Airstream was originally sold to.



To remove the carrier, take out the security chain pin and unfasten the plastic nut of the spare wheel carrier. Slide the carrier out to its full extent to remove the spare wheel.

251B model – the spare wheel carrier is a moulded plastic housing set through the floor below the bed. Lift the bed frame, then lift the false floor panels under the bed, to access the spare wheel. Lift the spare wheel assembly out.

JACKING PROCEDURE

To raise the Airstream to change a wheel you MUST use a jack.

CAUTION! Never use the corner steadies to lift the Airstream – they are designed for stabilizing, not lifting.

The Airstream is not supplied with a jack, nor axle stand, you need to purchase both as part of your personal Airstream tool kit. **NOTE! The choice of jack is an owner's responsibility.**

Issues to consider are:

- Ensure the jack you purchase has sufficient rating to lift the load it will carry when jacking your Airstream. In reality, you will be lifting approximately half the actual laden weight of the Airstream when lifting one side.
- A trolley jack has wheels and can move with any minor movement of the jacked trailer, whereas a bottle or scissor jack is static.

Portable trolley jacks are available, ensure any jack and axle stand you choose are rated to not less than 2 ton (2000kg).



Always ensure the material beneath the jack is even to provide a firm and sound base.

Always read and follow the jack manufacturer's instructions before using the jack.

Place the cup of the trolley jack on the chassis rail, or axle mounting plate, close to the axle.

E8 – Wheel changing

The following steps should be followed when changing a wheel:

1. Whenever possible, change a wheel when the Airstream is parked on level ground and leave the Airstream hitched to the towcar.

! WARNING: If you suffer a flat tyre on the Airstream and need to change the wheel by the side of the road, especially if the traffic is fast moving, first check the orientation of the spare wheel carrier (see heading ‘Spare wheel carrier orientation’ above). If you find the carrier is orientated so you would have to pull it out on the roadside, we recommend you call for breakdown assistance, do not risk injury by attempting to remove the spare wheel with cars passing in close proximity.

2. If one of the tyres is flat on a single axle trailer, resulting in insufficient ground clearance to fit the jack, first place a levelling device by the flat tyre and tow the Airstream onto the device to increase clearance.
3. Apply the handbrake on the towcar and the Airstream parking brake.
4. Lower the jockey wheel on the Airstream so it is in contact with the ground and clamp in position. Then the weight of the front of the Airstream will be transferred through both the jockey wheel and to the towcar coupling, when the trailer is jacked.
5. Chock the wheel(s) on the other side of the Airstream securely, with chocks placed to front and rear of the wheel(s).
6. Use a wheel brace, slacken off (but do not remove) the wheel bolts on the wheel to be changed. This should be done whilst the tyre is still in contact with the ground, which will prevent the wheel turning.
7. Jack up the Airstream (see Jacking Procedure) using a jack until the wheel for removal is lifted approximately 75mm/ 3” off the ground. Place an axle stand under the chassis rail just aft of the axle and lower the jack until the axle stand is taking the load.
8. Lower the corner steadies to touch the ground on the same side that the wheel is to be changed. This is an additional stabilizing measure.

! WARNING. Although a jack has to be used to raise one side of the Airstream when changing a wheel, a jack should not be relied upon as the final support. Use an axle stand. Before venturing beneath the Airstream to remove the spare wheel, check the Airstream is adequately supported, in the manner described above.

9. Remove the wheel bolts from the wheel to be changed and remove the wheel itself.
10. If the spare wheel is to be used, take out the security chain pin and unfasten the plastic nut of the spare wheel carrier. Slide the carrier out to its full extent and remove the spare. Check spare wheel for any damage or distortion. Slide the wheel carrier back into position and re-fasten the plastic nut and security chain pin. NOTE: The wheel being replaced should not be put onto the spare wheel carrier where it can be forgotten and left in an unrepaired state.
11. Ensure mating surfaces of the wheel hub and wheel and bolt seating areas are as clean and dry as possible. Fit the replacement wheel onto the brake drum and fasten wheel bolts so they are finger tight.
12. Check no persons are under or inside the Airstream. Raise the corner steadies, then raise the jack sufficiently to allow the axle stand to be removed. Then slowly lower the jack fully until the replaced wheel is in contact with the ground.
13. Using a torque wrench, tighten the wheel bolts to the correct torque setting:
 - **684 & 534 models:** 85lbs/ 115 Newton metres for alloy wheels and 65lbs/ 88 Nm for steel wheels, using 19mm socket.
 - **251B model:** 110 ft. lbs/ 149Nm for alloy wheels, 100 ft-lbs/ 135 Nm for steel wheels), using 21mm socket.Follow a pattern as represented by the numbers 1-5 below:



15. Check the spare tyre inflation pressure and insert additional air if required to reach the inflation pressure (see Section E11).

! CAUTION. The torque of the wheel nuts MUST be checked again at 10, 25 and 50 miles of travel after wheels have been fitted i.e. on a new trailer, or re-fitted after service (when all wheels are removed to check and clean brake hubs), or if a wheel is removed to replace a tyre.

USER CHECKS DURING EACH PERIOD OF USE

Check towball is un-damaged, clean and free from grease.

Check friction pad wear indicator to stabiliser coupling.

Inspect underside of coupling head to confirm it is free from dirt and grease. Clean as required.

Apply handbrake and observe brake linkage.

Check breakaway cable for damage.

Check tyre inflation pressures.

Check wheel bolt torque setting after the first run, following a wheel change.

Visual tyre check – inspect tyres for un-even wear, bulges or cracks; particularly after any mishandling – for example if you hit a kerb. Un-noticed tyre damage can cause blowouts.

Be alert to any loose fastenings/ connections, leaking oil etc.

The correction of any defects found during user checks, or use, should be referred to your Airstream dealer, or an approved after-sales service workshop for prompt service attention.

CAUTION! Inspection, maintenance and adjustment of the brakes, axle(s), hitch and other running gear components should be undertaken only by a trained service technician.

COMMON QUESTIONS

Creaking noise. Creaking noise may occur when driving, common causes are:

- Dirt between friction pads of coupling and towball of car. These noises do not have any effect on the function of the coupling and hitch. First check that the towball is clean.

New towballs may be painted, if so the paint coating should be removed using fine (150 grit) wet and dry paper.

Remove any stubborn deposits with fine (150 grit) wet and dry paper. Then degrease/ wipe clean using a clean rag and aerosol brake cleaner or methylated spirits.

Then check for build up of dirt on the friction pads of the coupling. Remove any deposits with 150 grit wet and dry paper, then wipe clean with aerosol brake cleaner.

- Dry running of drawbar/ draw tube in the bushings of the over run device. Grease the bushings using the grease nipples. Remove rubber gaiter and grease the drawbar.

Heat from wheel hubs

- Wheel hubs will get warm under normal operation. As the brakes are applied to slow down the trailer, they absorb energy, which gets dissipated as heat. Hard braking can result in temperatures being radiated well in excess of 150 Celsius – too hot to touch.

If in doubt, jack each side of the Airstream in turn (see jacking instructions). Check if the wheels spin freely, when the handbrake is off. If the wheels do not spin freely, contact your dealer to arrange for the brakes to be checked and adjusted.

MAINTENANCE

Completion of maintenance work at the prescribed intervals as set out in the chassis suppliers maintenance and operating instructions is essential in order to maintain the operating safety and roadworthiness of the Airstream.

CAUTION! Arrange a service at least annually or every 10,000km at your Airstream dealer, or an approved after sales service workshop, so the chassis and running gear can be inspected by a trained service technician.

Parts which will wear and need periodic replacement include:

- Hitch damper. Typical life approx 7 years.
- Friction pads in hitch head
- Brake shoe linings

The frequency of replacement of these parts depends on the intensity of use.

CAUTION! When installing spare parts, it is strongly recommended that only original components are used. Many chassis/ running gear components are safety critical parts. Use of spare parts other than original parts will invalidate the warranty.

E10 – Components, tyre pressures & wheel torque

Floorplan:	534	684	251B
Maximum weight	1900kg	2920kg	3500kg
Running gear supplier	Al-Ko	Al-ko	Autoflex Knott
Axle used	B1800-10	B1600-3	VGB 18/40-MV
Axle type	Rubber suspension	Rubber suspension	Rubber suspension
Axle max load	1900kg	2 x 1500kg = 3000kg	2 x 1800kg = 3600kg
Hitch used	AE 2,0-3	AE 3,0-3	KFG35-D GF
Hitch max load	2000kg	3000kg	3500kg
Hitch vertical max load	150kg	150kg	350kg (10% gross weight)
Safety coupling	WS 3000-D	WS 3000-D	AV35
Safety coupling max load	150kg	150kg	350kg
Drawbar type	251T	351T	ZHL35B
Drawbar max load	2800kg	3500kg	3500kg
Drawbar max vertical load	150kg	150kg	350kg
Brake used	Typ 2361	Typ 2051	25-4316
Alloy wheel	Hawk 6.0Jx15, 5/112	Hawk 6.0Jx15, 5/112	15 x 6J aluminium
Steel wheel	Mefro 6.0Jx15, 5/112	Mefro 6.0Jx15, 5/112	15 x 6J steel
Wheel max load rating	950kg	950kg	1283kg
Tyre specification	205/70R15C 106R	165R14 C LI97	225/70R15 Li 112
Tyre max load rating	950kg (1900kg for 2)	730kg (2920kg for 4)	1120kg (4480kg for 4)
Tyre inflation pressures	65psi @ 1825kg 65psi @ 1900kg	58psi @ 2400kg 61psi @ 2500kg 65psi @ 2600-2920kg	41psi @ 2800kg 43psi @ 2900kg 45psi @ 3000kg 46psi @ 3100kg 48psi @ 3200kg 50psi @ 3300kg 52psi @ 3400kg 54psi @ 3500kg
Wheel bolt torque	115Nm alloy wheels 88Nm steel spare wheel	115Nm alloy wheels 88Nm steel spare wheel	110 ft. lbs/ 149Nm alloy wheels 100 ft-lbs/ 135 Nm steel spare wheel

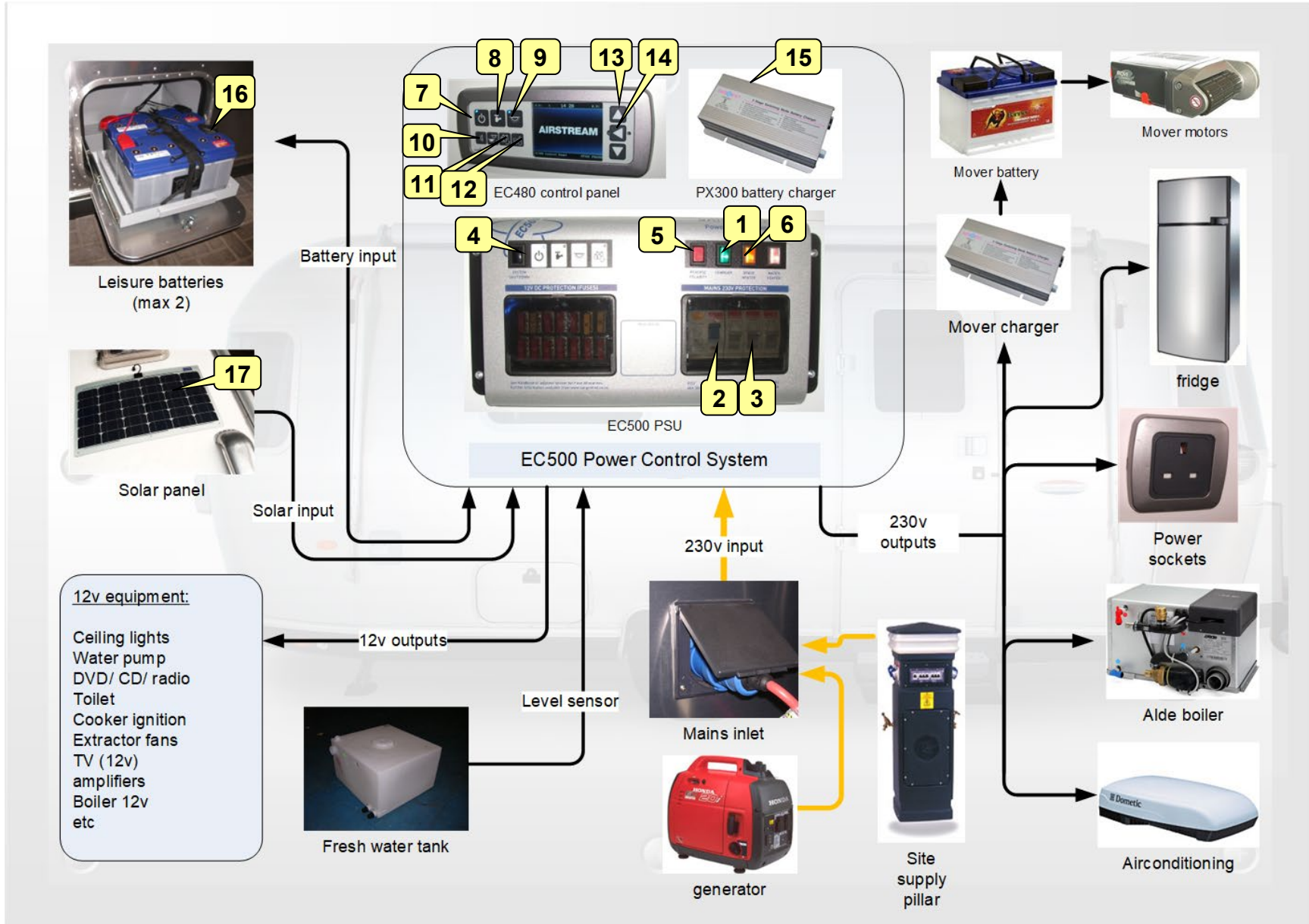
Section F – Electricity - 534 & 684 models



Schematic	F1
Normal operation	F2
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F1 – 534 & 684 Electrical, schematic

European specification Airstream – 534 & 684 models:



230V MAINS HOOK UP

Plug the orange hook up lead provided into a 230v mains supply, when available (or generator):

- Disconnect towing lead between car & Airstream, before connecting to mains.
- Inside Airstream, locate the EC500 PSU in wardrobe, ensure charger switch **(1)** is OFF (button out) and RCD **(2)** and MCB's **(3)** are all OFF (in the down position)
- Inspect site supply pillar. Assess if supply is suitable - 220-240V AC 50Hz and that it is earthed. Check current available (in amps). Turn site supply switch off.
- Unwind orange 230v mains cable into loose coils. Connect female connector of 230v cable to Airstream external mains inlet. Then connect male end to site supply. Use adaptor if plugging into domestic 230v socket. Turn site supply on.
- Turn on RCD **(2)** by pushing switch up, press test button adjacent, to confirm RCD trips. Turn on RCD again. Turn on 3 x MCB's **(3)** so switches are in up position.

Turn the PSU on:

- Verify the black 'Shutdown' button **(4)** is pressed in (out = shutdown activated).
- Press in the green charger switch **(1)** so the green light illuminates.
- Check the reverse polarity indicator light **(5)** is not illuminated.
- Depress Space Heater button **(6)** which should illuminate, supplying the Alde boiler.

! WARNING. Disconnect the 13pin lead between the tow vehicle & caravan before connecting a 230V supply to the caravan and before charging the caravan leisure battery by any other means.

12V CONTROL PANEL (see next page)

- Press ON/ OFF button **(7)** on EC480 digital control panel to turn 12v equipment ON.
- Press Pump button **(8)** to turn on the internal water pump, this draws water from the internal water tank to the taps.
- Press the Light button **(9)** to turn on/ off all lights wired off the lighting circuit.
- Press the awning light button **(10)** to turn on/off the external light over the door.
- Battery Select. When 13pin lead is connected to towcar, pressing battery select button **(11)** will toggle between using/ charging voltage of vehicle (starter) battery on car and leisure battery in Airstream. By default, the leisure battery is selected.

! CAUTION. Use vehicle battery in towcar only as temporary measure if necessary, over-use may prevent car starting.

- Tank auto fill. Press the tank auto-fill button **(12)** to enable the auto filling of the internal water tank, see water system instructions.
- Use scroll buttons **(13)** to scroll through the various menu / screen items or to make setting adjustments .
- Use the select button **(14)** to select options / items or to cancel alarms / warnings. Note: The screen illumination / backlight will turn off after a period of time. Press the select button to reactivate the illumination.

230V BATTERY CHARGER

The PX-300 air cooled battery charger **(15)** that charges the leisure batteries is mounted vertically in the rear of the hanging area of the wardrobe.

If a mover is fitted, a 2nd charger is fitted adjacent to the mover control boxes, this charges the mover battery only. This keeps the mover separate electrically from the rest of the 12v system..

CAUTION! Under heavy loads the charger case may become hot. ALWAYS ensure the ventilation holes at the top of the charger have a clear flow of air. Do not place combustible materials against / adjacent to the charger.

12V BATTERY LOCATION(S) AND FUSES

The 12v leisure batteries are located in an externally accessed compartment **(16)** with slide out battery tray for 2 x deep cycle wet lead acid leisure batteries. A 3rd starter AGM sealed battery can be fitted internally when/ if a mover is fitted.

Each battery has a 20amp battery fuse located in a small fuse holder set into the joinery internally. In addition there is a leisure battery fuse on the PSU.

SOLAR PANEL

The EC500 PSU incorporates a solar regulator, suitable for up to 120W (maximum) solar panel output. The 534 & 684 models are pre-wired for an optional roof solar panel **(17)**.

GENERATORS

Polarity indicator light **(6)** may illuminate when using generator.

! CAUTION. Never allow modification of the electrical system except by qualified persons. **! CAUTION.** Unplug 230v mains supply from trailer before using mover device (if fitted).

F3 – 534 & 684 Electrical, EC480 control panel



NOTE: See Sargent Electrical Services Ltd additional printed instructions for full technical specs on the EC480 and more detailed breakdown on scroll settings, clock and alarm use etc. The user instructions can be downloaded from Sargent's website: <http://sargentshop.co.uk/> and click on Technical Support.

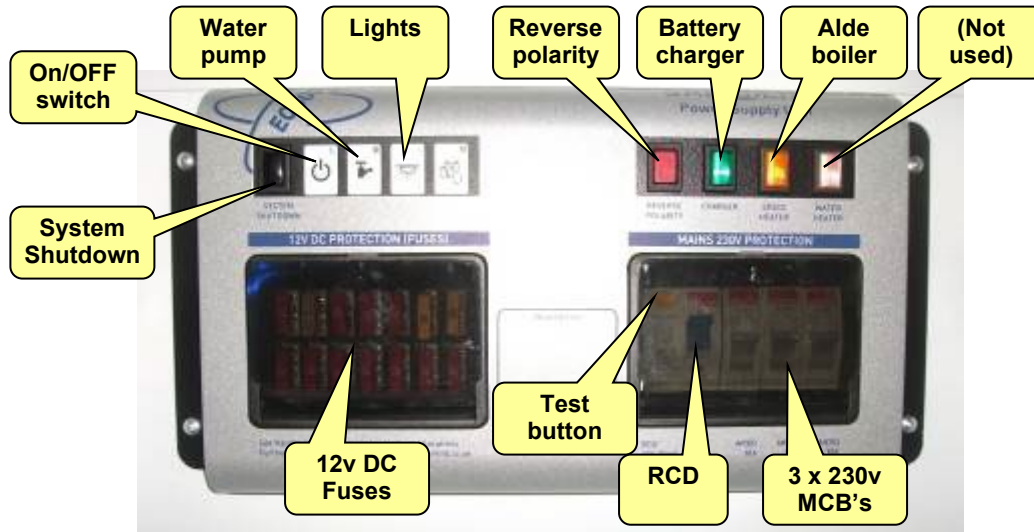
To access the advanced menu, scroll to the AIRSTREAM screen on the EC480 control panel, then press and hold up and down buttons simultaneously.

	<p>Power Button. Press the power button to turn the leisure power on. Press the button again to turn the power off. The adjacent LED will illuminate when the power is on, and also the voltage of the selected battery will be displayed on the screen. This button is also present on the PSU unit, so this feature can also be operated from the PSU.</p>		<p>Light Dimming Button. (This function is disabled).</p>
	<p>Pump Button. With the power on, press the pump button to turn the water pump on. Press the button again to turn the pump off. The adjacent LED will illuminate when the pump is on, and also the level of the water tank will be displayed on the screen. This button is also present on the PSU unit, so this feature can also be operated from the PSU.</p>		<p>Awning Light Button. With the power on, press the awning light button to turn the awning light on or off. The adjacent LED will illuminate when the light is on.</p>
	<p>Light Button. With the power on, press the light button to turn the main internal lighting on. Press the button again to turn the lights off. The adjacent LED will illuminate when the lights are on. The lights will be turned on and off automatically each time the power button is operated. This button is also present on the PSU unit, so this feature can also be operated from the PSU.</p>		<p>Fill onboard water tank. Press the button to start filling the onboard water tank from an external water source. This will allow water to enter the tank for 4 minutes, or until the tank is full. During the fill cycle, the blue LED to the water pump button on the EC500 PUS will flash on/off.</p>
	<p>Battery Select. By default, the leisure battery is selected as the power source if no mains supply is present, or as the battery to be charged when the mains supply is available. To change the selected battery, press the vehicle battery select button. The selected or 'Active' battery is shown on the screen, and on EC300 panels is also indicated by the adjacent LED (LED off = Leisure battery, LED on = vehicle battery).</p>		<p>Scroll Up. Use this button to scroll through the various menu / screen items or to make setting adjustments</p>
			<p>Select. Use this button to select options / items or to cancel alarms / warnings. Note: The screen illumination / backlight will turn off after a period of time. Press the select button to reactivate the illumination.</p>
			<p>Scroll Down. Use this button to scroll through the various menu / screen items or to make setting adjustments</p>

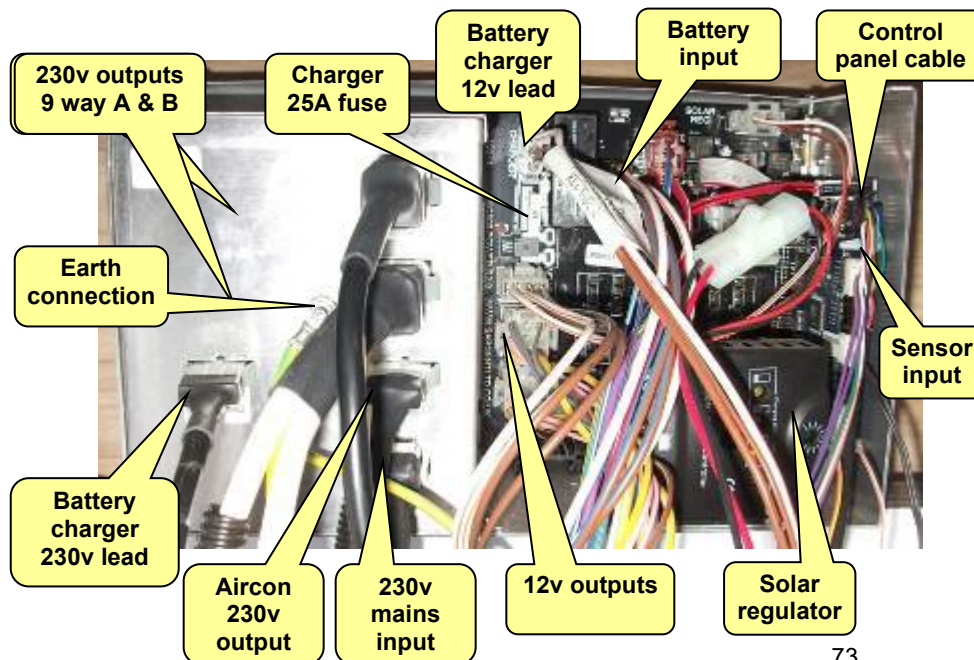
F4 – 534 & 684 Electrical, EC500 Power Supply Unit

The EC500 Power Supply Unit (PSU), EC480 Control Panel and PX-300 charger are used on **534 & 684** models:

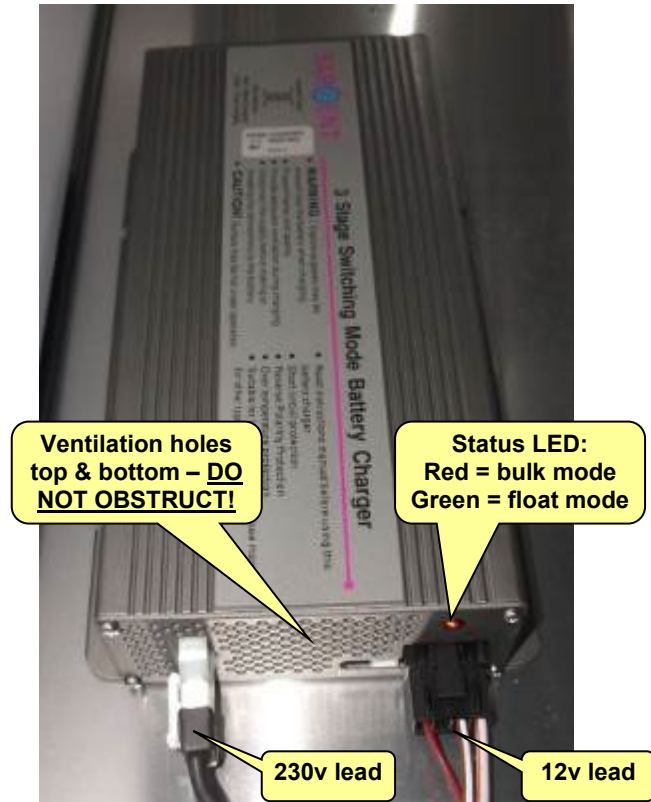
EC500 PSU front view:



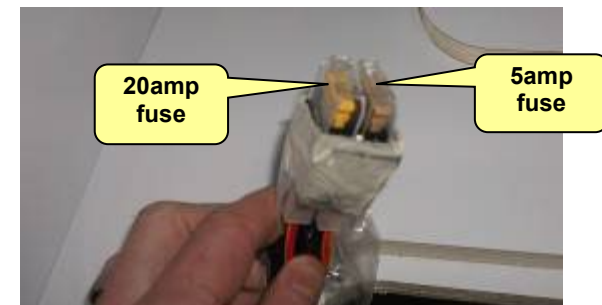
EC500 PSU rear view:



PX 300 air cooled battery charger:



Fuseholder behind EC500 PSU (see next page)



F5 – 534 & 684 Electrical, 12v fuses

12v DC fuses on EC500 Power Supply Unit:

Fuse	Rating	Fuse Colour	Description
1	10 Amps	Red	Toilet
2	5 Amps	Tan	Ignitions
3	10 Amps	Red	Electric Step
4	10 Amps	Red	Internal water pump
5	10 Amps	Red	Permanent Supplies
6	20 Amps	Yellow	Leisure Battery
7	20 Amps	Yellow	Vehicle Battery
8	10 Amps	Red	Fans
9	10 Amps	Red	Power Circuits
10	10 Amps	Red	Lighting Circuit 1
11	10 Amps	Red	Lighting Circuit 2
12	10 Amps	Red	En-route Circuits
13	10 Amps	Red	Solenoid valve on water pump board & ext. water pump
14	10 Amps	Red	Future supply
15	25 Amps	White	Charger (fitted internally to PSU)

Fuse 1 is top left, Fuse 15 is bottom right. Numbering runs from left to right, thus the top row is Fuses 1 - 7, bottom row is fuses 8 – 14.

! WARNING When replacing fuses always replace a fuse with the correct value. NEVER replace with a higher value/ rating as this could damage the wiring harness. If a replacement fuse 'blows' do not keep replacing the fuse as you could damage the wiring harness. Please investigate the fault and contact your dealer.

Additional 12v fuse(s) located behind EC500 PSU, see bottom right photo on previous page:

Both fuses below are fed from the car engine running / fridge supply (13 pin connector pin 10). This supply should only be present when the car engine is running.

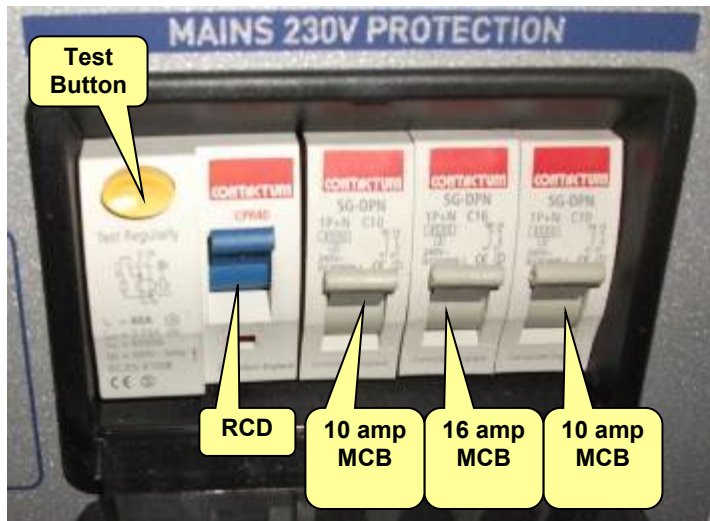
- The 20A fuse supplies the fridge cooling element via the red/yellow cable.
- The 5A feed goes to the roof harness and then to the satellite 12v supply on the yellow orange cable. This supply is used to park the satellite dish when the engine is started.

Additional 12v fuse(s) located at the Leisure battery(ies):

Battery 1	(Not at PSU)	20 Amps	Battery fuse - fuse remotely located near battery	Yellow	Brown / Blue
Battery 2	(Not at PSU)	20 Amps	Battery fuse - fuse remotely located near battery 2 (where fitted)	Yellow	Brown / Blue

Always carry plenty spare 12v blade fuses of each different rating (5A, 10A, 15A, 20A).

Residual Current Device (RCD) & Miniature Circuit Breakers (MCB's):



EC500 PSU

The Residual Current Device (RCD) is provided to protect the user from lethal electric shock. The RCD will turn off (trip) if the current flowing in the live conductor does not fully return down the neutral conductor, i.e. some current is passing through a person down to earth or through a faulty appliance.

To ensure the RCD is working correctly, the test button should be operated each time the vehicle is connected to the mains supply (see 230v mains hook up procedure instructions).

The Miniature Circuit Breakers (MCB's) operate in a similar way to traditional fuses and are provided to protect the wiring installation from overload or short circuit. If an overload occurs the MCB will switch off the supply. If this occurs you should investigate the cause of the fault before switching the MCB back on.

The switches are ON when they are in the UP position, as shown in the photo adjacent.

The table below shows the rating and circuit allocation for the three MCB's:

MCB	Rating	Description	Wire Colour
1	10 Amps	230v Sockets	White
2	16 Amps	Boiler/ Air conditioning (if fitted) / Extra 230v Sockets	Yellow (Fused spur assembly, from where yellow cable leads to boiler and blue cable to air conditioner) White for extra 230v sockets
3	10 Amps	Fridge / 12v Charger (internally connected)	Black (Fridge)

F7 – 534 & 684 Electrical, Batteries and battery care

Deep cycle leisure battery



European Airstreams have a metal battery box vented to the outside, accessed externally by a slide out tray, that can accommodate 2 batteries of approx 100Ah capacity.

This allows wet lead acid batteries to be used to power the 12v leisure equipment.

Leisure batteries are supplied by your Airstream dealer. We recommend a deep cycle leisure battery (NOT a starter battery) with a semi transparent wall, which will allow easy inspection of the electrolyte level.

Shown in the photo above are 2 x Banner 95751 Energy Bull 100Ah batteries.

The leisure batteries on the Airstream are selected by default each time the digital control panel is turned on.

Leisure battery electrolyte



Inspect leisure batteries periodically to check the electrolyte level. Look through the semi transparent wall to verify the liquid remains up to the top of the cells.

If the electrolyte level has dropped, apply gloves, extinguish any naked flames, then remove the cap to each cell (ideally using a battery cell removal tool) and add distilled water.

Starter battery for motor mover

A motor mover is best powered from a dedicated 12v starter type battery, charged by a separate battery charger. A starter battery is better able to cope with the larger current drawn by the mover, secondly this ensures a charged battery is ready to power the mover, even if the leisure battery is discharged.

! CAUTION If the space inside the battery box is occupied by 2 leisure batteries, the mover battery must be a sealed AGM battery so it can be positioned safely inside the habitable space.

! CAUTION. Inspect all 12v batteries periodically to ensure the +ve and -ve terminals remain covered with the red and black plastic terminal caps, which will prevent any metal objects coming into contact with the terminals. If one set of terminal caps is not in use, tape over the red terminal with insulation tape to prevent shorting.

Check the hold down straps securing the battery to the tray remain tightly fixed.

If you need to remove a battery, first isolate the battery by removing the fuse (see below), then disconnect the negative (black) terminal first.

Battery fuses

Know the position of your leisure battery fuses. Each leisure battery will have a yellow 20amp fuse internally close to the battery box, plus fuse 6 on the EC500 PSU protects both leisure batteries.



If a mover battery is fitted, it will have another 20amp fuse adjacent to the mover battery or battery charger.

Check the 20amp leisure battery fuses periodically, especially 24 hours before any period of use when you will be relying on the leisure batteries, i.e. not be connected to mains electricity. If a fuse is blown, one or both batteries will have been 'out of circuit' and may be in a discharged state.

A discharged battery will need charging for 24 hours to bring it back to a good state of charge, assuming it has not been damaged.

Customers who have their Airstream permanently connected to mains 230v electricity may elect to remove, or disconnect the leisure batteries (see later comments). To disconnect the leisure batteries, simply remove Fuse 6 of the EC500 PSU. When the battery charger is turned ON, it will supply 12v DC to the 12v leisure equipment and the 12v system will function as normal.

Understanding 12v battery use

To ensure that your leisure battery lasts as long as possible, make sure that it is never left in a discharged state. As soon as it has been discharged, it should be charged up again. Try to avoid discharging it by more than 50% before re-charging (typically a battery will last 3 times as long if you re-charge it when the voltage drops to say 12v, rather than 10.5v.) Avoid subjecting the battery to extreme cold.

Monitor the leisure battery voltage using the Sargents control panel. The mover battery (if fitted) is separate from the rest of the 12v system, so its voltage does not show on the digital control panel – use a voltmeter across the battery terminals if you want to check the voltage of the mover battery.

If in any doubt as to the voltage of any battery, isolate the battery by removing the 20amp fuse to that battery, then check the voltage directly across the battery terminals using a volt meter.

12 Volt Battery	State of Charge	
12.7V	100%	Blue = GOOD: not in need of charging.
12.5V	90%	
12.42V	80%	Green = OK: nothing to worry about but put the battery on charge as soon as you can.
12.32V	70%	
12.20V	60%	
12.06V	50%	Yellow = WARNING: recharge as soon as you can. Leave it and the battery will be damaged.
11.9V	40%	
11.75V	30%	
11.58V	20%	Red = URGENT! Recharge immediately, or damage will result.
11.31V	10%	
10.5V	0%	

The control panel allows you to monitor battery current as well, which is useful as it shows whether the leisure battery is being charged, or discharged.

Turn the digital control panel OFF & turn the charger OFF on the EC500 PSU. Temporarily cover any solar panels mounted on the roof. Use the ^ and v scroll buttons to display battery current.

Then turn on the digital control panel and some lights. The current being drawn by items turned on will now show as a negative reading, for example -10amps, means 10 amps per hour are being drawn from the leisure battery.

Now turn on the battery charger. The battery current will rise to become a positive figure. This shows current is now flowing into/ charging the leisure battery. Once you have established positive current flowing in to the battery to re-charge it, scroll to leisure battery voltage and monitor the voltage rising.

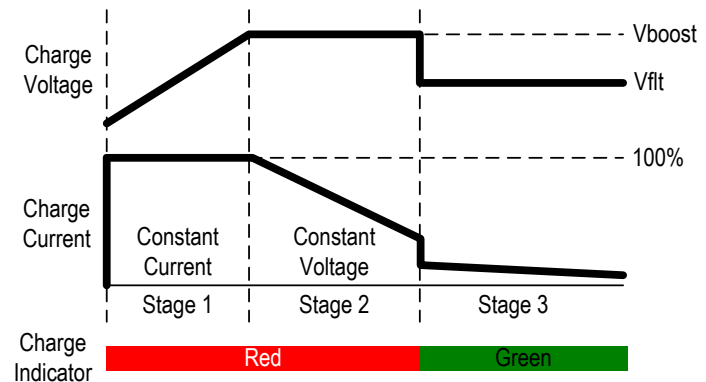
Battery charging

The time taken to re-charge depends on the total Ah to be replenished and the rate of charge. For example, if 2 x 100Ah batteries are depleted, the total Ah required to replenish is twice 100Ah = 200Ah. At a re-charge rate of 12 amps per hour, the time required would be 200/12 = 16.6 hours approx.

Mains battery charging

Connecting the Airstream to a 230v power supply and turning on the onboard PX300 battery charger is the fastest re-charging method.

The PX300 is a 3 stage battery charger. During stage 1 the battery voltage is increased gradually while the current is limited to start the charging process and protect the battery. At stage 2 the voltage rises to 14.4V (Vboost) to deliver the bulk charge to the battery. When the battery is charged, the voltage is decreased at stage 3 to 13.4V (Vfit) to deliver a float charge to maintain the battery in the fully charged state.



The status LED on the underside of the PX300 charger (where the electrical cables connect) illuminates when the charger is on. When the LED is red this indicates the charger is in bulk mode, when the LED is green the charger is in float mode.

When 12v leisure equipment is being used and the current drawn from the batteries exceeds 1.5amps, the charger will go into bulk mode.

All batteries will get warm during normal charging. If you detect excess heat from a battery, speak to your dealer for advice.

! CAUTION. The PX300 charger is air cooled, do not obstruct the ventilation holes at the top and bottom of the casing.

F7 – 534 & 684 Electrical, Batteries and battery care

Trickle charging using solar panels

The EC500PSU incorporates a Solar Regulator. This allows the direct connection of a solar panel up to 120watts. The regulator will trickle charge the leisure battery(ies) even when the EC500 system shutdown button is depressed.

Airstreams are pre-wired for an optional roof mounted solar panel, via the 12v roof harness.

A semi flexible solar panel should be fully bonded (rather than screwed) down to the roof and a cable gland used to seal where the cable passes through the roof.



What charging performance can be expected from a solar panel?

Solar panels contribute to charging of the 12v system and help maintain batteries at full charge (trickle charging), but will not recharge deeply discharged batteries in an acceptable time.

For example, a 70watt solar panel would have a theoretical maximum output of 5.1 amps per hour, assuming an output voltage of 13.5v.

In practice, a panel mounted flat on the roof, rather than at an angle facing the sun at 45degrees, will not be as efficient. Panels work best in sunshine, but still produce some output in overcast and rainy conditions.

Battery testing

The voltage measured across the battery terminals is only a crude indication of the condition of a battery, relative to its 'as new' condition.

A crude 'drop' tester applies a high load (from an electrical coil) and tests if the voltage drops under load, to crudely assess battery condition.

A more accurate test on the battery condition can be carried out using a conductance tester. This measures the CCA (cold cranking amps), normally stated in EN in Europe. The EN rating is usually printed on the battery, if it is not ask your Airstream dealer or contact the battery manufacturer.

The conductance tester allows the user to select the type of battery used and its capacity when new (stated in EN). More expensive professional testers produce a printout recording the state of the battery, showing voltage and the current EN reading, compared to the 'as new' EN reading.



REPLACING BATTERIES

Batteries do have a finite life/ number of charge cycles. As they near the end of their life, or if they have deteriorated due to being overly discharged, they will lose charge capacity. Hence an 85Ah battery may only work as a 40Ah one.

Always disconnect the 230v mains supply, turn off the battery charger and remove the leisure battery fuses before removing the battery. If your Airstream has 2 leisure batteries, both should be renewed at the same time, so the type and their state of charge capacity remains the same.

! WARNING. When connecting the battery, ensure that the correct polarity is observed; black is negative (-) and red is positive (+). Ensure the terminal rings are securely fastened and the plastic caps positioned over the terminals. Use the straps provided and ensure the battery is securely fixed so it cannot move.

! WARNING. Switch off all appliances and lamps before connecting, or disconnecting the auxiliary battery. Smoking is prohibited around the battery compartment.

F7 – 534 & 684 Electrical, Batteries and battery care

Caring for your batteries when Airstream is in storage, or permanent use:

Connected to mains electricity?	Winterised, heated?	Battery charging status, leisure batteries in circuit?	System Shutdown status & recommended ACTION
No	Winterised Alde heating turned OFF	No mains electricity connected, so no battery charging occurring via the PX300 mains battery charger. If a solar panel is connected, this will trickle charge the leisure battery only (not the mover battery if fitted)	Depress the EC500 System Shutdown button (OUT position = system shutdown activated) to ensure all 12v leisure equipment is disconnected. The only things not isolated by the System Shutdown button are the tracker supply and roof level permanent live supply (end galley roof locker) for an alarm. If no solar panel is connected, the leisure batteries will self-discharge over time. The leisure batteries could be removed to be trickle charged at home, or periodically charged by connecting the vehicle to 230V and using the PX300 charger.
Yes	Winterised Alde heating turned OFF	PX300 battery charger turned ON. Fuse 6 of EC500PSU in place, so leisure batteries in circuit.	Depress the EC500 System Shutdown button (OUT position = system shutdown activated) to ensure all 12v leisure equipment is disconnected. As the current drawn from the leisure batteries will be below 1.5amps, the PX300 battery charger will remain in float mode and can be left permanently switched ON.
Yes	Not Winterised. Alde heating turned ON and set to 5 to 10 degrees centigrade, to provide frost protection	PX300 battery charger turned ON. Remove Fuse 6 of EC500PSU , so leisure batteries out of circuit.	Do not depress the EC500 System Shutdown as you want to use the Alde heating and other 12v leisure equipment. When the Alde heating is turned ON, the current drawn is likely to be above 1.5amps and the PX300 battery charger may remain in bulk mode outputting 14.4v. In this situation, we recommend removing Fuse 6 of the EC500PSU and periodically re-inserting it for 24 hours to top up the battery. Customers who do not store the Airstream at home, who cannot do this, are advised to remove the leisure batteries and trickle charge them at home.

F7

F8 – 534 & 684 Electrical, troubleshooting

12V ELECTRICAL TROUBLESHOOTING

Digital control panel dead (panel shuts down when leisure battery charge drops below 9v):

- Check 20amp fuse adjacent to each leisure battery, replace if blown.
- Check 20amp fuse No 6. to EC500 PSU, replace if blown.
- Follow normal procedure for 230v mains hook up, including turning on green charger switch on PSU, then turn control panel on.

Digital control panel corrupt or erratic function (control panel software crash):

- Press system shutdown button on EC500 PSU, this will re-boot the system.

Lights dimming.

- This indicates the leisure battery voltage is low (11v or lower), check leisure battery voltage @ control panel. Recharge leisure battery by connecting to 230v.

230V TROUBLESHOOTING

No 230v supply:

- Tripped circuit breakers on campsite supply, as current drawn has exceeded the available supply.
- Orange mains 25m hook up lead not connected, or site supply not turned on.
- RCD or MCB's on PSU turned OFF.

One or more 230v sockets not working:

- Loose connection on 230v harness, identify which sockets are not working, then speak to your dealer.

ROAD LIGHT TROUBLESHOOTING

Individual road light not working:

- Likely to be blown bulb, remove lens cover and remove bulb to inspect filament and confirm.

Certain circuit not working (EG all left tail lights), possible causes:

- Blown fuse - check 12v fuse on your towcar to the relevant circuit (EG left tail lights). Replace if blown.
- Damaged pin on 13 pin plug on Airstream - examine all pins to check none bent or broken.
- Defective wiring to 13 pin plug on Airstream - take apart and check wires firmly connected into screw terminals, no corrosion or damage.
- Defective wiring to towcar electric socket on car - take apart and check contacts for corrosion, loose wires etc.

No road lights working:

- Loose connection where 13core lead joins main 12v harness inside Airstream – speak to your Airstream dealer

Intermittent flashing to rear LED 6" oval tail lights:

- Bulb failure monitoring system on some high end 4x4 towcars, causes LED trailer lights to flash on and off. Contact your Airstream dealer.

230v ELECTRICITY SUPPLY

The 230v electrical system within the Airstream is designed to run on a 230v 50hz AC supply. The three 230v circuit breakers are rated to 10, 10 & 6 amps, making a total of 26 amps. However the input supply is limited to **16amps** by the connectors used on the mains hook up cable. In addition, if a hook up adapter lead is used, this may reduce the rating further to the rating of the plug used – **13amps** in the UK.

Mains supply

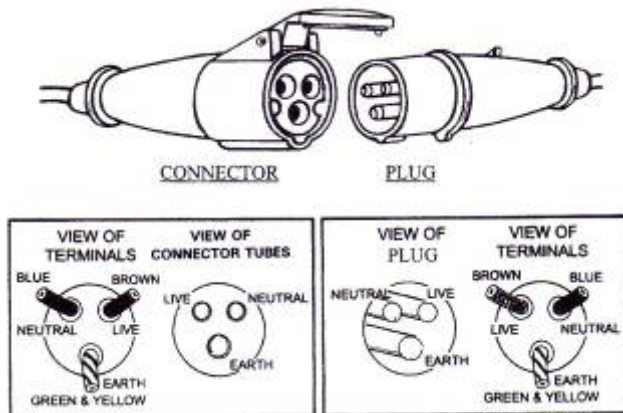
Check when booking into a campsite and on arrival, what the mains supply is to the individual campsite supply pillar. This will be quoted in amps.

This will determine the current you can draw (without tripping circuit breakers on the campsite supply) and may limit the 230v appliances you can use, at least simultaneously.

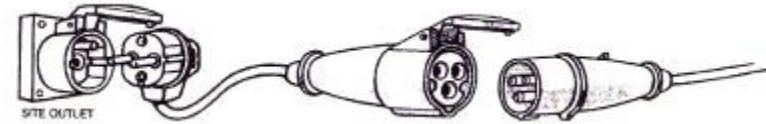
Whilst modern commercial campgrounds often quote a **16amp** supply, the actual supply available may be lower particularly at peak times in winter months, if the campground is fully occupied and the demand for electricity is high.

Some older campsites may offer only **3-5 amps** to each pitch.

Inspect the electricity bollard to check the type of socket outlet provided. This should be earthed, meaning the plug has 3 pins. Many campsites in Europe are now adopting the European standard for connectors (BS EN 60309-2, formerly 'CEE 17' or BS4343) which is a blue 3 pin connector, rated to 16 amps.



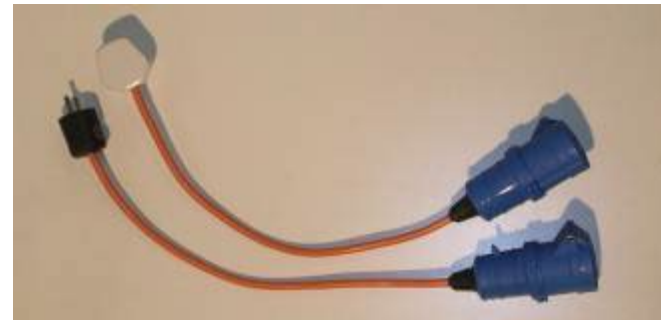
Some continental European campsites still have 2 pin socket outlets, which vary in type. Whilst it is possible to purchase an adaptor (French version illustrated below), be careful to check that the 2 pin plug also has earth strips or sockets, or your installation will not be properly earthed.



! WARNING. If the site does not have a modern EN 60309-2 supply, ask to see the electrical protection for the socket outlet and check with the site operator that it is safe to use. Never use a site without an earthing system.

! WARNING. Always disconnect the towing electrics connector between tow vehicle and Airstream, before connecting a mains supply to the Airstream.

To connect to a 13 amp socket outlet at home, or to a generator with such a socket fitted, you will need a mains hook up adaptor (photo below), these can be purchased from your dealer.



When plugging into the mains supply at home, check the rating of the circuit breaker on the consumer unit, which supplies the socket into which you are plugging the Airstream mains hook up cable.

This needs to be at least **13amps**, the rating of the plug used for the hook up adaptor.

F9 – Electricity, more information

Portable generators

If you are using a 230v AC generator, again the supply in amps will be limited by the output of the generator.

For example the typical portable 2kW generator, such as the Honda EU20 (pictured), has a 2000 watt output, which is equivalent to approx **8.7amps @ 230v** (amps = watts/ volts).

Noise output from generators can be considered a nuisance – speak to any neighbours after letting the generator run for several minutes to warm up, to check that the noise is not intrusive.



Generators vary in quality, cheaper models tend to be noisier and provide less stable power output. Sound output for the Honda EU20i is stated as 59dB at 7 meters with a full load.

Honda pioneered inverter technology; their 'Inverter' generators achieve smooth surge free output (suitable for sensitive electronic products) by generating 12v DC power, which is then passed through an inverter to produce 230v AC.

Two like Honda EU series generators can be linked in parallel to increase available wattage through the generator outlets.

Secure the generator to guard against theft by chaining to a secure object such as a tree, or vehicle chassis.

Generators are heavy, take care where you place this weight and allow for it in your payload calculations.

! WARNING. Generators become hot when used, never leave a generator unattended when young children are at play and take care where siting it – for example long dry grass is a hazard.

! WARNING. Water & electricity are a potentially lethal combination. Do not use a generator in wet weather unless it is covered so the exhaust fumes can escape. Never use a generator in an awning, purchase a generator cover.

Polarity

In the UK, the neutral (blue) wire of mains 230v supply is zero voltage and the live (brown) wire is 230v. To ensure light fittings etc. are not live when switched off, the switch in any appliance socket or switch creates a break in the live wire. The neutral wire remains permanently connected to the fitting. For this reason, it is important that the neutral wire does not become live, a situation referred to as '*reverse polarity*'.

Check for reverse polarity each time you connect to a 230v supply. The EC500 PSU incorporates a 'reverse polarity' warning light, to make this easy.

Reverse polarity can be experienced on a continental campsite, even when the site connector is to EN60309-2. It is possible to rectify the reverse polarity. Your 'on the road' kit includes a reverse polarity lead (photo below), in which the live and neutral wires have been crossed over.



If the reverse polarity light on the PSU illuminates, plug this reverse polarity lead into the mains inlet socket of the Airstream, then plug the 25m hook up cable into this. Then check the polarity warning light again on the PSU.

Or if you are plugging in using a 2 pin continental adaptor, unplug the 2 pin plug, rotate through 180 degrees, plug in again and check the polarity warning light again.

! CAUTION. If these steps do not rectify the reverse polarity situation, disconnect from the mains and consult the site warden for advice.

NOTE: The reverse polarity light will illuminate when using some types of generator, because some generators centre tap the earth connection making both neutral and live conductors 110v above earth. This 110v difference causes the neon polarity indicator to illuminate. In most cases it is still safe to use the generator, but consult the generator handbook for more information.

230v ELECTRICITY DEMAND

Having established the likely supply available in amps into the Airstream, next consider what the demand will be from 230v mains appliances fitted and being used in the Airstream.

The list below shows the output in watts and current consumption in amps for a typical list of 230v appliances which may be fitted or connected:

Appliance	Category of equipment	Amps	Watts
Battery charger (within PSU)	Standard	3 (max)	690
Fridge	Standard	0.8	190
Boiler	Standard	4 or 8 amps	900 or 1800 (1 or 2 immersions)
Aircon	Optional	9.5	2200
Microwave	Optional	6.3	800 output, 1440 input**
TV (LCD type)	Optional	0.3	65
Kettle	Plug in	8.7	2000 *
Hairdryer	Plug in	8.7	2000 *

Some of these like the battery charger, boiler and fridge will be standard equipment. Others like air conditioning, TV's and the microwave are optional equipment.

Lastly you need to consider 230v appliances you may plug into 230v sockets; like a hairdryer, kettle or electric fan heater.

** Domestic portable fan heaters, hair dryers and kettles are each often rated at 2000watts. Lower wattage kettles are available (750watt), they take longer to boil.*

*** The quoted wattage for microwave ovens is the OUTPUT or cooking power. To calculate the approximate INPUT needed, double the output and deduct 10%.*

If you are camping on a site with only a 5 amp supply available:

This equates to 1150 watts (5 x 230v). You will need to monitor and moderate use of 230v appliances so your total wattage being drawn remains below 1150 watts. This will be sufficient for battery charging, fridge and TV operation; but you will need to set the boiler to gas only operation and not use any high wattage items like the microwave, air conditioning or plug in hair dryers etc.

Camping on a site without 230v supply

The fridge should be set to gas operation, as well as the boiler.

Without a 230v supply, the battery charger will not operate. You will however be able to operate the 12v systems from the 12v leisure battery.

12V ELECTRICITY SUPPLY

The Airstream has numerous appliances that use 12v DC power; this includes all lights, water pump, extractor fans, 12v power sockets, TV antenna/ amplifier etc. The 12v Fuse Description Chart earlier in this section lists all the 12v DC fed appliances and the circuit each is fed by.

When a mains 230v supply is connected to the Airstream, the PX300 charger powers the 12v leisure equipment (as well as charging the battery).

If you need to use the electrical system without a Leisure battery connected, first remove the 20amp Leisure Battery Fuse from the PSU (Fuse 6). This will prevent a short if the ring terminals of the battery terminals touch each other, or the metal lining of a battery box. Then turn on the mains 230v RCD, MCB's and the charger ON/ OFF switch on top of the PSU, as normal.

Vehicle battery

The vehicle battery in the tow car can also be used if the Airstream and tow car are correctly connected electrically. The car power circuit and the earth for it need to be correctly wired through to the Airstream, typically using matching male and female 13pin sockets.

This allows the Airstream to either draw 12v DC power from the vehicle battery in the tow car, or to re-charge it.

! CAUTION. Use vehicle battery in tow car only as a temporary measure if necessary, over-use may prevent the car starting.

Press the battery select button on the digital control panel, to select Vehicle battery. The adjacent LED will illuminate when the vehicle battery is selected. The vehicle battery will then be used as the power source and charged by the charger and/ or solar panels (if fitted to the Airstream).

F9 – Electricity, more information

Battery charging and 12v fridge operation whilst towing

The last leisure battery charging option is charging from the towcar whilst driving, the power being generated by the towcar alternator.

The fridge in the Airstream can also be operated on 12v whilst driving.

The electrical connection between Airstream and towcar must be correct, so all wires of the Airstream 13pin connection lead are connected to the correct wires of the tow car. The best way to do this is to have matching male and female 13pin connectors fitted to both tow car and Airstream. See Section A6 for detailed information on towing electrics and the 3 common types of 13pin plugs found in Europe.

The important pins on the 13pin towing connector for battery charging and 12v fridge operation are:

Pin No.	Function	Airstream harness colour	Airstream 13 core lead colour	Comments
Pin 9	Towcar battery +ve	brown/ green (N/G)	brown/ blue	Supplies current for charging leisure battery, when engine is running
Pin 13	Earth for 9	white/ orange (W/O)	white/ green	
Pin 10	Engine running signal	red/ yellow (R/Y)	brown/ red	Powers fridge +ve (12v operation when driving)
Pin 11	Earth for 10	white/ black (W/B)	white/ blue	

For charging to occur, the engine of the towcar must be running (powering pin 10), then the current for charging flows down pin 9 into the power converter of the PSU.

Similarly, the fridge will only operate on 12v when the engine of the towcar is actually running (key in the ignition is not sufficient), so pin 10 is powered.

The battery charging and 12v fridge operation functions are both checked during manufacture of the Airstream, using a test box with switches to simulate car +ve connection and car ignition.

Once you connect your towcar, you may however wish to reassure yourself that the wiring on your towcar is correctly connected to the wiring on the Airstream, to allow battery charging and fridge operation on 12v when driving. To do this you need a plug in ammeter.

Before connecting the Airstream to your towcar using the 13pin lead, enter the Airstream and switch off the control panel. Remove the leisure battery fuse from the PSU, plug it into the blade holder of the in-line ammeter, then plug the blade of the ammeter back into the leisure battery fuse position of the PSU.

You will see a small current being drawn, now switch on the digital control panel and a couple of lights. Remembering that the ammeter is directional, look to see if you get a positive or negative reading. If you get a positive reading, remove the ammeter and plug it in the other way round. You should now have a negative reading (eg - 2A or whatever current is being drawn, depending upon how many lights are on).

Turn the fridge energy selection dial to 12v operation and the LED indicator should be off.

Now hook up the 13pin lead to the car and start the engine.

The control panel in the Airstream should shut down, the EC480 digital control panel will display 'System disabled Engine started'.

Whilst someone revs the tow car engine, check the ammeter - you should now have a positive current being shown, confirming that the leisure battery is being charged.

The LED indicator for 12v fridge operation should now be illuminated.

! NOTE. Not all car manufacturers use wiring of a good cross sectional area to carry current from the car battery +ve (which in turn is charged by the car alternator) to the towing plug. Hence it is sensible to have this checked by an auto-electrician (using thicker cable can improve charging).

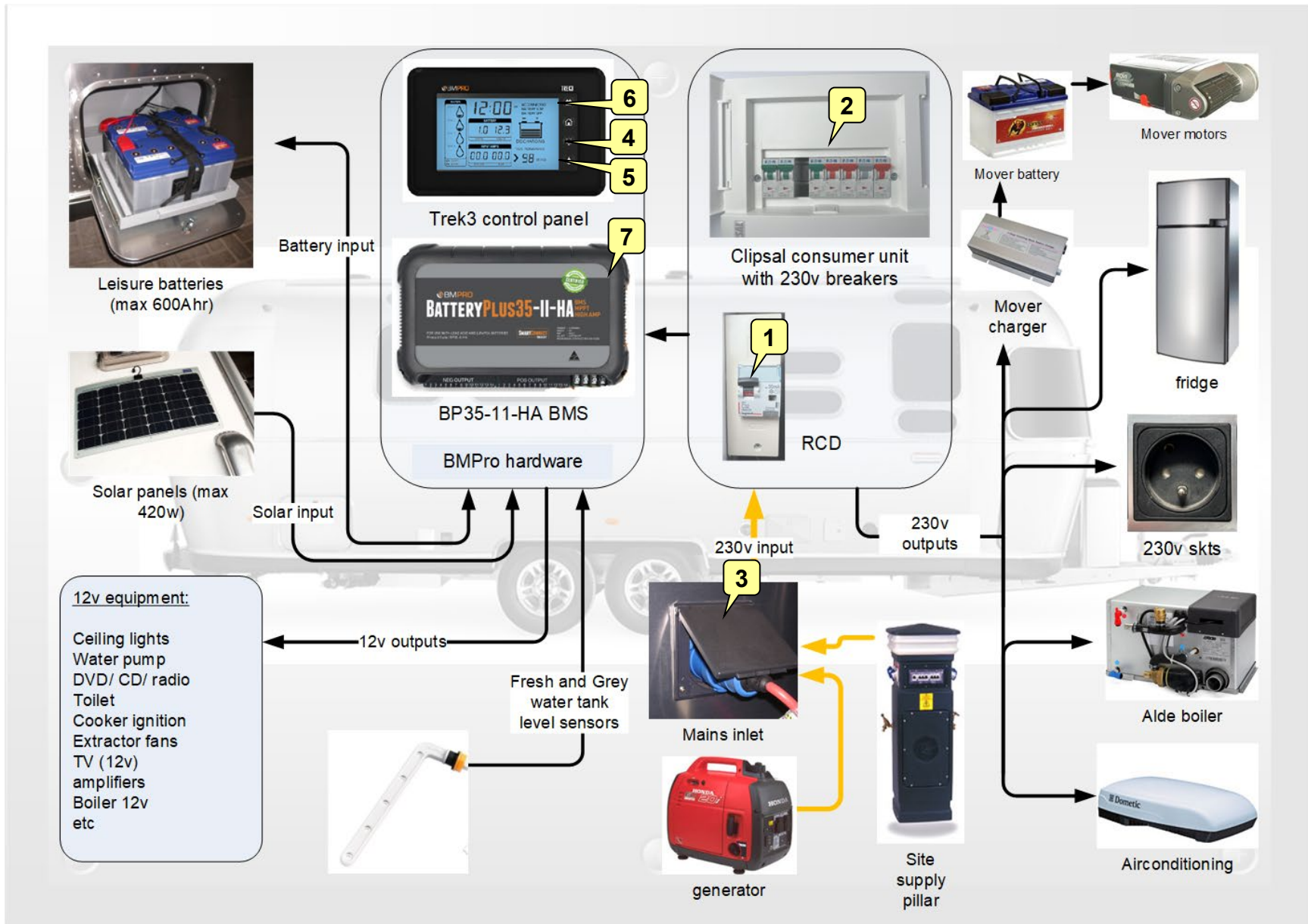
Section G – Electricity, 251B model



Schematic	G1
Normal operation	G2
Trek3 control panel	G3
BP35-11-HA Battery Management System	G4
Batteries	G5
Solar/ other	G6
230v consumer unit and circuits	G7

G1 – 25IB Electrical, schematic

European specification Airstream – 25IB model:



G1

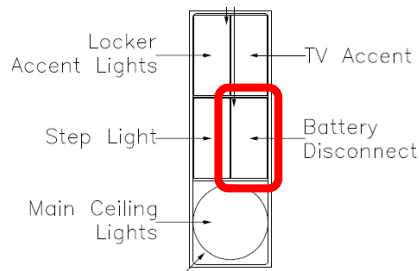
230V MAINS HOOK UP

Plug the orange hook up lead provided into a 230v mains supply, when available (or generator):

- Disconnect towing lead between car & Airstream, before connecting to mains.
- Inside Airstream, locate the RCD **(1)** and MCB's **(2)** and verify these are all OFF (in the down position)
- Inspect site supply pillar. Assess if supply is suitable - 220-240V AC 50Hz and that it is earthed. Check current available (in amps). Turn site supply switch off.
- Unwind orange 230v mains cable into loose coils. Connect female connector of 230v cable to Airstream external mains inlet **(3)**. Then connect male end to site supply. Use adaptor if plugging into domestic 230v socket. Turn site supply on.
- Turn on RCD **(1)** by pushing switch up, press test button adjacent, to confirm RCD trips. Turn on RCD again. Turn all MCB's **(2)** ON so switches are in up position.

12v LOAD DISCONNECT SWITCH

Use this switch inside the entry door to connect or disconnect all loads from the battery(ies). This connects to the remote switch terminal block on the BP35-II-HA. This will not affect solar charging.



TREK3 CONTROL PANEL (detail view next page)

- Trek3 does not have an ON/OFF button. The Trek3 receives power directly from the BatteryPlus35 through the connected data cable. The Trek3 will automatically turn off if it is not receiving power from the BatteryPlus35.
- Upon start-up, the Trek3 will display CAN WAIT on its Home screen, until communication between the Trek3 and BatteryPlus35 is established.
- Backlight **(4)** - Single press will turn the backlight on. Press again to turn the backlight off; otherwise the backlight will automatically turn off after 30 secs. To turn the nightlight on, press and hold the Backlight button for three seconds or until the backlight blinks. The nightlight will stay on for 10 hours. To turn nightlight off, press and hold the Backlight button until the nightlight turns off.
- Water Pump **(5)**- turns the water pump on and off. The Airstream 25IB has only 1 water pump, so the 2nd water pump in the menu should be turned off in Set-up.
- Battery button **(6)** - press the battery button to enter ECO mode to preserve battery capacity until the battery can be charged. All other display segments on the Trek3 will turn off as well. Battery charging is not affected by ECO mode.

BATTERY MANAGEMENT SYSTEM (BMS)

The BatteryPlus35-II-HA battery management system **(7)** is located towards the bottom of the wardrobe, above the 230v consumer unit **(2)**.

It operates from a 100-240V AC mains power supply, the towing vehicle auxiliary and solar panel(s) to provide 35A of current to simultaneously power 12v leisure loads and charge the leisure battery(ies).

It supports Lithium (LiFePO4) battery charging and has a built in 30amp MPPT solar charge controller, capable of handling 420watts of solar.

It is rated to charge battery banks of up to 600Ah in capacity and both lead acid and lithium (LiFePO4) battery types.

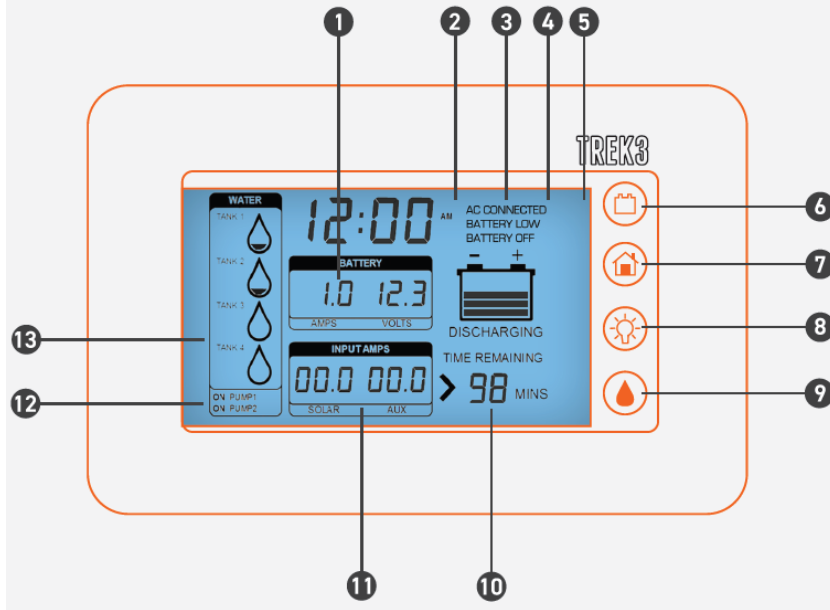
CAUTION! Under heavy loads the BP35-11-HA case may become hot. Ensure the ventilation clearances are maintained, do not place any items against/ adjacent to the unit.

The BatteryPlus35-II has over-temperature protection and will shut down if its internal temperature rises above safe level. The BatteryPlus35-II will automatically restart once it has cooled to an acceptable level.

SOLAR CHARGING

When charging the battery from solar, the BP35-II-HA applies a multi-stage charging algorithm. It will use solar as a charging source if the voltage generated by the solar panel is greater than 17.5V for at least two minutes.

G3 – 25IB Electrical, Trek3 control panel



1. Battery Information
2. Battery Capacity Bar Graph
3. AC Connected: Appears when connected to AC mains
4. Battery Low: Appears when battery voltage is low.
5. Battery Off: Appears when BatteryPlus35 has entered ECO Mode.
6. Battery Button: Enables ECO Mode.
7. Home Button: Enters Set-up Mode.
8. Backlight Button
9. Water Pump Button
10. Time Remaining
11. Input Amps
12. Water Pump Status
13. Tank Level Indicators

Button usage IN SET UP:

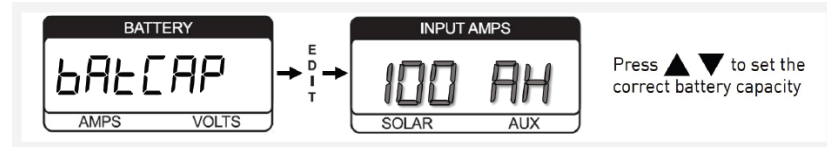
BATTERY = select function to edit
 HOME = return/ back to previous
 BACKLIGHT = scroll up
 WATER PUMP = scroll down



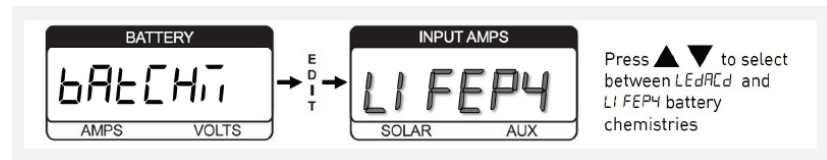
SET UP

To enter Set-up mode, hold down the Home Button until **SET UP** is seen on the Battery display. To exit Set-up, repeatedly press > Back.

Battery capacity - Navigate to the batCaP menu function. Press Edit. Use the Scroll Arrow buttons to set the correct battery capacity.



Battery chemistry – If you have a lithium battery and a BatteryPlus35-HA, you will need to configure the battery chemistry to lithium. Select the AdvAnC menu function in Set Up. Navigate to the bAtCHM menu function. Press Edit. Use the Scroll Arrow buttons to set the correct battery chemistry.



Low battery warning – navigate to bataLm menu function. By default, the low voltage warning threshold is 11V for lead acid and 12.3V for LiFePO4 batteries. Can be adjusted between 10.0 and 14.0V in steps of 0.5V.

To enable **tank monitoring** in Set Up, use the tAnKS menu. Press Edit. Use the Scroll Arrow buttons to select the desired tank. Press Edit. Use the Scroll Arrow buttons to enable or disable the selected tank.

To configure the **water tank type**, Navigate to the tAnKS menu function. Press Edit. Use the Scroll Arrow buttons to select the desired tank. Press Edit. Use the scroll arrows to change to tYP. Press Edit. Use the Scroll Arrow buttons to set the tank to CLEAN or dirty.

The **clock** can be configured to 12hour or 24hour time in the CLOCK menu function.

For fuller instructions from BMPPro, scan the adjacent QR code.

25IB model – Battery Management System (BMS):



1. MAINS CABLE - The BatteryPlus35-II is pre-cabled with a permanent mains power supply cord for use with 240V or 110V input power.
2. LOAD TERMINAL BLOCK – COMMON NEGATIVE CONNECTION - Negative wire connection return point for the 12V loads.
3. LOAD OUTPUTS – 15A X 2 POSITIVE CONNECTIONS - Used for connecting the positive wire of the 12 V loads, outputs 1 & 2.
4. LOAD OUTPUTS – 10A X 12 POSITIVE CONNECTIONS - Used for connecting the positive wire of the 12 V loads, outputs 3 – 14.
5. AUX+ - Connection point for external DC input positive.
6. BATT+'ve - Connection point for battery +'ve and –'ve terminal. Attach fuse to Batt+ wiring.
7. BATT-'ve .
8. (Not used).

9. **RESET (MASTER RESET BUTTON)** - Press the Master Reset Button if any part of the system is unresponsive or not operating correctly..
 10. CAN BUS COMMUNICATION CONNECTOR - To connect to and power BM PRO accessories (BC300 + CommLink External Shunt or OdysseyLink) or Trek control panel.
 11. REMOTE SWITCH TERMINAL BLOCK (RSW) - Terminal block for connecting an optional remote switch. This switch is used to disconnect the loads from all power.
 12. MOUNTING HOLE (X4).
 13. LOAD OUTPUT STATUS INDICATORS.
 14. SOLAR PANEL CONNECTION - for the solar panel input.
 15. +BRK BATTERY OUTPUT (40A RATED) - This output is an uncontrolled 15th output with a maximum current rating of 40 A. This is specifically designed for loads which do not need to be isolated or have a current rating of higher than the inbuilt circuit protection of the individual outputs and have a current rating less than 40 A.
- WARNING!** Any loads connected to +BRK output will not turn off even during ECO mode or Storage mode. To maintain good health of the battery during low voltage, manually turn these loads off. Exceeding 40A total load current may turn-off some of the load outputs 1-14. All loads connected on this output must be individually fused.
16. SYSTEM STATUS INDICATOR - Indicates the operational status (see next page).



G4 – 25IB Electrical, BP35-11-HA

25IB model – Battery Management System (BMS):

Positive 12v load outputs, circuits

#	USAGE – 25IB model	Wire colour	Rating
1	NOT USED		15A
2	NOT USED		15A
3	Water pump	Pink/ black	10A
4	NOT USED		10A
5	Main cabin lights	Yellow	10A
6	Bedroom lights	Purple	10A
7	Bathroom lights	Black	10A
8	Galley/ oven & fridge	Pink	10A
9	Booster, USB, 12v TV	Orange	10A
10	Fans	Red	10A
11	Locker/ sewer compartment lights	Black	10A
12	Radio	Grey	10A
13	NOT USED		10A
14	USB	Purple/ white	10A

Loads are attached using 6.8mm female spade Quick Connects (QC).

Electronic Load Fuse Protection

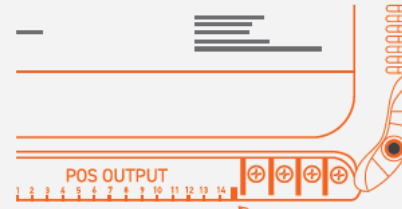
Each 12v output is protected by an internal electronic fuse. Electronic fuses are auto-recoverable and eliminate the need for the user to replace a blown fuse. The electronic fuse will act if the BatteryPlus35-II detects a current greater than the current rating of the terminal and the Output Status Indicator on the BatteryPlus35-II will flash red. The BatteryPlus35-II will power off the faulty load and resume normal operation once the fault has been rectified.

Physical fuse locations

- Battery fuses (40amp) x 1 – battery box at the rear.
- 30amp fuse in auxiliary charge line from 14way terminal block to BP35 aux input (circuit 20) – under the RS front dinette seat.
- 30amp fuse in fridge charge line from 14 way terminal block to fridge (circuit 12) – under the RS front dinette seat.

LED status

8. LED STATUS INDICATOR



LED is located on the bottom right

Look at the LED status indicator to see the current battery charge status.

The LEDs are organised into a traffic light system - green shows the battery is fully charged, orange shows the battery is charging, and red shows there is a fault.

Refer to the table for more details.



●	AC Charging
1x	Low Battery Voltage LFP Mode No Battery
2x	SI Solar Charging SR & HA Solar or AUX/Solar Charging
3x	Aux Charging SI Solar/Aux Charging
●	Battery OK, AC available
1x	Battery OK, no sources available
2x	SI Battery Ok, Solar available SR & HA Battery OK, Solar or AUX/Solar available
3x	Battery OK, AUX available
●	Fault on One or More Output Loads
1x	High Temperature Fault
2x	Battery Fault
3x	Solar Fault
4x	Other Fault
⊗	Power Off

G5

Battery selection

	BATTERY	SI	SR	HA*
Lead Acid	Valve-Regulated (VRLA)	Yes	Yes	Yes
	Absorbed Glass Mat (AGM)	Yes	Yes	Yes
	Gel	Yes	Yes	Yes
Lithium	LiFePO4	No	No	Yes

Table 2: Batteries compatible for use with the BatteryPlus35-II
 * By default, the BP35-II-HA is configured to charge lead acid batteries.

WARNING! The BP35-II-HA is designed for use with Lead Acid and LiFePO4 Lithium batteries only. Do not connect other types of Lithium batteries.

Before connecting multiple batteries in parallel to the BatteryPlus35-II, check that all batteries are same:

- manufacturer
- model
- capacity
- age, and
- fully charged

Connecting/ disconnecting a battery:

1. Power off all loads connected to the BatteryPlus35-II, the easiest way is with the battery disconnect switch, by the trailer entry door.
2. Turn off and remove all power sources (auxiliary/mains/solar) to the BatteryPlus35-II.
3. Connect or disconnect the battery's negative (black) terminal from the BatteryPlus35-II Batt- Connection Point
4. Connect or disconnect the battery's positive (red) terminal from the BatteryPlus35-II Batt+ Connection point

Configure battery capacity & chemistry

After fitting a new battery to the BatteryPlus35-II, make sure that the battery capacity and chemistry is set correctly, using the Trek3 panel.

This will ensure that the BatteryPlus35-II will select the best charging parameters for the battery in use, and the software accurately estimates battery usage.

Battery Health Preservation

The BatteryPlus35-II preserves battery health by preventing the battery from excessive discharge. The BatteryPlus35-II will start a two-stage shutdown or Low Voltage Disconnect (LVD), powering down the BatteryPlus35-II outputs. This is to conserve remaining battery capacity until the battery can be charged. The BatteryPlus35-II will enter the two stages of LVD, ECO Mode and Storage Mode, when the caravan's battery voltage falls below the LVD thresholds. Note +BRK Battery Output (40A rated) is not controlled by the LVD mode.

ECO mode

The BatteryPlus35-II will provide power to your battery monitor. However, power to the load terminal block will be turned off (except for terminal 1).

To exit ECO Mode, start battery charging. The BP35-II will exit ECO Mode when the battery charges to the Recovery voltage. Upon exit of ECO Mode, the BP35-II will automatically return to its previous state of operation.

When in ECO Mode you may temporarily turn on caravan loads for a short time by cycling the switch connected the BatteryPlus35-II's RSW input or the battery button on Trek2, Odyssey or Mobile Apps. This feature allows you to retract slide-outs or electric steps.

STORAGE mode

Power to all loads and the accessories including battery monitors and remote controls will now be turned off.

To exit Storage Mode, start battery charging. The BatteryPlus35-II will exit Storage Mode when the battery charges to the Recovery voltage. When in Storage Mode you may temporarily turn on caravan loads for a short time by cycling the switch connected the BatteryPlus35-II's RSW input.

G5 – 25IB Electrical, batteries

Storage

Once your adventure is over be sure to charge the battery and power off all loads. Use the battery disconnect switch by the trailer entry door, to enter Storage Mode and power off all loads.

When not in use, it is recommended that you recharge the battery, ideally monthly, or every three to six months. Regular recharging prevents the battery from becoming heavily discharged, which can significantly shorten the battery's lifespan. If the trailer is parked in the sun and in storage mode with a solar panel fitted, this is a convenient way to maintain your battery.

Heavily Discharged Batteries (Lead Acid)

The BatteryPlus35-II will not charge heavily discharged lead acid batteries.

In normal use, and with the BatteryPlus35-II battery health preservation, batteries should never become heavily discharged. If your battery is heavily discharged, disconnect it from the BatteryPlus35-II and charge with a stand-alone charger. Reconnect the battery once the battery voltage has recovered to normal levels.

Heavily Discharged Batteries (LiFePO4 HA Model only)

The BatteryPlus35-II-HA can recover and charge a heavily discharged LiFePO4 battery. The internal Battery Management System (BMS) of a LiFePO4 battery will turn off the battery voltage if it detects that the battery is heavily discharged. The BatteryPlus35-II-HA will provide the voltage to restart the LiFePO4 battery's BMS and then commence charging of the LiFePO4 battery.

Operation without a battery

The BP35-II will act as a power supply if the following conditions are met:

1. A battery is not connected to the BP35-II, and
2. The BP35-II is configured to charge Lead Acid batteries, and
3. The BP35-II is connected and powered by a mains power source, or
4. The BP35-II is connected and powered by an AUX input

Power Supply mode allows you to control and power your caravan's loads directly from mains or AUX without the need to connect the caravan battery. When powered from the mains, the BP35-II provides a voltage of 12.8V.

Battery charging Management

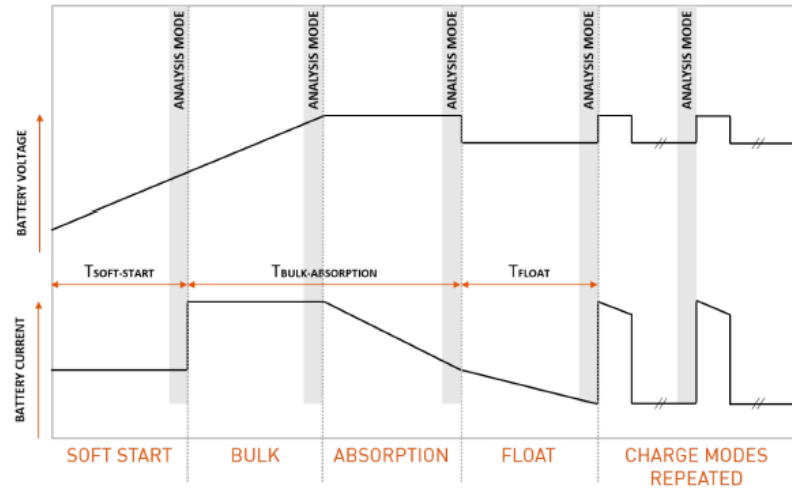


Figure 6: BatteryPlus35-II Battery Charging Management Algorithm

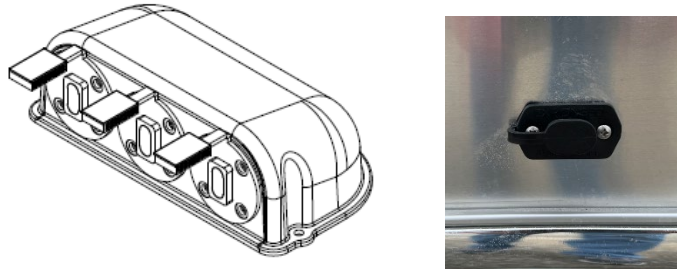
BATTERY CAPACITY	SOFT START	BULK- ABSORPTION	FLOAT
≤ 100Ah	6 Hours	5 Hours	6 Hours
150Ah	6 Hours	7.5 Hours	6 Hours
200Ah	6 Hours	10 Hours	6 Hours
250Ah	6 Hours	12.5 Hours	6 Hours
≥ 300Ah	6 Hours	15 Hours	6 Hours

Table 7: Timeout for each charging mode, based on battery capacity

G6 – 25IB Electrical, solar/ other

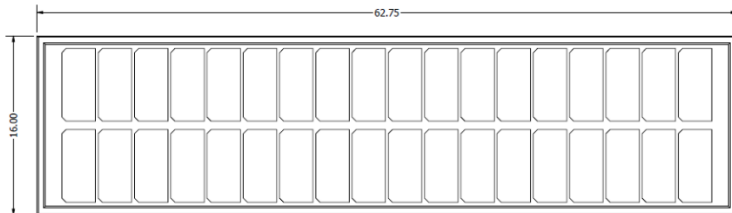
Solar panels

The trailer comes pre-wired for solar as standard, with a 3 position solar port on the main roof (left image below), able to take connections from up to 3 solar panels.



In addition, there is a single port on the roadside wall (right image above), to allow an additional portable solar panel to be connected.

1 x 100w Merlin solar panel is available as a factory fit option on the roof. This is a rigid low profile panel, fitted on metal brackets.



Subject to other equipment positioning on the roof, 1-2 further solar panels could be ordered as a dealer fit option, using matching solar panels purchased from Airstream. These will come with an SAE connector to plug into the port on the roof.

The maximum solar panel wattage that the 30amp MPPT solar charge controller fitted can cope with is 420watts.

Inverter

An inverter is not fitted as standard, or available as a factory fit option.

App control

BMPro offer an additional hardware unit called OdysseyLink103, which can be connected to the Trek3 enabling control and monitoring via a phone app, plus the ability to add Tire Pressure Sensors, Gas Bottle Sensor and Wireless Temp Sensor.

G7 – 25IB Electrical, 230v consumer unit & circuits

230v circuits

The left image below shows the RCD (residual current device), which is positioned behind a door of the cabinet housing the bedroom TV, at the foot of the bed.

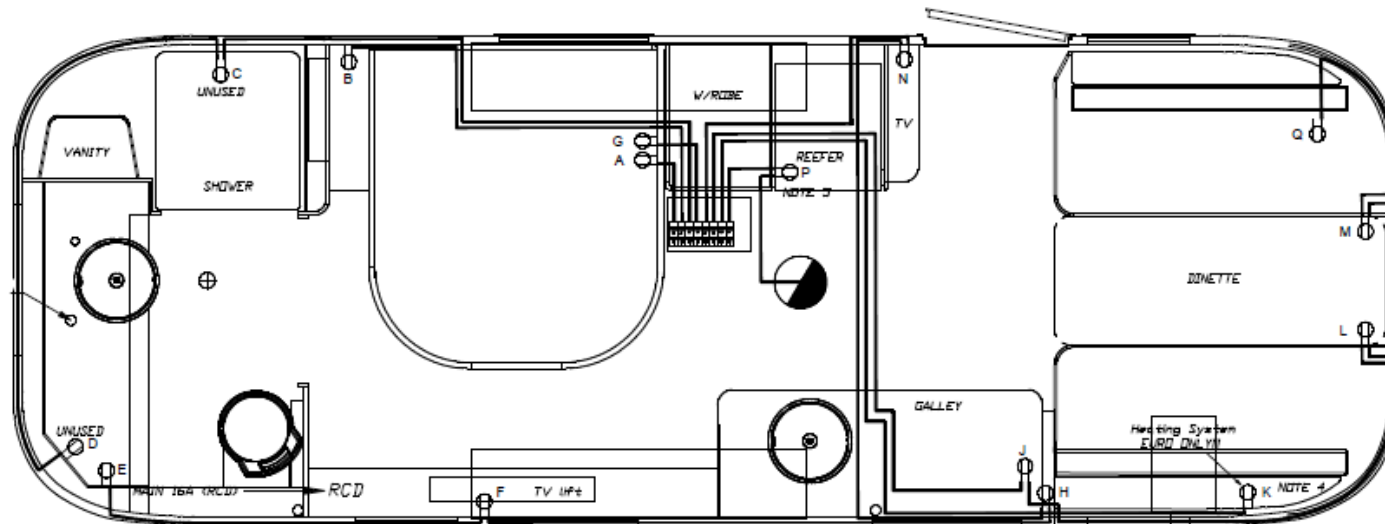
When connecting to a non familiar 230v supply (most locations other than your home), turn the RCD off (switch down), before connecting the mains electrical hook up lead externally and turning the site 230v supply on. Then turn the RCD on by pushing the switch up and press the test button adjacent, to confirm that the RCD trips. Then you can turn the RCD back on.



The 230v consumer unit is a Clipsal enclosure mounted in the base of the wardrobe. It has 7 breakers fitted (right photo adjacent), which supply the following circuits:

CRT.	SYM	DESCRIPTION	RATED (AMPS)	WIRE GA.	BREAKER TYPE
1	A	BP35 Power Management System Recept. (Single)	2.5	14	6A
2	B	Night Stand Recept.	1.0	14	6A
4	G	Refer Recept.	2.25	14	6A
5		Cabin Receptacles	5.0	14	10A
	N	Cabin TV Recept.	1.0	14	
	H	Galley Top Recept.	1.0	14	
	F	Bedroom TV Recept.	.5	14	
	E	Bathroom Recept.	1.0	14	
6	J	Microwave Recept.	4.5	14	10A
	L	RS Dinette Recept.	1.0	14	
	M	CS Dinette Recept.	1.0	14	
	Q	Dinette Locker Recept.	1.0	14	
7	K	Heating System (EU ONLY) * NOTE 4	12.5	14	16A
8	P	Air Conditioner Recept. * NOTE 5	6.38	14	10A
Total Potential Current			40.6300		

The drawing below labels the outlets A to P.



Section H – Water - 534 & 684 models



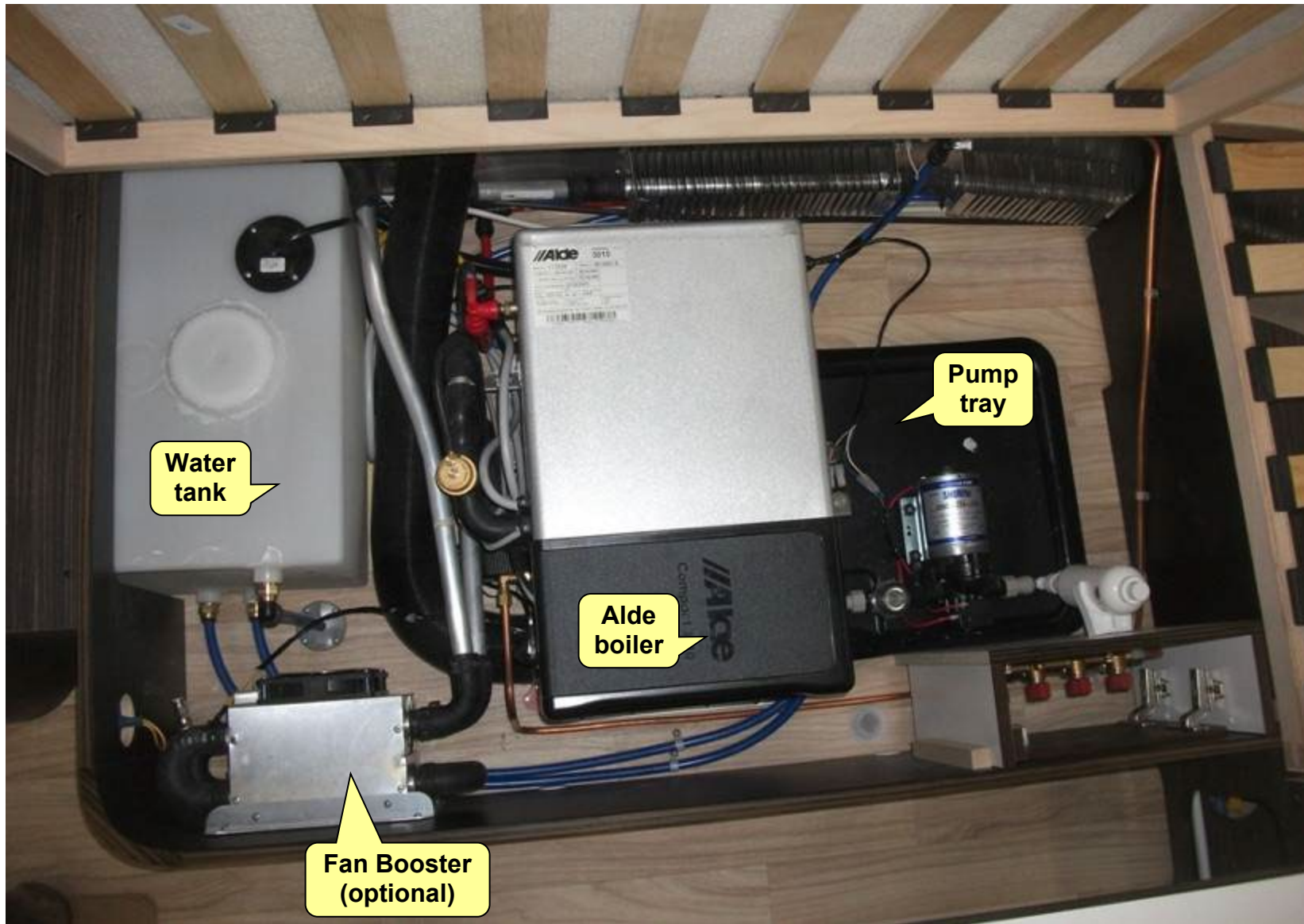
Overview – water & waste water systems	H1
Normal operation	H2
Equipment	H3
Priming and draining	H4
Troubleshooting and maintenance	H5

H1 – 534 & 684 water system - overview



H1

'Wet' systems under seat, typical arrangement:



H1 – 534 & 684 waste water system - overview

(Shower tray not shown)

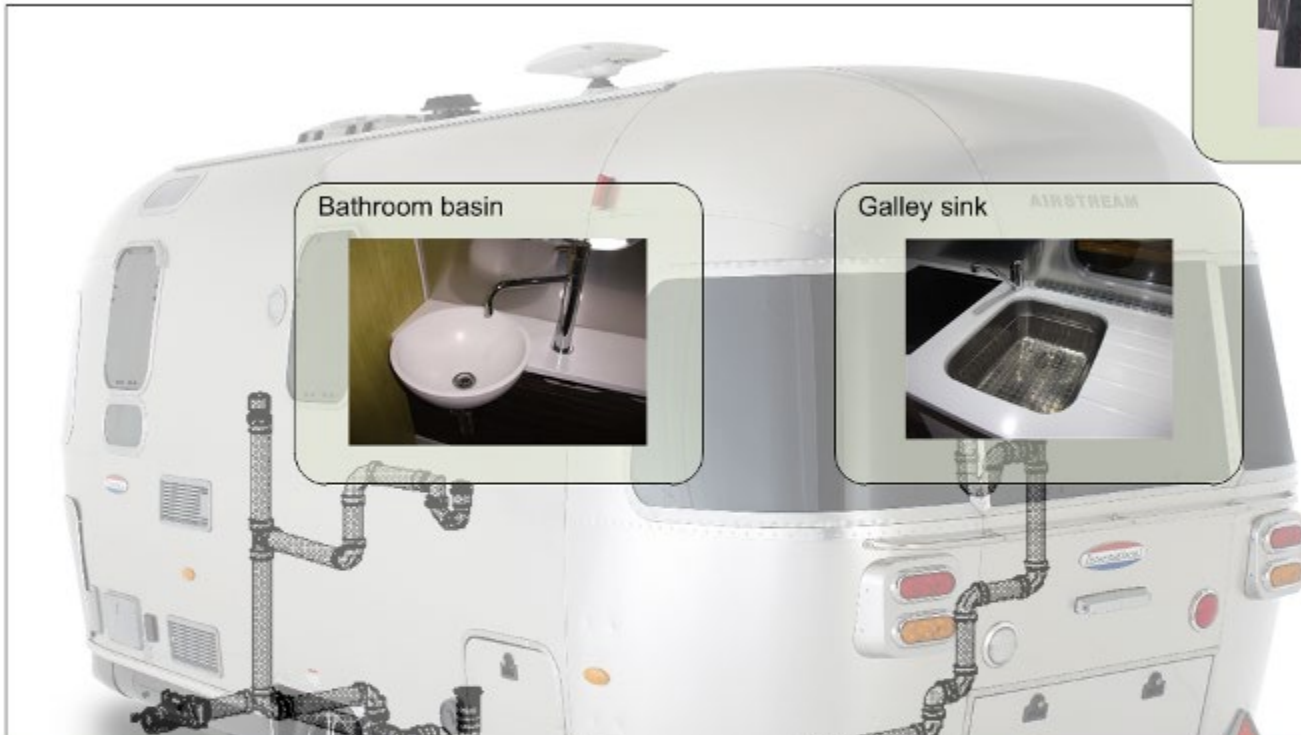
Rigid 38mm piping



Bathroom basin



Galley sink



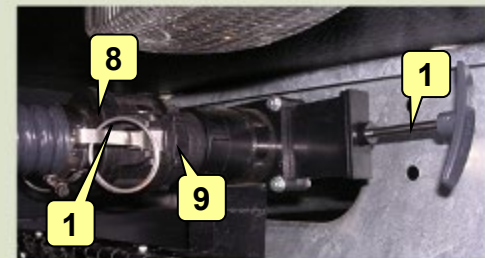
Portable waste tank connected



Banjo coupling and 38mm hose



Gate valve in open position



H1

CONNECTING COLD WATER SUPPLY

Before attempting to draw water into the Airstream, first ensure that the internal water tank auto-fill button (1) on the electronic control panel internally is turned OFF, so it is not illuminated.

Fill Aquaroll (2), or other portable water container, from the nearest suitable clean water supply and place next to the water inlet socket of the Airstream. Alternatively, if a mains water supply is available, use a Whale mains water connection hose, or Aquaroll mains adaptor and connect to the tap.

NOTE: *There is no improvement in water pressure to taps using a mains water connection.*

When using the Aquaroll, you will require the external submersible pump (3). First place the submersible pump into the Aquaroll, so the pump drops below the water. Then insert the plug of the submersible pump, or mains water hose, into the black water inlet socket on the exterior of the Airstream. **NOTE:** *Place the submersible pump into the water BEFORE connecting it to the water inlet socket, this allows air to escape from the pump and prevents airlocks.*

Check that the plug is fully pushed in to the inlet socket, then push down the lid/ cover to the inlet socket (photos below), so the plug of the hose is locked into the inlet socket.



Incorrect



Correct

If you are using the mains water hose, now turn the tap ON so the hose becomes pressurised.

CAUTION! Turn the mains tap OFF at night, or when leaving the Airstream unattended.

Before filling the internal water tank, open the waste water compartment (4) using the quarter turn catches and check the yellow handle (5) to the water tank drain down valve is in the closed position – perpendicular to the direction of travel. **NOTE:** *position and type of drain down varies.*

CONNECTING WASTE WATER CONTAINER

Place Wastemaster (6) or other portable waste water container adjacent to waste water compartment (4) of Airstream.

To operate the waste water compartment light fixed to the underside of the floor of the compartment, the control panel internally must be turned ON (7), then press the small switch on the light.

Fit female banjo coupling of waste water hose (8) over male coupling (9) of waste water piping in waste water compartment. Pull clips (10) forward to lock coupling.

Pull gate valve handle (11) to out (OPEN) position, so waste water will drain into the Wastemaster, when taps are run inside the Airstream.

COLD WATER OPERATION

Enter the Airstream. Turn 12V control panel ON using top left button (7) so it is illuminated, then press button with tap emblem (12) to turn the internal water pump ON.

Press the up or down arrows (13) to scroll to the display which shows the fresh water tank level (the scale labelled (F) (14).

If there is water in the internal water tank and you open a tap in the Airstream, the internal pump (15) will turn on and deliver water. A surge damper (16) is fitted as standard, which helps prevent pump cycling.

FILLING INTERNAL WATER TANK

If the internal tank is empty, or needs topping up, press the tank auto-fill button (1) on the control panel.

If you are using the Aquaroll, this will start the external submersible pump (3) which you can hear running if you walk outside, it will also open the solenoid valve (17) to allow water to enter the internal water tank (18).

As water fills the internal tank, a sender in the top of the tank (19) with 4 different lengths of metal probe, detects the change in water level and you can monitor the level via the control panel (14).

The auto fill process will stop once the water level reaches 100%, or after 4 minutes have passed, whichever is the sooner.

If the Aquaroll runs dry whilst filling the internal tank, the 4 minute cut off will prevent the submersible pump running continuously, but if you notice increased noise from the submersible pump (a sign the Aquaroll is empty), stop the fill process by turning the auto-fill button off (1).

The internal water tank has an overflow (20) which passes down through the floor. There is no external filler point in the wall of the Airstream for filling the water tank by gravity.

DRAINING WATER TANK BEFORE TRAVEL

The position of the water tank forward of the axle means travelling with the water tank full will increase noseweight.

CAUTION! Check the noseweight limit of your towcar before travelling with the water tank full. Open the drain down valve to drain the tank contents.

H3 – 534 & 684 water system - equipment

PIPING

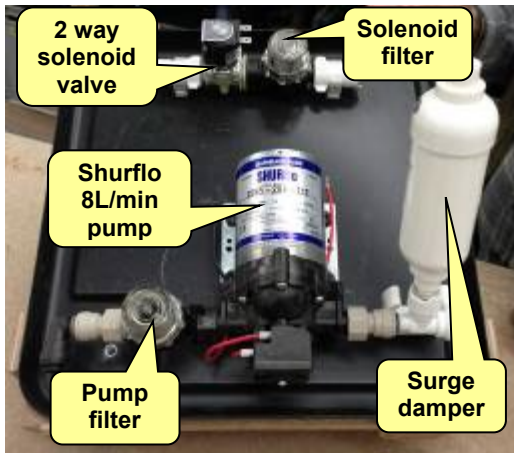
Water piping is 12mm John Guest semi rigid plastic piping (red for hot, blue for cold), connected by 12mm quick connect push fit couplings.



Any repairs required should be made with the same piping and fittings.

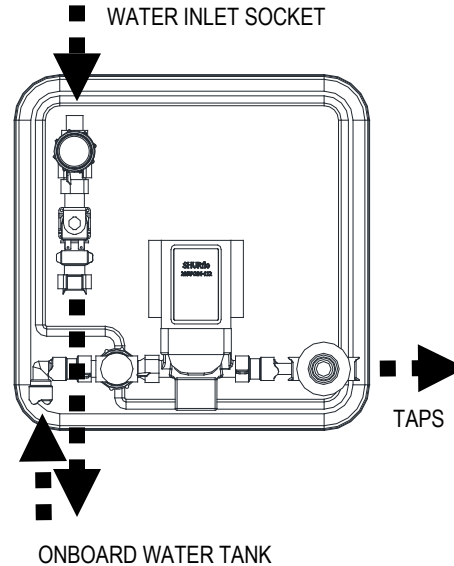
WATER PUMP TRAY

The onboard water pump, surge damper, solenoid valve and filters are mounted on a plastic pump tray, with drain through the floor. This allows filters to be removed for winterizing, without wetting the floor.



The pump used on all models is a Shurflo Trail King 7.5 LPM 20psi pump. This is a self priming diaphragm pump with integral pressure switch.

WATER ROUTING



FILTERS

Pump & solenoid valve filters

The reciprocating pistons in a diaphragm pump are sensitive to small particles of debris. Dirt can also clog the solenoid valve. Hence filters are fitted on the inlet side of both pump and solenoid valve.



The filter caps should be removed if the water system is drained down for winterizing. Turn the pump off, unscrew the clear plastic caps and clear any debris.

The solenoid valve also contains a small filter (2nd photo below) on the inlet side. This can be inspected if necessary by removing the solenoid.



Inlet socket filter

The water inlet socket on the outside of the Airstream contains another similar small filter. This can be inspected as necessary by removing the inner part of the inlet socket (use manual Philips screwdriver only, or heads of soft stainless steel screws will burr).

The filter is inserted from the rear of the inner part of the inlet socket (right photo below).



Before re-fitting the inner part of the inlet socket, check the O ring is present as highlighted below.



SUBMERSIBLE WATER PUMP

The external pump used to fill the internal water tank is the Whale Watermaster high flow EP1612 submersible pump. Customers are advised to purchase and carry a spare pump.



WATER PRESSURE AND FLOW RATES

Typical flow rate at any tap when drawing water from the external Aquaroll, or onboard tank, will be 3 to 4 litres per minute.

MAINS WATER CONNECTION

Two options are available for connecting to a mains water supply:

The Whale Aquasource mains water connection hose (**left photo below**) allows a tap to be connected directly to the water inlet socket of the Airstream. In this situation, mains water is connected to the Airstream as long as the tap is turned ON. The Aquasource has a pressure inhibitor in the plug, which is set at the factory to regulate pressure at maximum 1.2-1.5bar.

Alternatively, the Aquaroll mains adaptor (**right photo below**) connects the tap to a ball valve set into the Aquaroll. In this situation, the Aquaroll acts as an external header tank. This arrangement removes any risk of mains water pressure flooding the Airstream should any plumbing fitting fail.



DRINKING WATER

! CAUTION Any water supply or water system can harbour germs/ bacteria. Whilst sanitising of the water system is possible, we recommend for your own safety that all occupants of the Airstream drink bottled water only.

WATER TEMPERATURE

! CAUTION Hot water temperature can be high from the hot tap, particularly if the boiler is operated on gas and the extra warm water function is selected. Take care to prevent scalding when using taps and showers without thermostatic mixers.

See Section 1 of this Manual for detailed instructions on supply of hot water and heating from the Alde Compact 3010 boiler.

WATER FOR TOILET FLUSHING

The water pump needs to be turned on when flushing the toilet, for the toilet flush to work.

WATER TANK LEVEL INDICATOR

Note: the EC480 water tank level display only shows the level in the onboard tank.

To check the level of water in an external Aquaroll, look into the Aquaroll.

Don't forget to empty the portable Wastewater tank. This has similar capacity to the Aquaroll, so will need emptying each time you fill the Aquaroll.

H4 – 534 & 684 water, priming & draining down

PRIMING AND RE-FILLING SYSTEM

If the Airstream has not been used for several months and particularly if it has not been heated, you may like to ask your dealer to re-commission the system. They can do an air pressure test before re-filling with water.

Fill Aquaroll and connect external pump.

Close both drain down points – onboard water tank drain down near to onboard water tank and hot water drain down adjacent to boiler. Yellow handles should be in horizontal (down) position.

Check and close hot & cold taps to all sinks, internal shower and external shower.

Lift seat cushions to give visible views of the onboard pump, so you can hear it running and quickly see any leaks.

! CAUTION. Remember to refit the caps to the 2 filters on the water pump tray. NOTE: it does not matter if the filter is facing up, or down, once refitted.

Then press on/ off button **(7)** to turn on control panel, then turn on tank auto-fill button **(1)**.

Verify the external pump starts, water enters the internal water tank and the external pump shuts off when the internal tank is full.

Turn on water pump **(12)** and open hot tap furthest from boiler. The internal water pump should start. Leave tap open to release air from the boiler hot tank reservoir, as it fills with cold water. When water flows steadily from the hot tap, switch the same tap to cold to bleed air from the cold water pipework and wait until water flows steadily. Then turn the tap off. The pump will continue running to build pressure, then shut off.

Repeat for all other taps – open to hot and cold side in turn until the water flows steadily.

Refit the shower head to the internal shower if this was removed for winterizing, ensuring washers are in place to all connections.

Open the external shower compartment door externally. If the shower head was removed for winterizing, re-fit the shower head ensuring washers are in place to all connections. Then open hot and cold taps to the outside shower.

Then the system is filled and ready to use.

After re-filling the water system, do a thorough check immediately for leaks, then check again after 12-24 hours.

Check the water pump tray area, on the aft side of the boiler (where the hot and cold water connections to the boiler are), connections to the onboard water tank, under the kitchen and bathroom sinks. Including connections to the shower etc.

DRAINING DOWN

For full instructions on winterising your Airstream, see section D5 of this Manual. The text below deals with the water system only.

Disconnect the water supply externally (if connected).

Drain the internal cold water tank. Locate drain down lever below or above floor and open, to empty the tank.

Drain the domestic hot water tank in the Alde boiler. Lift the yellow lever to the drain down point, which is usually positioned close to the Alde boiler.

Turn ON the water pump at the control panel.

Open all taps in turn until no water flow. In the case of single lever taps, move the tap to midway between hot and cold and lift to the open position, then leave tap in open position.

Open all showers to 'on' position. Un-clip shower heads to internal and external showers (including pull out shower heads to wet baths, which should be pulled out fully).

Depress any hand spray levers while holding down into the shower tray/ onto the ground respectively, until there is no further water flow. Remove shower heads, shake water out and store.

Flush the WC until water flow into the bowl ceases.

Access the internal water pump. Remove caps to filters of pump and solenoid valve and allow water to drain out. Leave the filter cap(s) off (*ready to replace in Spring when re-commissioning*).

Access the waste water bellypan compartment. Pull gate valve and leave in fully out (open) position, to drain any water from waste water piping.

All toilets: Remove WC vacuum cassette, empty completely, flush with clean water, leave to drain and then return to the trailer, or store indoors.

Fill P traps to galley sink, bathroom wash hand basin and shower tray with antifreeze, diluted to manufacturer's instructions.

CAUTION! If water is allowed to freeze in the system, serious damage to the water heater, pipework and pump will occur.

EXTERNAL PUMP NOT WORKING

Check fuse 4 on the EC500 PSU, this supplies 12v power to the external pump supply. Remove the fuse and check if it is blown. Replace it carefully ensuring that both blades of the fuse are engaged into the fuse holder.

Lift the seat frame to access the water pump tray area. Locate the rear of the water inlet socket, which the submersible pump plugs into externally.

There are electrical spade connections on the rear of the socket, which wires from the 12v floor should be connected to. Check the green/ white wire is connected to the left hand spade terminal which is labelled '+', the white/ orange wire is connected to the right spade terminal labelled '-' (negative).

To double check that 12v power is being supplied:

- 1) Turn the auto fill button on at the control panel (bottom right hand button).
- 2) Look at the EC500 PSU in the base of the wardrobe. The LED of the water pump button on the EC500 PSU should start flashing, indicating the tank fill process is enabled.
- 3) Use a voltmeter, or if you don't have one, remove an LED ceiling light, undo the light from the roof harness and use the LED light to check for power at the external pump wires. Remove the wires temporarily from the rear of the water inlet socket, then touch the red wire of the LED light on the green/white wire, the white wire of the light on the white/ orange wire. If the LED light illuminates, you have 12v power!

Reconnect the wires to the rear of the water inlet socket (green/white wire to +ve).

If you have confirmed that 12v power is being supplied, but the external pump is still not working, this would point to the pump being defective.

EXTERNAL PUMP WORKING, BUT WATER NOT FILLING INTERNAL TANK

Check fuse 14 on the EC500 PSU, this supplies 12v power to the 2 way solenoid valve. Remove the fuse and check if it is blown. Replace it carefully ensuring that both blades of the fuse are engaged into the fuse holder.

Locate the solenoid valve (**17**) on the pump tray. Touch it lightly to see if it is warm.

Disconnect the submersible pump, or mains water hose, from the water inlet socket externally. If there is a filter fitted to the inlet side of the solenoid valve, remove the clear plastic cap to the filter. Check for debris, then re-fit the filter cap, turning until it is hand tight.

To double check that 12v power is being supplied:

With the auto-fill button pressed on the control panel, remove one of the 12v wires connected to the top of the solenoid valve, then re-connect it again. You should hear a click noise if power is reaching the solenoid valve, causing it to open and close.

If you do not hear/ feel the solenoid valve opening & closing, use a voltmeter, or if you don't have one, remove an LED ceiling light, undo the light from the roof harness and use the LED light to check for power on the wires supplying the valve. Touch the red wire of the LED light on the green/red wire, the white wire of the light on the white/ orange wire. If the LED light illuminates, you have 12v power!

If you have confirmed that 12v power is being supplied, but the solenoid valve is still not working, this would point to the valve being defective.

INTERNAL PUMP NOT WORKING, WATER NOT FLOWING TO TAPS

Is there water in the onboard water tank? Press the up or down arrows (**13**) on the Sargents control panel to scroll to the display which shows the fresh water tank level (the scale labelled (F) (**14**).

Alternatively, locate the internal water tank (**18**) under the seating and check if there is water in the tank (the tank wall is semi-transparent allowing you to see the level of water).

Remove the base cushion and lift the seat frame above the water pump tray. Locate the internal Shurflo pump (**15**) on the pump tray.

Open a tap, then put your hand on the Shurflo pump. Is it vibrating at all? If it is this indicates the pump is getting power and the problem is not electrical.

If the pump is not vibrating at all, check fuse 4 on the EC500 PSU, this supplies 12v power to the external pump supply. Remove the fuse and check if it is blown. Replace it ensuring that both blades of the fuse are engaged in the fuse holder.

Inspect the electrical connections to the pump, check the blue/ green wire is connected to the red cable of the pump and the white/ orange wire is connected to the black wire of the pump.

H5 – 534 & 684 water, troubleshooting & maintenance

Pump not turning off:

- The usual cause for the pump not being able to build pressure and turn off is the cold water supply has run out – check Aquaroll or internal water tank and fill if empty.
- If tanks are sufficiently full, check for taps left on, or leaks in the system.

Pump not priming:

- Check that plug of hose is fully engaged in the inlet socket, with cover to the inlet socket correctly pushed down to lock the plug of the water hose in the inlet socket.

Pump cycling (clicking on/off periodically):

- Any slight drop in pressure in the water system will often cause a pump to cycle on and off for a few strokes. This can be irritating, especially at night.

Check that all taps are turned off and none are dripping water. Check for signs of leakage elsewhere - adjacent to the pump, on the floor, or under the Airstream.

If no leaks can be found from the cold & hot water piping, check and clean the filter adjacent to the pump.

If the pump cycling continues and becomes regular, despite a check for leaks and cleaning of the filter, speak to your dealer.

In the meantime, the pump can be turned off at the control panel **(15)** to prevent it cycling, for example at night, when taps or the WC are not being used.

Leaks from water pipe connections:

- If the system is not drained down and allowed to freeze in winter, freeze/ thaw action can cause the semi rigid pipes to partially push out of the push fit couplings, causing leaks when the system is put back into service.

Access all connections and check the semi rigid piping is fully pushed into the push fit couplings.

Low flow:

- Check for kinks in the braided connection hose from the tap, or shower, to the semi rigid water lines.

MAINTENANCE RECOMMENDATIONS

Visual inspection

- Remove cushions from seats above water pump tray/boiler/cold water tank. Inspect pump tray, water tank connections and boiler connections for any evidence of leakage.
- Inspect under kitchen sink and bathroom lavy worktop for any sign of leaks to fresh or waste water fittings to taps and showers.

Filters

- Check and clean all filters (see previous section for locations) periodically, at least once annually.

Tank sender

- Remove the sender in the top of the water tank **(19)** by unscrewing the 4 screws holding it in place. Clean the metal probes with a scotchbrite pad. Then refit.

O rings on male spigot of water inlet socket

- Check periodically that both O rings (there are 2) on the male spigot of the mains water inlet are present and undamaged.



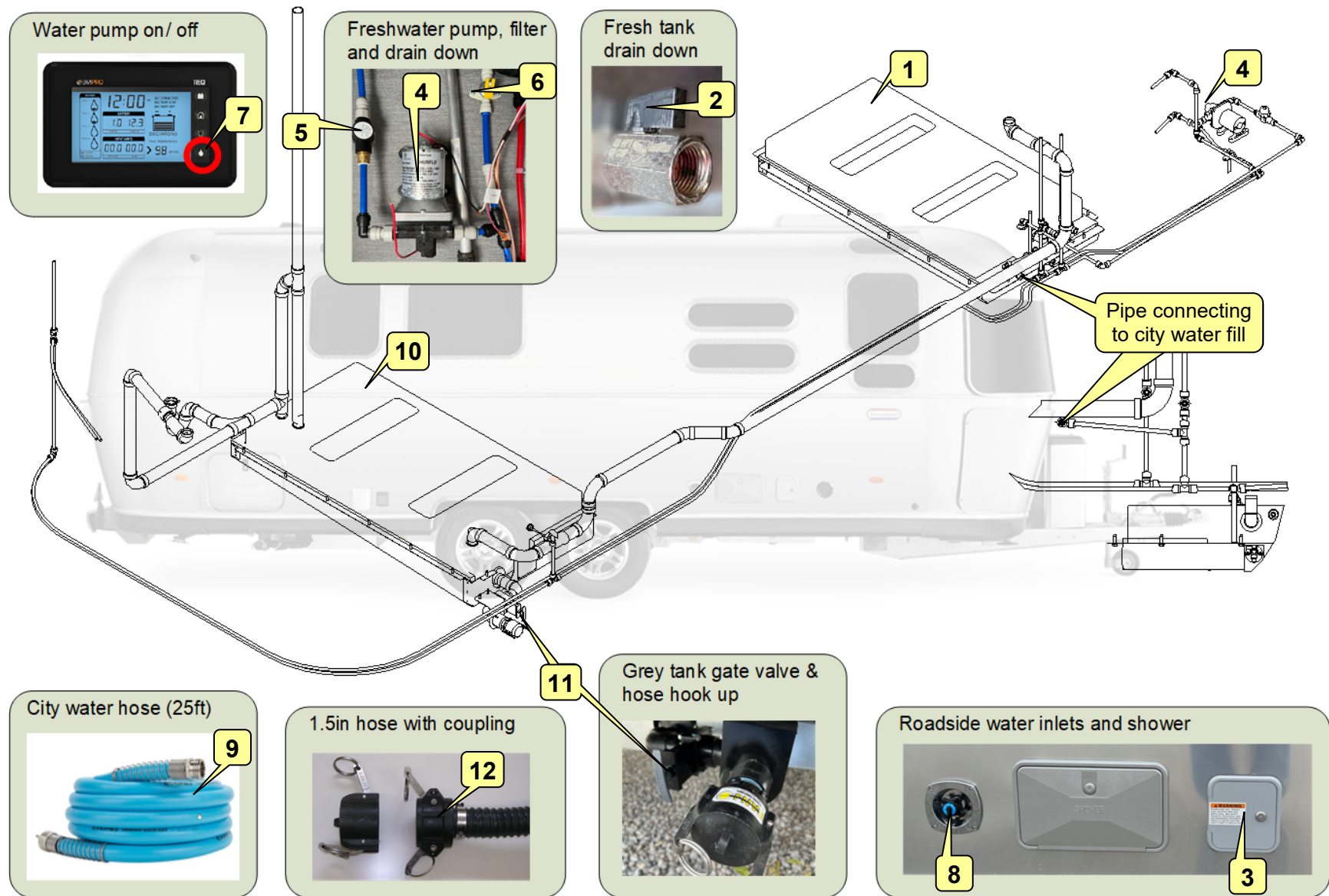
Section I – Water – 251B model



Overview – water & plumbing
Normal operation

I1
I2

I1 – 25IB water & plumbing - overview



FRESH WATER TANK

The fresh water tank (1) is a 104litre capacity tank located below floor, forward of the axle.

The position of the water tank forward of the axle means travelling with the water tank full will increase noseweight.

CAUTION! Check the noseweight limit of your towcar before travelling with the water tank full.

The fresh tank can be drained using the in-line brass valve (2) mounted to the galvanized steel tank underbelly below floor on the roadside, and/ or by opening a tap and running the water pump.

If you opt to run the water pump, be sure to watch closely and turn the pump off when the tank runs dry. Pump damage can occur if the pump runs dry for more than a few minutes.

GRAVITY WATER FILL

Fill the water tank from the gravity water fill (3). This is located externally on the road side of the trailer, behind a lockable compartment door. A small vent is located next to the port to allow air to expel from the tank as it is filled.

Use an open ended hose that is approved for drinking water use. Turn the hose on and let the water run through the hose for a short time to flush it out, before inserting it into the gravity water fill.

Remember, the more water you carry in the fresh water tank, the less cargo carrying capacity you have for other items.

The tank level is measured by a dipper, which connects to the Trek3 control panel inside by the entry door, or you may fill the tank until water overflows out of the fill.

WATER PUMP

The water pump (4) is positioned under the roadside seat, forward of the Alde boiler. Lift the seat cushion and seat frame for access. A separate filter (5) to the pump is adjacent, as is the water drain down valve with yellow lift lever (6).

To draw water from the tank, open the bathroom basin tap to the hot side and turn on the water pump (7) at the Trek3 control panel. This will draw water into the Alde boiler hot water tank, before being drawn to the tap.

For some time, the open tap will sputter air. When water starts flowing, open the tap to the cold side until water flows steadily. Then open other taps to clear other water lines of air also. Once the system is filled with water and the taps closed, the water pump will shut off.

When a tap is opened, the pump will come back on automatically. If the tap is just barely open, it is normal for the pump to cycle on and off.

As a general rule, the water pump should be turned off while using a city water hookup, however the water pressure at some campgrounds may be low. The water pump can be turned on to assist the city water hookup pressure. Be sure there is some water in the fresh water tank. The pump will only use the water that is needed out of the tank to bring the pressure up to the usual pressure.

WATER PUMP FILTER

The water pump filter (5) should be cleaned periodically as part of seasonal maintenance, this is best done when the water system is drained down so pipes are not full of water and the water pump is turned off.

Remove the transparent bowl (turn counterclockwise) of the strainer housing of the filter on the water line leading to the water pump. Carefully pull out the strainer/screen. Clean and rinse with water (use a household detergent if necessary). Reinstall the strainer and bowl, being careful not to damage the seal. The bowl collects sediment and should be positioned under the housing as depicted above. Check for leaks prior to resuming normal operation.

CITY WATER HOOK UP

The city water hook-up point (8) is also located on the road side of the trailer. For consistent water flow and plumbing line safety, an in-line regulator limits pressure to 50 psi. Use a tasteless, odorless, and non-toxic high-pressure hose (9) of at least 1/2 in. diameter designed for RV use.

When the city water connection is used, the city water flows directly into the cold water lines to the taps and the water heater, the fresh water tank is effectively bypassed. The water pump does not need to be turned on.

CAUTION: in this situation, the water lines are pressurised as long as the city water hose is pressurised; you may like to turn the tap feeding the external hose off, when leaving the trailer as a precaution.

I2 – 25IB water & plumbing – normal operation

GREY TANK AND WASTE PIPING

Wastewater from the kitchen sink, shower and bathroom basin drains into the grey water holding tank (10). This is a 121litre capacity tank located below floor, forward of the bathroom.

This tank is made from corrosion-free molded plastic with baffles, insulation and a 1.5" dump valve (11) positioned on the roadside.

Check the grey tank level frequently using the Trek 3 control panel. If the Gray Water holding tank is overfilled, drain water may back up into the shower tray and cause an unpleasant cleaning job.

Never drain the tanks at any place other than an approved dumping station.

CAUTION: Due to the location of the grey tank towards the rear of the trailer, the weight of any water moving in the tank could induce sway when towing, therefore the grey tank should always be emptied prior to travel.

GREY TANK EMPTYING

To empty the tank, attach the 1.5" diameter sewer hose (12) by pressing the quick cam fitting onto the dump valve outlet and engage the clips .

Attach the outlet end of the hose to the sewage outlet, making sure that the hose is placed so it will drain completely.

Pull the dump valve handle as far as it will go and wait until the tank is drained. Replace the bayonet ring cap prior to traveling

TANK CLEANING

Note: when the trailer is hooked up to city water, the fresh water tank is not in use and any water in it stagnates, hence periodic sterilisation is recommended.

Potable water systems require periodic maintenance to deliver a consistent flow of fresh water.

Depending on use and the environment the system is subject to, sanitizing is recommended prior to storing and before using the water system after a period of storage. Systems with new components, or ones that have been subjected to contamination should also be disinfected as follows:

1. Determine the amount of common household bleach needed to sanitize the tank. Multiply "Liters of tank capacity" by 1.0; the result is the milliliters of bleach needed to sanitize the tank. (in this case 104ml).
2. Mix the proper amount of bleach into a container of water.
3. Pour the correct amount of solution (water/bleach) into the Fresh Water tank and fill with potable water.
4. Open all faucets (hot and cold) allowing the water to run until the distinct odor of chlorine is detected.
5. The standard solution must have 4 hours of contact time to disinfect completely. Doubling the solution concentration will allow for contact time of one (1) hour.
6. When the contact time is completed, drain the tank. Refill with potable water and flush the plumbing of all sanitizing solution.

DRINKING WATER

! CAUTION Any water supply or water system can harbour germs/ bacteria. Whilst sanitising of the water system is possible, we recommend for your own safety that all occupants of the Airstream drink bottled water only.

PIPING

Water piping is 12mm John Guest semi rigid plastic piping (red for hot, blue for cold), connected by 12mm quick connect push fit couplings. Any repairs required should be made with the same piping and fittings.

WINTERISING

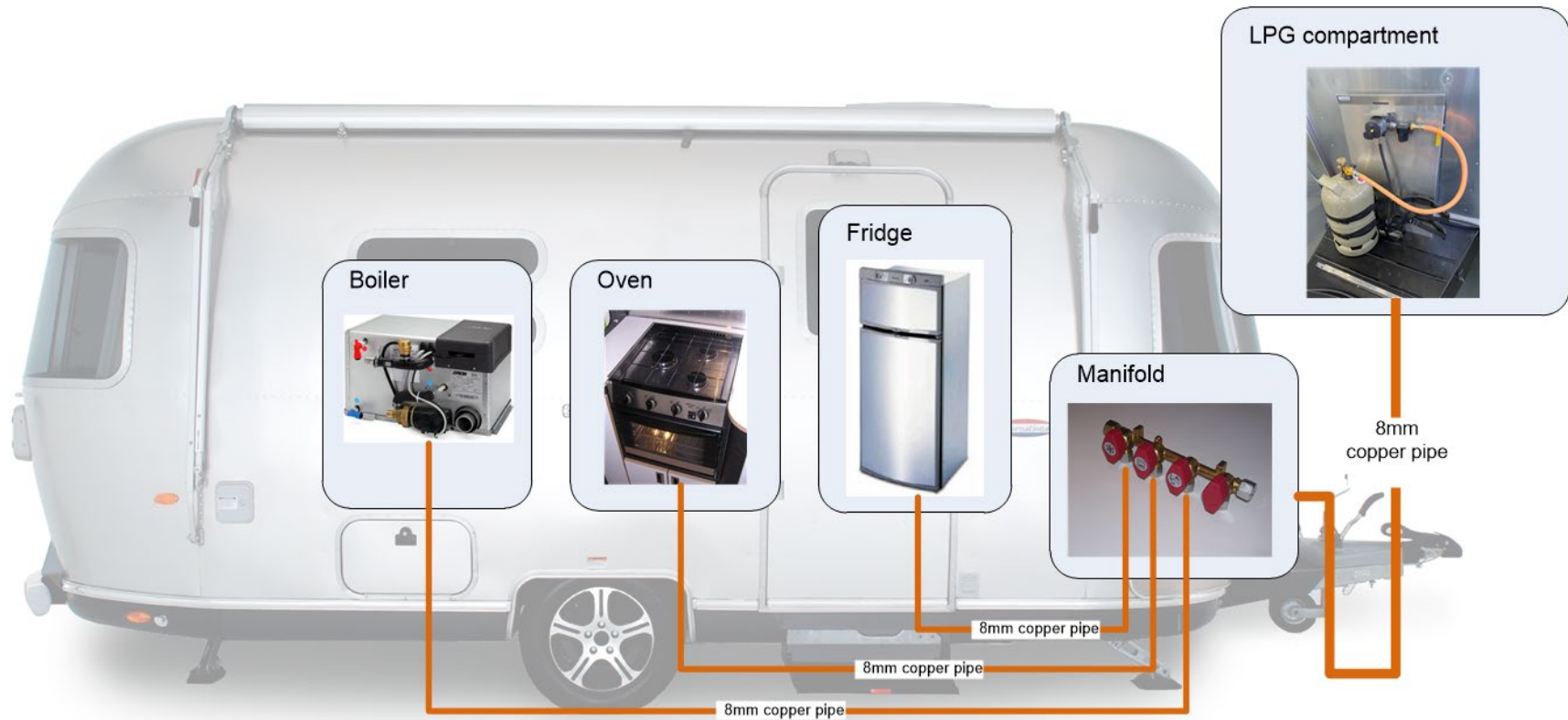
See Section H4 of this manual for instructions on draining down when winterising, the steps to follow for the 25IB model are similar to the 534 & 684 models.

Section J – Gas



Overview	J1
Components	J2
Further information	J3
Facts, maintenance, carbon monoxide	J4
Troubleshooting	J5

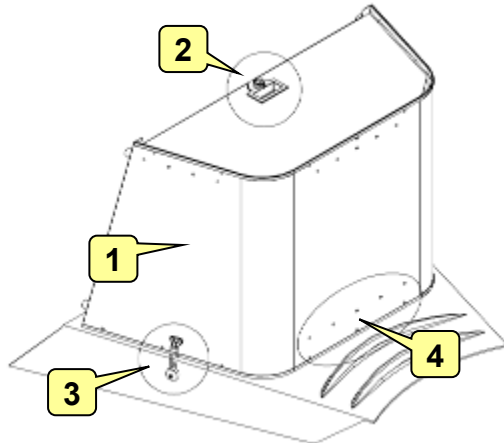
J1 – Gas, Overview



Equipment may vary (fridges differ in size), positions are illustrative only, not to scale.

LPG COVER – 534 & 684

Remove the LPG cover (1) externally on the drawbar to the front of the Airstream:



To remove the LPG cover, unlock & turn the latch on the top of the cover (2), then loosen the bungee cords (3) holding the cover to each side of the drawbar. Then lift the cover up, tilt it forwards and lift it off.

Before re-fitting the cover, it helps to have the winder handle of the jockey wheel facing forwards.

To re-fit the LPG cover, offer the cover up tilted forwards, so the front of the LP cover fits over the L bracket (4) fixed to the drawbar cover. Then push the cover down and into place over the vertical backrest, which the regulator is fixed to.

Secure the cover by turning and locking the latch (2), then fix the bungee cords – if present – to the hooks on each side of the LPG cover.

! WARNING. Always check that the LPG cover is secured, with the latch turned and locked and the bungee cords fixed before travel.

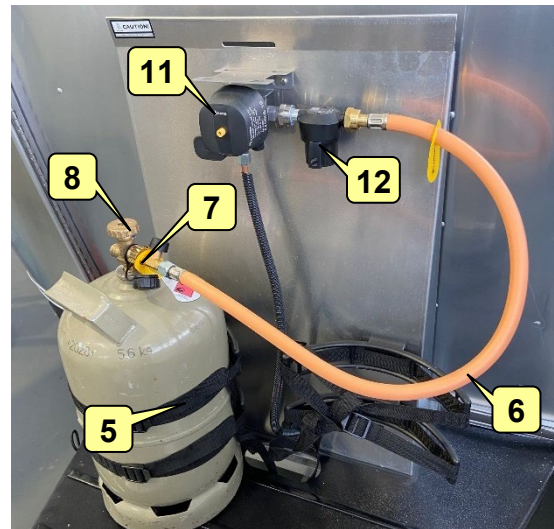
LPG CYLINDERS

Check gas level in cylinders. Cylinder size & type will differ from country to country. Some cylinders have inbuilt level gauges, or semi-transparent walls revealing the liquid level, or lift the bottle.

Turn off all gas operated equipment inside the Airstream before opening cylinder valves. Check that the cylinders are securely restrained using the bottle straps (5) provided.

Fit the high pressure hose (6) to the cylinder that you intend to use. An adaptor (7) may be required to connect the hose to the cylinder valve, adaptor type varies by country, ask your dealer if in doubt. Then open the valve (8) on the cylinder.

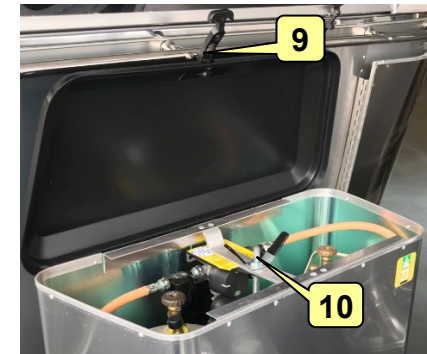
! CAUTION. Ensure that the hose assembly is not under stress when connected to the cylinder



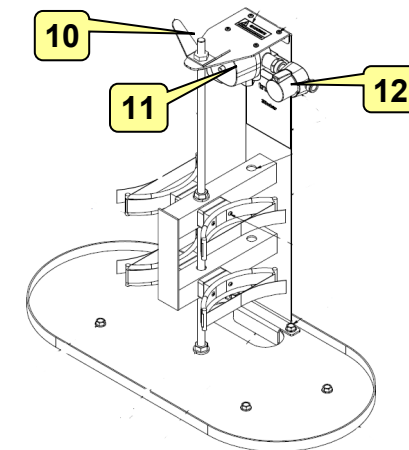
LPG COVER – 251B

Un-do the rubber latch (9) that holds down the hinged black plastic lid of the LPG cover, then lift up the hinged lid. This gives access to the valves on the LPG cylinders.

To lift the LPG cover off fully to change the cylinders, unwind and remove the large wing nut (10) that holds the cover down to the LPG support assembly. Then lift the cover off.



The LPG support assembly shown below secures the cylinders, regulator (11) and gas filter (12).



J3 – Gas, further information

REGULATOR

The regulator (11) is mounted adjacent to the gas filter and regulates the gas pressure to a uniform 30mbar with flow rate of 1.2kg/hr.

The Truma SecuMotion drive safe regulator monitors the pressure. An integrated gas flow monitor will shut off the flow of gas if the pressure falls below 27mbar (due to gas pipe break).

After opening the cylinder valve, slowly press the reset button on the regulator, then release slowly (3 seconds).

If no pressure point is felt when the button is pressed again, the regulator is ready for operation

GAS FILTER

The gas filter (12) is incorporated to prevent any contaminants from the cylinders reaching and clogging the gas regulator.

MANIFOLD

The manifold valve is located inside the Airstream. The supply to each gas appliance can be turned on or off independently by turning the tap knobs; vertical = open, horizontal = closed.



Light a gas burner to the cooker hob to verify gas is flowing through to the appliances.

CYLINDER RESTRAINT

Cylinders should be secured in the LPG compartment using the straps provided (2 straps per cylinder). The straps are vertically spaced to suit 5-7kg cylinders.

The use of larger cylinders sited outside the LPG compartment is not recommended. If you choose to do this, the connecting high pressure hose should not exceed 750mm.

! WARNING If using cylinders other than those recommended, ensure these are adequately supported and do not cause damage to other fixtures and fittings located in the compartment.

HIGH PRESSURE HOSES

Use only approved high pressure hoses to connect the gas cylinders to the auto changeover.

The type of thread used for high pressure hoses varies in different EU countries, consult your local dealer.

Please use the correct size spanner for the gas hose connectors, as this will prevent damage to the screw fittings and ensure that the fitting is tightened sufficiently.

! CAUTION. The pressure regulator relies upon a sealing washer(s) to maintain a gas tight joint. It is essential to check that the washer is present, sound and correctly positioned prior to making the connection.

High pressure hoses sold are made from rubber (last 5 years), or stainless steel (last 20 years).

If hoses are left not connected to a cylinder for any extended period, the open end should be protected against the entry of dirt or insects.

LPG GAS TYPES

The European Airstream gas installation is designed to operate on either propane or butane LPG at 30mbar.

Butane has a higher calorific value, but it will not change from liquid to gas below 0 degrees centigrade at atmospheric pressure. It is not therefore suitable for winter use. As the need for heating is greater in winter months, propane is generally the customer's preferred fuel.

FACTS ABOUT LPG

LPG is not poisonous. Bi-products are harmless.

LPG has been given a smell by the manufacturers in order to identify leaks. LPG is heavier than air and therefore sinks to the lowest point.

LPG cylinders contain both gas and liquid forms. When the cylinder is filled, high pressure transforms the gas into liquid. The liquid reverts to gas when the valve on the cylinder is opened.

LPG is a flammable gas. It can be a fire and explosion hazard if stored or used incorrectly. Store cylinders vertically and securely, to prevent them from toppling.

Do not mount your LPG cylinder horizontally or use liquid phase gas cylinders. Liquid-gas explosion may result. Read the product label or contact product manufacturer for details.

! WARNING. There is a danger if all air and oxygen are excluded. **LPG is heavier than air. Should a gas leak occur the fitted floor vents allow the gas to escape from the caravan. For this reason always ensure that floor vents are unobstructed. Gas drop holes & low level ventilation holes must be kept clear at all times.**

SUSPECTED GAS LEAKS

If you smell gas or suspect a leak and it is safe to do so, turn off the gas appliances and turn off the valves on the cylinders. Evacuate the Airstream and ventilate the interior. See professional advice as to the cause of the leak.

! WARNING Never use a naked flame to check an appliance for leaks.

A gas engineer with experience of LPG installations should confirm & correct the source of the leak and check the system is sound before it is re-used.

GAS APPLIANCES

Ensure you have read the operating instructions for each gas appliance, as supplied by the appliance manufacturer, contained in your Owner's Pack.

Turn off gas appliances before travel, except those heating appliances (such as the Alde 3010 boiler) designed to function when the vehicle is in motion.

! WARNING Do not use appliances with a different working pressure to 30mbar.

! WARNING Do not use independent portable gas appliances inside the Airstream.

! WARNING Do not mis-use appliances, for example do not use cookers as heaters.

! WARNING Maintain adequate spacing of combustible materials from sources of heat.

Warning Ensure that the gas cylinder valve is closed before disconnecting an empty cylinder
Warning Extinguish any fire, flame or source of ignition (including cigarettes, pipes and pilot lights) before changing gas cylinders.

Warning When leaving the caravan for any period of time or storage always turn off the gas at the gas cylinder

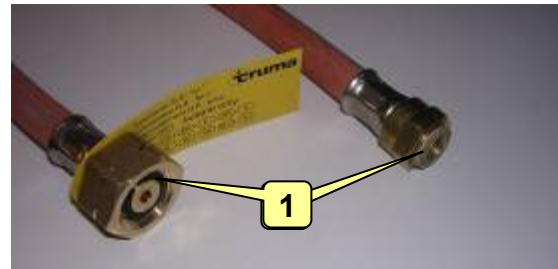
MAINTENANCE

Customer checks

Check flexible gas hose joints and connections for tightness, when changing gas cylinders.

Inspect flexible high pressure hoses for deterioration and renew, as necessary, with approved type, in any case no later than the expiration date marked on the hoses.

Check the gasket/ O rings **(13)** are present to both ends of the gas hoses each time the hoses are re-connected.



Use of a leak finder spray on these high pressure hose joints is recommended to check for leaks after each cylinder or hose replacement.

Annual service by a qualified professional

A professional technician qualified to service LPG installations in caravans must check your Airstream gas system once a year and issue a dated certificate verifying its integrity.

This must include an air soundness test of the gas installation to 150mbar to EN1949 requirements and check of gas appliances and cylinders fitted, in accordance with the manufacturer's instructions.

CARBON MONOXIDE

Carbon monoxide (CO) is produced when a fuel such as charcoal, gas or petrol burns incompletely. This could be because an appliance isn't working properly or might simply happen as part of its normal function. Barbecues, for example, produce carbon monoxide even when they are working well.

Carbon monoxide is a colourless, odourless gas and is poisonous. In high concentrations it can kill swiftly. In smaller concentrations CO poisoning can give symptoms similar to flu or food poisoning. Look out for headaches, nausea and vomiting, dizziness, drowsiness and weakness - but the best advice is to avoid poisoning in the first place:

- **Never take a barbecue into a tent, awning, caravan or motorhome.** Even a cooling barbecue gives off plenty of poisonous carbon monoxide (CO), which can kill.
- **Never use a fuel-burning appliance to heat your tent or awning.** Gas and kerosene heaters – unless they are permanently fitted in a caravan or motorhome – should only be used outside. Stoves and barbecues are designed for cooking not space heating.
- **Never run a gas, petrol or diesel-powered generator inside a caravan, motorhome, tent or awning.** Make sure fumes from a generator don't blow into your unit or anyone else's from outside either.
- **Don't cook inside your tent or awning**
- **Don't use any other gas, charcoal, liquid or solid fuel appliances inside a tent or awning.** Gas-powered fridges and lamps, for example, also need plenty of ventilation to prevent them producing poisonous carbon monoxide. Tents and awnings aren't generally designed with this in mind.

Fit a carbon monoxide (CO) alarm, but note: it should never be used as an alternative to following the advice above.

J5 – Gas, ventilation and troubleshooting

VENTILATION

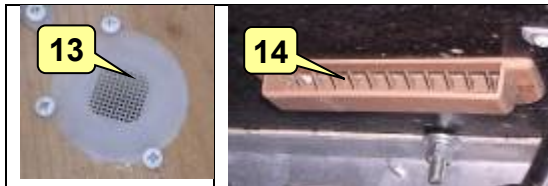
The high and low level ventilation provided in the Airstream complies with BSEN 721.

Vents should not be obstructed in any manner, as this could lead to insufficient fresh air. In this case the confined atmosphere becomes depleted of oxygen which leads to the formulation of the highly poisonous gas 'carbon monoxide'. See next page.

THE PROVISION OF ADEQUATE VENTILATION IS THEREFORE ESSENTIAL.

! CAUTION Regularly check that the low level vents through the floor are unobstructed.

These vents consist of gas drop holes **(13)** near/ under gas appliances, plus 2 x 200sqcm vents under the convectors to the front of the Airstream. These are ducted above floor so they cannot be obstructed, but check the plastic covers **(14)** below floor to confirm they are clear and free from dust.



No gas flow

- Check there is liquid gas in one or both LP cylinders.
- Open valve on cylinder to be used.
- Check that the red tap knobs to the internal manifold are in the open (vertical) position.
- Turn on and attempt to ignite the gas supply to one of the cooker gas rings, to confirm that gas is flowing

Fridge not lighting on gas operation.

The fridge LED indicator light for gas operation flashes yellow intermittently. This usually indicates air needs purging from the gas pipe to the fridge, following changing a gas cylinder.

Turn the fridge off.

Check gas supply. Try lighting one of the cooker gas rings, if they also will not light then investigate at the LPG compartment. Check the gas cylinder valves are turned on, the cylinder connected has gas inside, the regulator test button has been pressed. Then check that the manifold tap serving the fridge is in the open (vertical) position.

Then press the fridge energy selector gas operation button again. The fridge will attempt to ignite again.

Repeat the procedure of turning to off, then to gas operation 3-4 times, to remove air from the gas pipe. If after this the fridge will still not ignite on gas, consult your dealer.

'Gas out' displayed on Alde boiler control panel.

Similar to the fridge.

First using the Alde control panel, set gas operation to OFF - see top of page 23 of Alde operating instructions. Then check the gas supply – see paragraph above. Then set the Alde control panel gas operation to on.

Repeat this procedure 3-4 times as necessary to purge air from the gas line. Once the boiler ignites on gas, you will feel heat coming from the wall flue externally.

Section K – Heating & hot water



Overview – system layout

Boiler

Control panel

Normal operation

Dealer supplied items

K1

K2

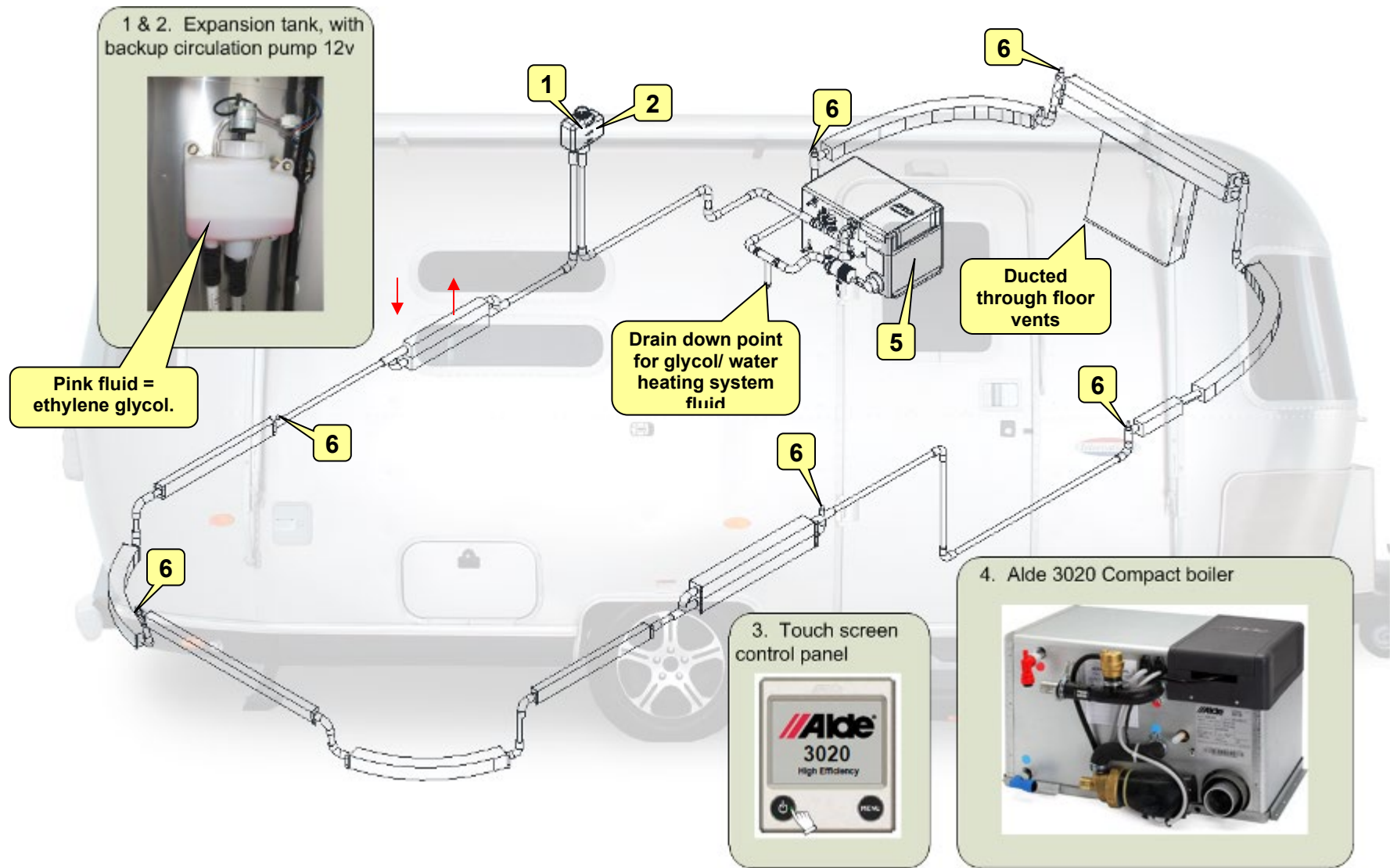
K3

K4

K5

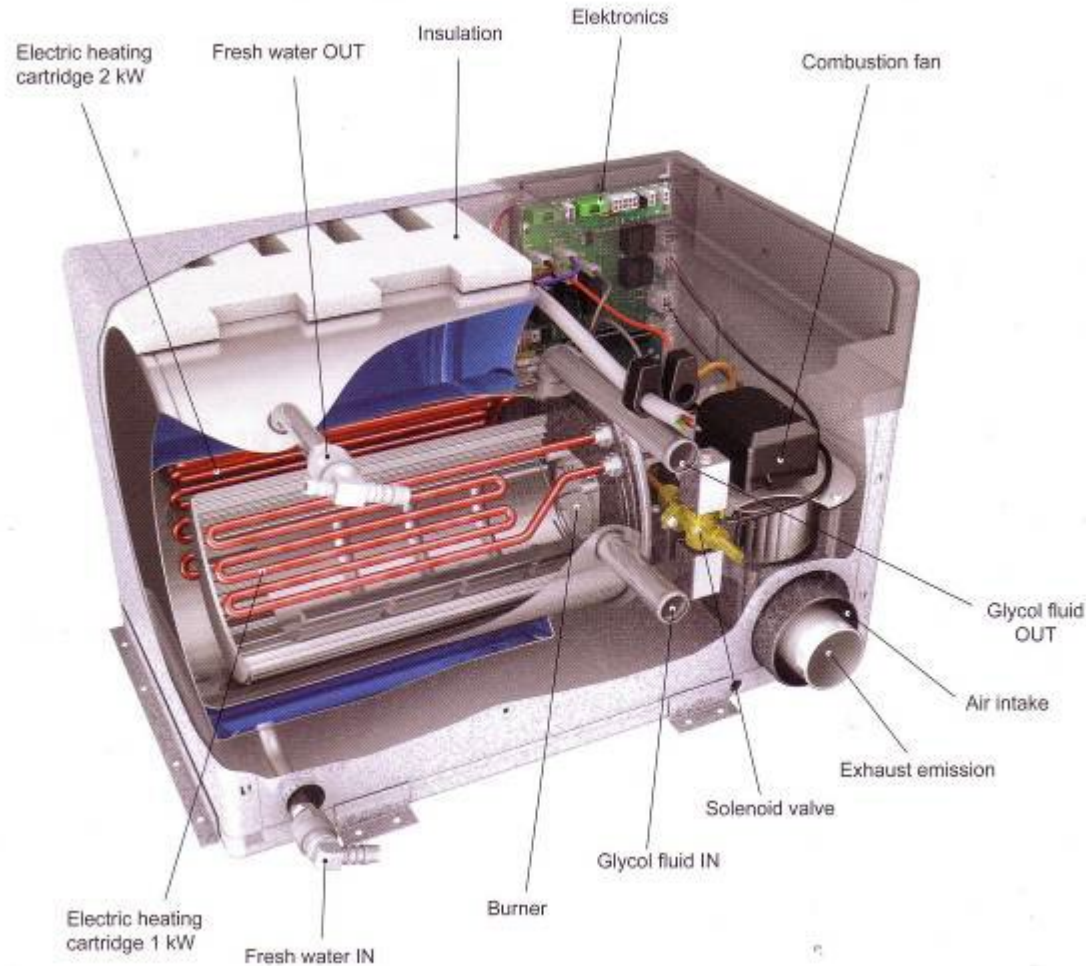
K1 – Heating overview – system layout

Typical European specification Airstream heating system layout:



ALDE COMPACT 3020 BOILER

The Alde Compact 3020 HE (high efficiency) boiler consists of three eccentrically fitted cylinders – heat exchanger, water jacket for the heating system and outermost, water jacket for hot water.



AIRSTREAM + ALDE: HEATING SYSTEM DESIGN

European specification Airstreams are equipped with the Alde 3020 Compact boiler, providing hydronic (wet) central heating and hot water.

The Alde system has been integrated into each new European Airstream floorplan from the outset.

First the number and type of convectors is planned to ensure maximum heat output and even heat distribution. Special curved and flattened convectors were developed for the Airstream shell.

Next the joinery is designed in detail, to provide maximum air circulation to the network of convectors and pipes in the backs of cabinets and seats etc.

The fact the joinery is designed to suit the Alde system, rather than visa versa, is key to end performance.

Cold chamber testing is used to identify areas for improvement. In final testing Airstream achieved grade 2

Benefits of the Alde system include even heat distribution, maximum efficiency, silent operation and minimal circulation of dust and allergens. Maximum comfort for mobile living.



K3 – Control panel

TOUCH SCREEN CONTROL PANEL

The 3020 boiler uses the colour touch screen control panel 3020-113. Copied in this manual are the principle settings, *for full operating instructions please refer to Alde's Operating Instructions for the Alde Compact 3020 HE.*



Boiler OFF

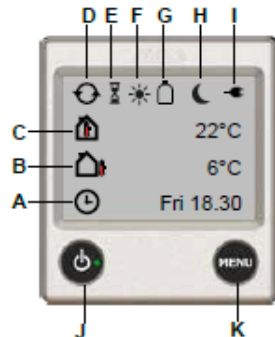


Turning boiler ON

To start the boiler, press the On/Off button and the start-up display appears. The boiler starts with the last selected settings.

Standby screen

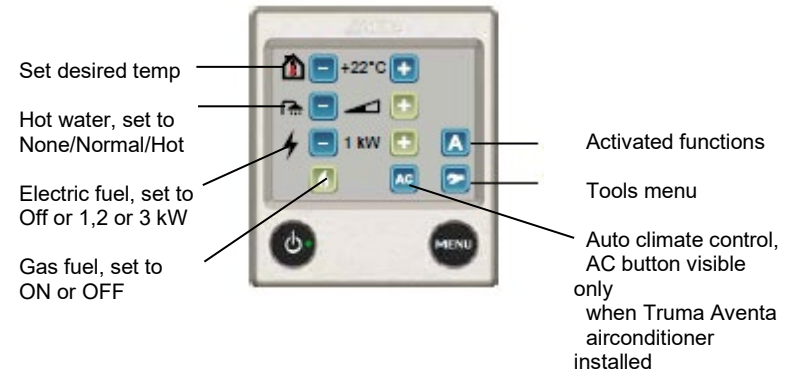
The standby screen shows 'at a glance' the status of the boiler:



- A – Clock, appears when activated
- B – External temperature
- C – Internal temperature
- D – Heating circulation pump ON
- E – Automatic boiler start, when activated
- F – Day auto, when activated
- G – LPG bottle full/empty, when activated
- H – Night auto, when activated
- I – 230v connected
- J – On/Off main switch for boiler
- K – Menu, press for settings menu

NB! If "Standby Screen" in the Backlight menu is set to Dark, the display goes out when it enters standby mode, but lights up if you touch the screen.

Settings Menu



- Set desired temp
- Hot water, set to None/Normal/Hot
- Electric fuel, set to Off or 1,2 or 3 kW
- Gas fuel, set to ON or OFF
- Activated functions
- Tools menu
- Auto climate control, AC button visible only when Truma Aventa airconditioner installed

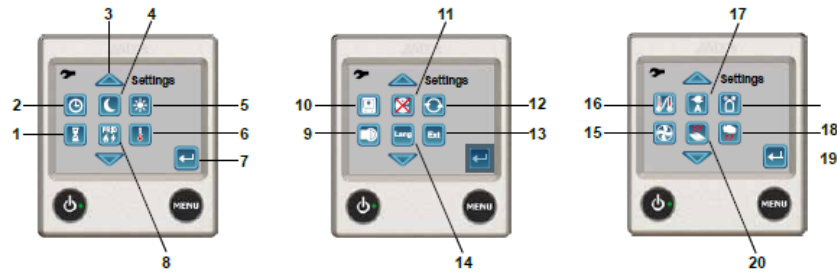
Info! When hot water only is required, during the summer for instance when there is no need for heating, no settings need be made; the boiler looks after this function automatically.

Activated Functions

- Night auto is activated. However, it does not have to be within the time/day setting.
- Automatic boiler start is activated. However, it does not have to be within the time setting.
- This function is used in cases where an external main panel can be used to operate some of the boiler functions or if *Alde Smart Control is installed.
- Displayed if one or two external room sensors are connected.
- Circulation pump in continuous operation. NB! This function limits the supply of hot water, particularly when there is a low heating requirement.
- Day auto is activated. However, it does not have to be within the time/day setting.
- The boiler is set to be started with External start but has not necessarily been activated.
- Load monitor is connected and set to limited current.
- Booster is on.
- AC is on in the panel but it is not necessarily in operation.
- EisEx is installed but not necessarily turned on.
- DuoControl or DuoComfort is installed and connected to Alde Compact 3020 HE
- Timer for engine heater is set but not necessarily within the set time/day.
- Floor heating is in operation.

To Activate a function, press the Tools menu button, scroll to the end and press the button 'Installed Accessories', then select which function you want to activate. To activate the remote operated multi speed 12v pump fitted to the boiler, under the pumps menu, select 'Main, remote'. Then you will find under the Tools menu, that you can change the pump speed.

Tools Menu

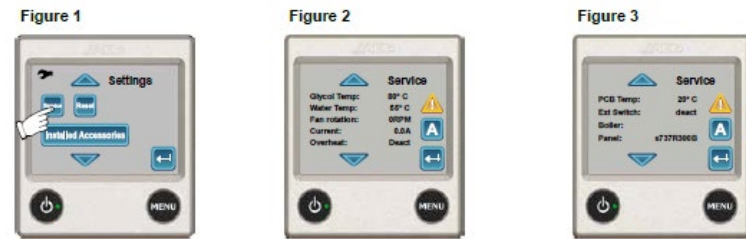


- 1 – Automatic boiler start
- 2 - Clock
- 3 – Arrow symbols to browse between fields
- 4 – Night auto
- 5 – Day auto
- 6 – Offset (temperature adjustment)
- 7 – Return, press to return to the previous menu
- 8 – Prio – prioritise between electricity or gas as the main fuel choice
- 9 – Button sound, turns button sounds on and off
- 10 – Backlighting, a choice of dark (off), bright or invert
- 11 – Auto temperature increase (legionella)
- 12 – Circulation pump settings, select which pump to use, set continuous operation
- 13 – External start, set to Off, Ext or 230v
- 14 – Language, select from English, French or German. Service menu is English only
- 15 – Booster
- 16 – Setting room sensor, choose sensor in the panel, or 1 of 2 remote sensors if fitted
- 17 – Load monitor, set current in amps
- 18 – EisEX, 12v defroster for gas regulator
- 19 – Engine heater (Not Applicable as no engine present)
- 20 – Floor heating (Not Applicable as no floor heating fitted)

Notes:

1. A grey function button means the function has not been installed and/or activated.
2. You can exit the tools menu at any time using the MENU button or return button.
3. For full explanation of each tool menu function, please refer to Alde's Operating Instructions. We recommend having these instructions to hand before activating any of the tools above.

Service Menu



The Service menu is accessed by pressing Service (see figure 1). This function shows values from the boiler on the screen (figures 2 and 3). The values are updated every second.

You can access the Error Log from the Service menu by pressing the warning triangle. The 20 latest error messages will be shown. Browse with the arrows. If a fault occurs in the system, the cause will be shown on the display (this is only displayed when the control panel is in standby mode). To acknowledge the fault and restart, disconnect the panel from the boiler and also pull out the 230 V cable if *AC is connected together with Alde Compact 3020 HE.

Low battery: 12 V supply to boiler has dropped below 10.5 V, possibly causing system brownout. Automatically clears when 12 V supply reaches 11 V.

Fan failure: Combustion fan speed too low. Bearing may be stiff after a period of disuse. Automatically clears after 5 mins. Please try again.

Gas failure: Out of gas or gas is not igniting. Check the gas cylinder is full. Try a different gas cylinder, ensuring it is propane gas. Check the gas regulator and any isolation valves are open and not frozen

Overheat or red blue fail: Bleed the system of air. Check the fluid level in the expansion tank. It should be 1 cm above Min mark when cool. Check the circulation pump is responding. Wait 15 mins for the fluid to cool down.

Overheat PCB: Failsafe in boiler has triggered. Check the fluid level in the expansion tank. It should be 1 cm above the Min mark when cool. Check the boiler compartment is ventilated, and that the vents are unobstructed. Do not place storage in the boiler compartment.

Window open: Optional window sensor has triggered, gas heating is suspended. Automatically clears and gas heating resumes when window is closed.

Connection failure: Break in comms between Alde control panel and daisy-chained third party control panel. Check the cable between the Alde control panel and third party control panel.

Connection fail ext: Loose connection between Alde control panel and boiler. Unplug cable at the control panel and boiler, then carefully plug back in. Check there is slack on the cable at the control panel, but not excessive weight from free-hanging/unmanaged cable

Panel failure 1 and 2: Moisture is trapped in the control panel. Remove the Alde control panel from the vehicle and air in a warm, dry place overnight.

No match Heater/Panel: Control panel is incompatible with boiler PCB. Check control panel part number. Control panel 3020-013 is for 3020 A-series boiler, 3020-113 is for 3020 HE-series boiler.

K4 – Boiler, normal operation

CHECKS BEFORE USE

Check that the expansion tank (1) in the wardrobe contains a pink fluid (ethylene glycol). This should be at least 10mm above the minimum mark when cold. See later instructions for adding more heating system fluid if necessary.

! CAUTION The boiler must not be started if there is no ethylene glycol fluid in the system.

Check that the flue is clear of snow and ice, and that no other objects are hindering or disturbing exhaust and supply air from the flue.

To turn the boiler on: Press the bottom left button on the Alde control panel.

FUEL SELECTION

Press the Menu button, to access the Settings Menu. Select the fuel type you wish to use.

First program the electric operation to suit the electricity supply available where you are camping – 1 immersion will draw 4.5amps, 2 immersions will draw 9amps, 3 immersion will draw 13.5 amps.

Select gas operation if:

- You are camping on a site without 230v electric hook up, or limited supply (say 5A).
- You want the boiler to heat up rapidly - heat up time will be faster on gas (5.5kW), than electric operation (max 3kW).
- External temperature is near freezing, or below. Electric only operation will maintain a circa 15C differential between external ambient and internal temperature. As external temperature drops to freezing, gas operation will be required to maintain a warm internal temperature (say +20C).

To force the boiler to ignite on gas, turn the electric operation off, or prioritise gas rather than electric using the 'Prio' setting in the Tools menu.

TURNING ON HEATING AND HOT WATER

To turn on heating: Press the menu button to access the Settings Menu, increase the desired internal temperature to above current ambient internal temperature.

To turn on hot water: In the Settings Menu, set the hot water to Normal (shown below), or press + again for More hot water (this will last for 30 minutes, during which time the heating circulation will be turned off).

IS THE BOILER WORKING?

Listen:

- On gas operation, you will hear the boiler combustion fan come on, followed by the spark noise of the burner igniting. On electric operation you will hear the relays click as the boiler is turned on and off.
- With gas operation, go outside and listen for noise of gas flowing at the LP compartment. Then place your hand near the boiler flue externally and check for warm flue gases.

Touch:

- Verify pipework is coming warm by touching pipework at the front and rear of the Airstream and by the boiler & expansion tank.
- Turn on a hot tap and verify water is becoming warm.
- Touch the circulation pump (round Coke can sized cylinder by the base of the boiler) and verify it is vibrating slightly.

Look:

- Verify 230v electrical hook up emblem shows on Alde control panel. Verify 12v circulation pump symbol appears on the control panel.
- Monitor rising internal temperature on control panel.

CIRCULATION PUMPS

The 3020 boiler specified for Airstream has a 12v multi speed pump fitted to the boiler, which can be controlled from the control panel (Tools menu/ circulation pump settings). The control panel icon for this pump is shown below. Normal speed is speed 2, speed 5 can be used to aide bleeding of air, but it is not recommended to leave the pump on speed 5 as this may shorten its life.



*PWM controlled 12 V pump, this is a variable speed controlled pump that can be set to five different levels (1-5) via the panel, normal level is 2, which works in most cases. Mounted on the boiler



An additional 12v pump is supplied in the expansion tank, as a back up pump. To select this pump, choose the control panel icon shown below.



*Extra 12 V pump, often located in the expansion tank.



HEATING - BLEEDING TRAPPED AIR

If areas of pipework/ convectors remain cold, this indicates air is trapped somewhere in the system.

Follow the instructions below to bleed trapped air.

First turn off the heating. Reduce the desired internal temperature to below the current internal temperature. The circulation pump will then stop and fluids in the system will settle. This allows trapped air to rise to the highest points of the system.

Identify the positions of bleed points **(6)** in the system, ask your dealer if you are in doubt about their location in your Airstream. Most floorplans contain 4 or more bleeder points.

Some are concealed behind seat backrests or the mattress **(left photo below)**. Each bleed valve has a round finger turn dial **(right photo below)**, turn this anti-clockwise to open.



Bleeder access hole



Bleed valve



Towel rail bleeder

If a heated towel rail is provided in the bathroom, this has a small bleeder valve on the top rail.

Open each bleed point in turn, until they start discharging fluid, then close them.

Then turn the heating back on, to re-start the circulation pump and leave it running for a while, ideally overnight.

If the cold areas of the system still do not warm up, try raising and lowering the front of the Airstream, whilst opening the highest bleed point:

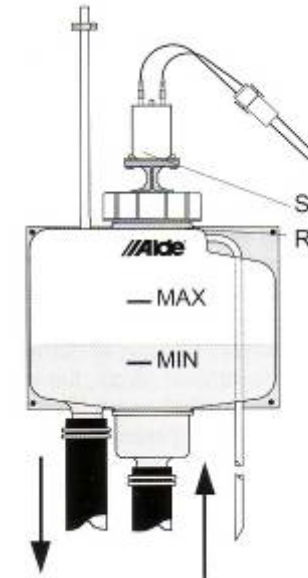
- Stop the circulation pump. Lower the front of the Airstream as much as possible. Leave it in this position for a few minutes to allow the air to travel upwards in the system. Then open the highest bleed point in the system. Leave it open until it discharges glycol fluid.
- Then raise the front of the Airstream as much as possible and repeat the above procedure. Then position the Airstream horizontally and start the circulation pump.

If the cold areas of pipework/ convector still do not come warm, then contact your Airstream dealer, who can use a Service Pump to bleed the system.

TOPPING UP HEATING SYSTEM FLUID

After establishing that the system is now warm throughout, check the level of fluid in the expansion tank. The level will drop after bleeding, especially in the early days of use, as air in the network of pipes and convectors is replaced with the glycol/ water.

The fluid level should be at least 10mm above the MIN mark when the system is cold.



To manually add more fluid if necessary, first turn off the circulation pump.

Then unfasten the circulation pump nut (R) and lift the pump (S) out of the tank.

Slowly pour more fluid into the tank.

! CAUTION The type of GLYCOL used and the dilution mix to water are critical to the future durability of the heating system. The anti-bacterial and anti-corrosion qualities of glycol are more important than the anti-freeze protection!

To guarantee compatibility, top up with the same antifreeze that is already in the system. The glycol used by Airstream is pre-mixed ALDE branded glycol, with ethylene glycol antifreeze with silicate OAT, giving 5 year corrosion protection. It is pink in colour.

Ask your dealer to supply a 1 litre top up bottle of ALDE branded glycol, to use for topping up purposes, see below.

K4 – Boiler, normal operation

HOT WATER

The outer water reservoir of the boiler stores the domestic hot water (capacity 8.4 litres). This is filled with cold water when priming the water system.

This outer hot water reservoir can be empty and the heating system still used safely, so long as the heating system has been filled with glycol/ water.

WARNING! Hot water temperature can be high from the hot tap, particularly if the boiler is operated on gas and the extra warm water function is selected. Take care to prevent scalding when using taps/ showers.

The hot water temperature can be checked accessing the Service Menu and checking the water temperature reading.

USE OF HEATING WHEN DRIVING

The Alde 3020 boiler can be used when the Airstream is being towed, but with the following caveats:

- 1) The user is responsible for checking that this does not contravene any national laws in the country of use.
- 2) To operate when the Airstream is connected to the towcar, the 12v system in the Airstream needs to be modified by your dealer to provide a permanent live 12v positive supply to the boiler. Otherwise the Alde boiler will not receive 12v and won't operate once the car ignition is turned on.

DRAINING HOT WATER RESERVOIR

The hot water reservoir should be flushed (emptied and refilled) if:

- 1) if the boiler has not been used for some time, or
- 2) when the boiler is in continuous use supplying hot water (if the Airstream is being lived in full time for example), in this case the hot water reservoir should be emptied approximately once a month.

This is necessary to ensure that a new air cushion is formed in the water heater. The air cushion is essential for absorbing pressure surges.



Lift to drain

See section F5 for the full drain down procedure. Locate the drain down point with yellow lift lever (photo adjacent) closest to the boiler. If you are unsure of its position, ask your dealer.

Switch off the water pump. Open all water taps – this is necessary for air to enter the hot water reservoir as water is emptied out – and leave them open. Then open the hot water reservoir drain down point, by raising the yellow lever to the vertical position.

Check that all the water is emptied out (about 8 litres). Leave the yellow lever in the vertical (open) position until next time the water system is filled.

! CAUTION. The hot water reservoir of the boiler should always be drained of water when there is a risk of frost and when the Airstream is not in use. The warranty does not cover frost damage.



TROUBLESHOOTING

No display on Alde control panel:

- Main electronic control panel not turned on.
- Blown fuse to Alde boiler or failed PCB to boiler – speak to your dealer.

'Gas out' flashes on Alde control panel:

- Set gas operation to OFF on Alde control panel. Then try lighting cooker gas ring to see if gas is being supplied to cooker.
- Check the gas cylinder valves are turned on, one or more cylinders have gas inside and lastly, that the regulator test button has been pressed. Then check that the manifold tap serving the boiler is in the open (vertical) position.
- Then set the Alde control panel gas operation to ON. Repeat this procedure 3-4 times as necessary to purge air from the gas line. Once the boiler ignites on gas, you will feel heat coming from the wall flue externally.

Areas of convactor remain cold, load noise from 12v pump circulating in expansion tank:

- Airlock in system, follow instructions earlier in this section for bleeding trapped air.

K4

- 3) The boiler must not be operated on LPG when re-fuelling at a petrol station.

! CAUTION. Do not fill the hot water reservoir, or flush through the water system with Milton or similar, as this can cause corrosion of the stainless steel boiler casing.

K5 – Alde system, dealer supplied items

HEATING SYSTEM FLUID REPLACEMENT

K4

Periodically the heating system fluid must be drained down and replaced, as the Glycol loses its anti-freeze, anti-corrosive and anti-bacterial properties over time.

The ALDE branded glycol should last 5 years from when installed, but ask your dealer to test the glycol during the annual service:

- A refractometer is used to test frost protection, the mix needs to contain not less than 40% glycol.
- A PH strip is useful to test corrosion protection, the mix should be neutral/pH 7.

The standard dilution mix is 60% water and 40% Glycol, which gives freezing protection to -25 Celsius.

If the heating system will be exposed to temperatures below -25 Celsius, then the Glycol percentage should be increased to 50/ 50. This will give protection to -36 Celsius. It is important the solution is well mixed.

Complete drain down and replacement of the heating system fluid is best done by your dealer, using a service pump kit to flush out the system replacing the original glycol mix with water. Then the water is flushed out with new glycol. This ensures that none of the old glycol remains and the heating system is fully cleaned through.

OTHER DEALER SUPPLY & FIT OPTIONS

A range of other Alde system upgrades are available, including:

Fan booster (left image below)

A 0.5kW fan booster kit is available as an upgrade option. There is space for this in the 684 2.5 model (photo below with 150cm s/steel grille).



Alde Smart Control (3020 057), right image above

This allows Smartphone remote control of most key functions, by an App downloaded from App Store or Google Play. SIM card not included.

Battery back-up (3010 414), left image below

Plugs into the rear of the control panel, saves User settings.



Load monitor (3010 246), right image above

The load monitor shows how many amps the vehicle is drawing. If the total current consumption of the vehicle exceeds the set value, the electrical output of the boiler will be reduced automatically.

This also applies to Truma Comfort AC if connected to the panel. Note: the Truma AC must be turned on from the panel and not via the AC remote control if it is to work with the load monitor.

Discrete temperature sensors (3010 238)

1 or 2 additional internal temperature sensors, plug into rear of control panel.

THERMAL INSULATION HEATING

Your Airstream caravan has been designed and manufactured to a grade 2 thermal insulation and heating level for specific climatic conditions and tested according to the procedure in EN1645-1.

The classifications are as follows:

Grade 1

A caravan with an average thermal transmittance (u) that does not exceed 1.7w/(m2k).

Grade 2

A caravan with an average thermal transmittance (u) that does not exceed 1.7w/(m2k) and which can achieve an average temperature difference of at least 20°C between inside and outside temperatures when the outside temperature is 0°C.



This protects the 230v fuses being overloaded. A meter is fixed onto the incoming 230v supply cable in the Airstream, plus a cable needs to be run to the Alde control panel, also requiring the 'options dangle' (3020 023) to be fitted.

K5

Section L – Audio visual

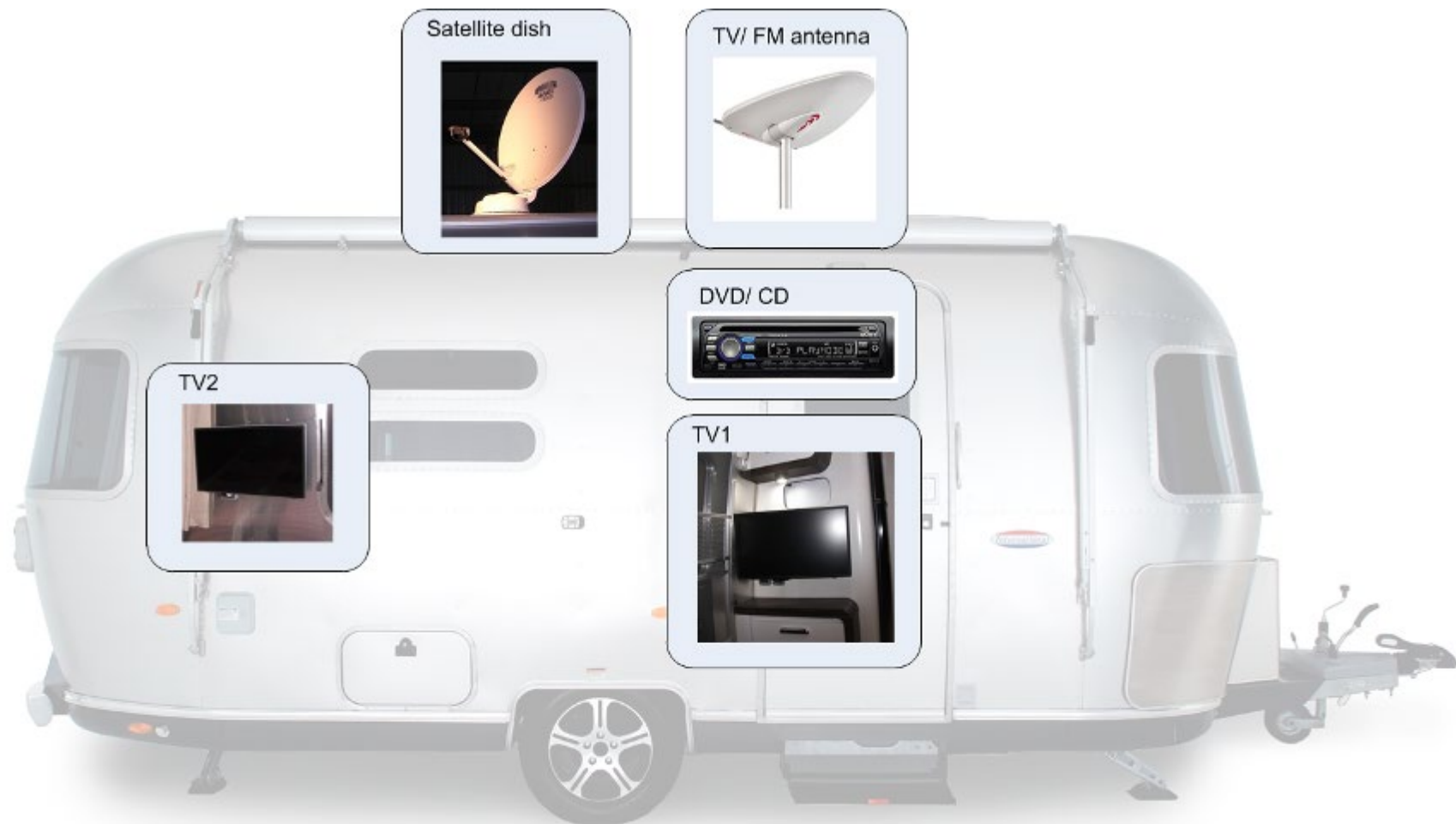


Overview
Normal operation
TV/ FM antenna, directional

L1
L2
L3

L1 – Audio visual, overview

Typical European specification Airstream audio visual equipment:



Equipment may vary according to options chosen, positions are illustrative only, not to scale.

STANDARD & OPTIONAL EQUIPMENT

European specification Airstreams have a roof antenna factory installed for TV/FM, but other equipment such as CD/radio, TV's and satellite (if desired) are installed by the dealer. Hence equipment used can vary.

TERRESTRIAL TV (VIA TV ANTENNA)

1. Directional antenna:
Raise TV antenna, adjust to suit direction and polarity of nearest TV transmitter.
2. Turn on TV(s) and select digital TV (rather than AV) channel.
3. Auto-tune each TV to find the strongest channels.

DVD PLAYBACK

European models do not have 3 x phono AV cabling, or HDMI cabling from the head unit, to the 2 x TV positions.

The recommended and simplest solution for DVD playback is to fit and use TV's which incorporate a DVD player.

To have sound coming through ceiling speakers:

The audio signal from the front TV can be fed back to the CD/radio rear AUX, via an AV plate adjacent to the front TV and a 2 way phono cable connecting to the rear AUX input of the CD/radio head unit fitted. Additional cables and equipment may need installing, ask your dealer.

SATELLITE TV

Satellite TV offers 2 advantages over terrestrial TV:

- access to potentially many more TV channels
- good TV reception via the satellite dish, in areas where terrestrial TV reception via the TV/ FM antenna is poor.

Satellite signal however can be blocked by trees and buildings.

To receive satellite TV, a dish and receiver are required. The receiver decodes the signal and produces a picture on the TV(s).

Ask your dealer for advice on the types of satellite dish available and suitability for use where you intend to travel.

TV/RADIO ANTENNA

(251B model):



An omni directional roof-mounted TV/Radio antenna receives free Local VHF/UHF TV signals and FM radio signals. The signal is boosted to maximize signal strength and provide TV and radio reception.

The booster must be turned on to receive Local VHF/UHF TV signals and FM radio signals.

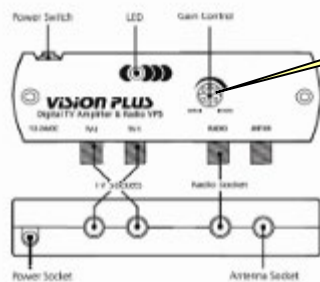
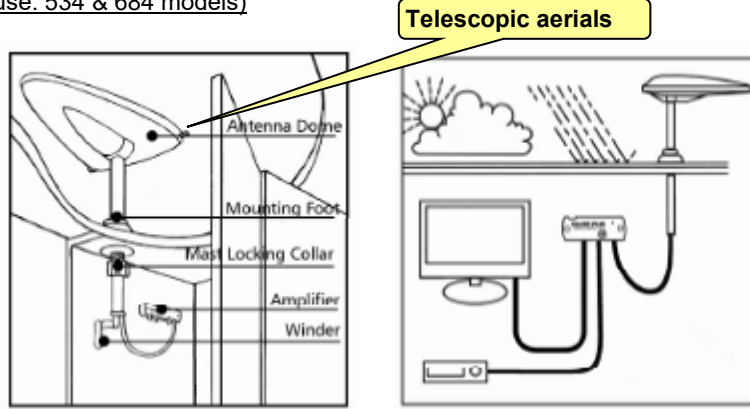
The antenna booster is controlled by a switch on the antenna booster's wall plate inside the media roof locker. Press the small pushbutton on the wall plate to turn **ON** the booster. To view cable or satellite, you will need to turn it **OFF**.

The antenna is constructed of durable automotive grade plastic that is UV-protected, weatherproof, and capable of withstanding outdoor climates. Clean the antenna with mild soap and water only. Do not powerwash or use harsh cleaning solutions, solvents, or alcohol to clean the antenna or antenna base.

L3 – TV/ FM antenna, directional

STATUS 550 digital directional TV & FM antenna

(use: 534 & 684 models)



Gain control

The gain control switch on the Status power pack should be set to the normal 'NML' position for general use. The Low setting may be used when situated close to TV transmitters where strong signals may be affecting the quality of the picture.

TRAVELLING

Prior to travel, turn the winder handle clockwise to ensure the antenna is back in the horizontal position. Then lower the mast. Turn the mast as necessary so that the red spot on the bottom of the mast points to the rear of the Airstream.

CAUTION! Do not travel:

- With the antenna raised
- With the antenna angled vertically
- With the telescopic aerials extended

OPERATION

On arrival, establish the approximate position of the nearest transmitter and whether the signals are horizontally or vertically polarised (some TV broadcasting stations transmit in the horizontal plane, others in the vertical plane). Ask the site operator or check other antennas in the vicinity.

1. **Loosen** the mast locking collar and wall bracket lock nut as necessary, to enable the mast to be raised.
2. **Turn** the mast to direct the antenna towards the nearest TV transmitter. The red spot on the bottom of the mast indicates the front of the antenna.
3. **Rotate** the winder handle anti-clockwise to cant the antenna - to alter the antenna orientation from horizontal to vertical, if signals are vertically polarised.
4. **Turn on** TV(s) and auto-tune to find the strongest channels. Re-tuning may be necessary at all new camping locations. You may need to adjust the mast direction to achieve the best picture quality.
5. **Re-tighten** the mast locking collar and wall bracket lock nut to secure mast in extended position.

USE OF TELESCOPIC AERIALS

- You **DO NOT** need to extend the telescopic aerials for FM radio reception.
- You **DO** need to extend the telescopic aerials to receive VHF television reception (in continental Europe). **NOTE:** VHF TV transmissions are **ONLY** horizontally polarised.

To extend the telescopic aerials, you need to safely access the TV antenna on the roof of the Airstream. If using portable steps, get another person to hold the steps before you climb them. The TV antenna dome will need to be in the fully lowered position. Pull out the aerial on the outboard side of the antenna, then rotate the antenna to access and pull out the 2nd aerial.

CAUTION! Do not cant the antenna to the vertical position when the telescopic aerials are extended, this risks damage of the aerials if they hit the roof/ other roof level equipment.

Section M – Appliances - other



Toilet
Refrigerator
Cooker
Smoke alarm

M1
M2
M3
M4

M1 – Thetford C263S china bowl toilet



NORMAL OPERATION

Before removing the toilet cassette externally, go inside the bathroom and use the blade handle (1) to close the blade (2) to the toilet bowl (*turn clockwise to close*).

CAUTION! Never use force to remove the cassette, or put it back into place, always check if the blade handle is in the correct (closed) position.

Open the cassette access door externally by pushing the 2 release buttons (3) firmly simultaneously.

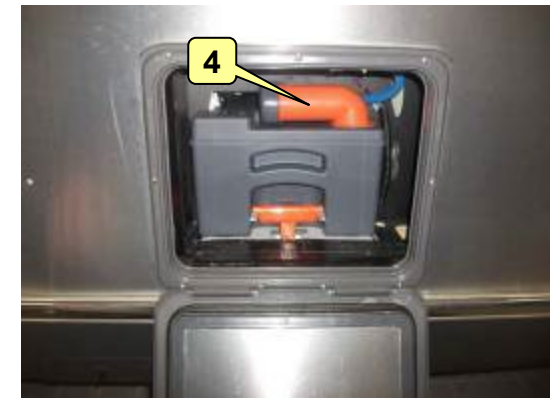
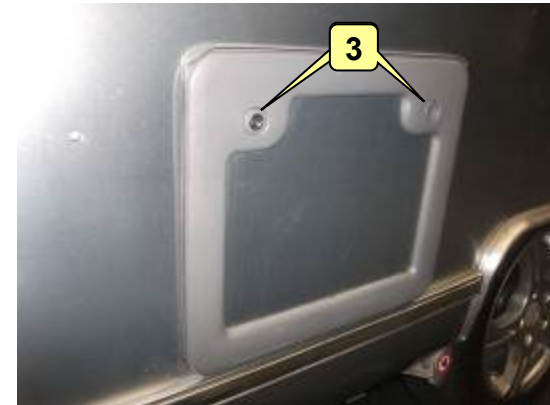
Remove the cassette, empty and rinse if required, then place the tank upright and turn the rotating spout (4) upwards. Remove the cap with the measuring cup inside and pour dosage of Thetford toilet fluid into the cassette.

CAUTION! Always pour the toilet fluid via the emptying spout of the cassette, never add toilet fluid via the toilet bowl as this could damage the lip seal of the cassette!

Next add approximately 2 litres of water, this can be done via the cassette spout before replacing the cassette. Alternatively, you can replace the cassette, then go inside and open the blade handle (1), then press the flush button (5) to pour water into the bowl and cassette.

Turn the bowl (6) to the desired position with the cover closed and using both hands. Run a little water into the bowl using the flush button (5) to confirm the water pump is turned on and there is water in the internal water tank for flushing.

Close the blade handle (1) after use, ensuring it is pushed fully to the left, to engage the seal. Do not travel with water in the bowl.



M1 – Thetford C263S china bowl toilet

TIPS FOR FAMILIES

Notice how when the blade handle is pulled to the left to close the blade, the final movement of the blade handle to the left pulls the blade up slightly, engaging it tightly to the rubber seal. This is what makes the toilet bowl watertight.

By implication, if the blade handle is not pulled fully to the left, fluids in the bowl may leak into the toilet housing below.

For this reason, for families with children, we recommend instructing children to open the blade, before using the toilet.

Families with children are also recommended to purchase a 2nd cassette, so when a full cassette is removed to be emptied, a replacement empty one can be inserted immediately. Otherwise there is a risk a child may unwittingly use the toilet whilst the cassette is being emptied.

C250 CASSETTE

The C250 cassette has a capacity of 17.5 litres. The cassette should be cleaned periodically with Thetford Tank Cleaner. Keep the rubber O ring seal soft and pliable with Seal Lubricant. The inside of the cassette can be accessed as shown below.



Remove sliding cover



Turn round insert..



..and lift out..



.. to access inside



Align blade opener knob



.. so aligned with ratchet

TOILET PAPER



Ordinary toilet paper can cause clogging. Use Aqua Soft paper which dissolves quickly, prevents clogging and makes it easier to empty the waste-holding tank.

CLEANING & MAINTENANCE

Use Thetford approved products:



Bowl cleaner



Seal lubricant



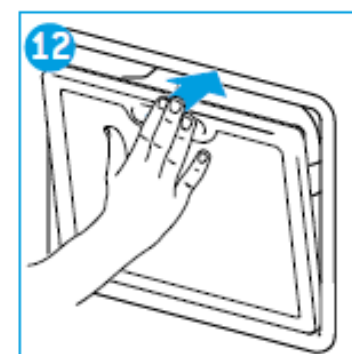
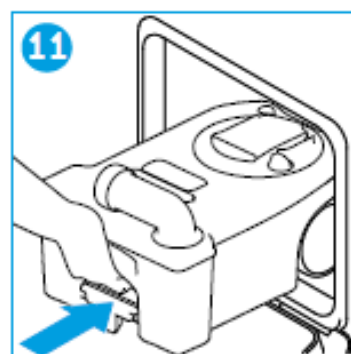
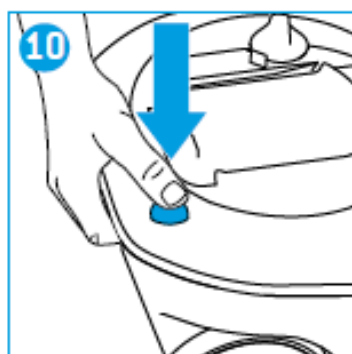
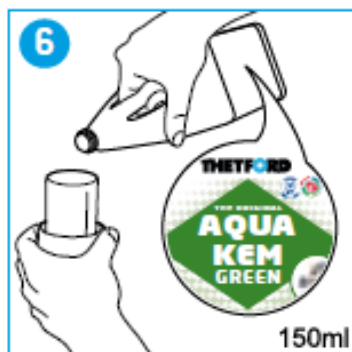
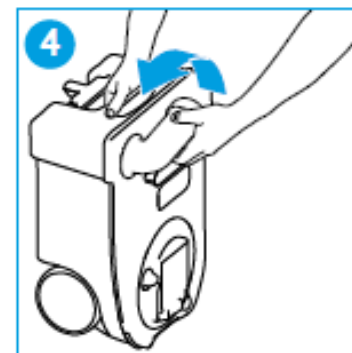
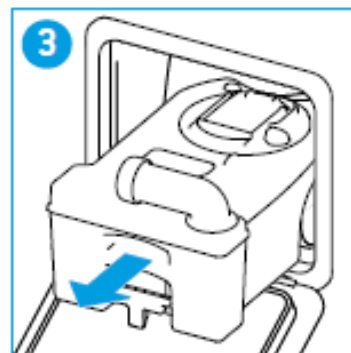
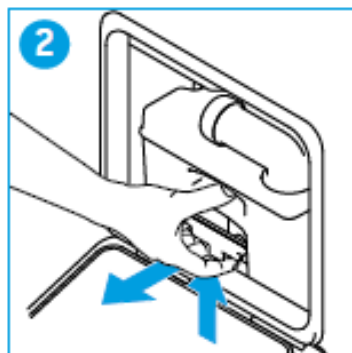
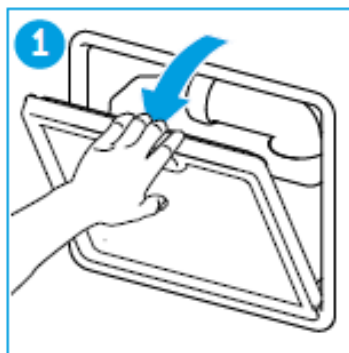
Tank cleaner



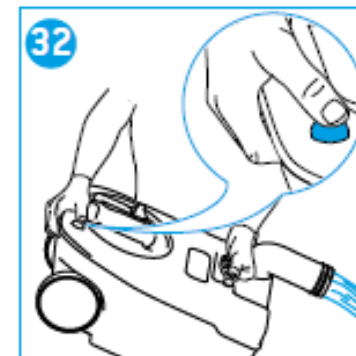
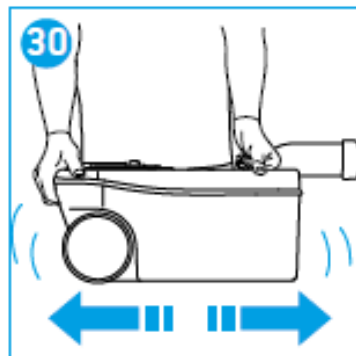
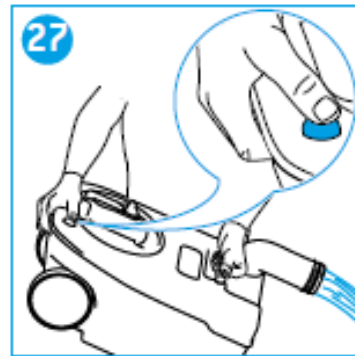
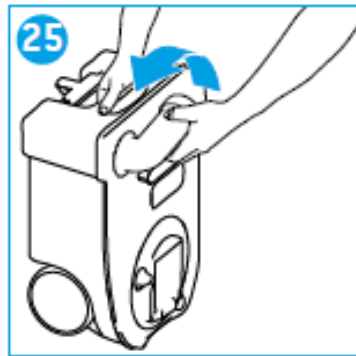
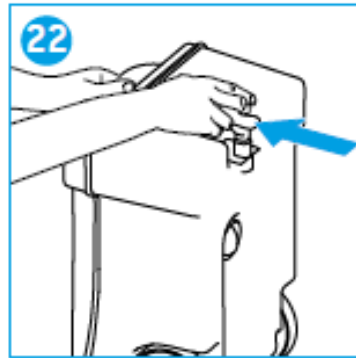
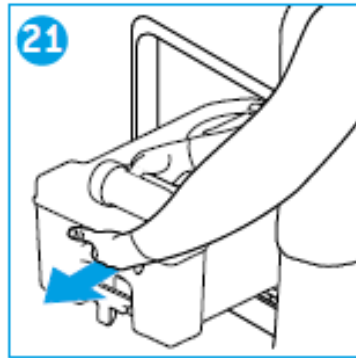
Waste tank chemical

M1 – Thetford C263S china bowl toilet

PREPARING AND EMPTYING CASSETTE



M1



M2 - Refrigerator

REFRIGERATOR NORMAL OPERATION

European specification Airstreams are fitted with a Dometic or Thetford absorption refrigerator, which use ammonia as a coolant. The refrigerator operates on either 230v mains electricity, 12v DC electricity, or liquid gas (propane/ butane).

Please refer to the operating instructions contained in your Owner's pack for full explanation of the controls for different refrigerator models and for detailed advice on all aspects of the operation of the refrigerator.

If you store the Airstream at home, switch the refrigerator on at least 12 hours before you depart, with the energy selector switch to 230v, so the refrigerator is pre-cooled. Then place pre-cooled food and drink in the refrigerator when packing to depart.

Set the fridge to the 12v energy option just before travel. The adjacent LED will light green only once the car ignition is turned on, so long as the Airstream and car are correctly electrically connected, so pin 10 of the 13pin connector is powered when the car is running (see Section F11 of this manual for full details).

NOTE! Powering the refrigerator on 12v DC from the towcar battery is suitable only for maintaining the temperature of the refrigerator and its contents once it has been refrigerated.

! CAUTION. Shut and lock the refrigerator doors before travelling.

On arrival at the campsite, check the mains electricity supply available in amps. If the supply is limited (5 amps or less), or there is no mains electricity available, set the fridge to gas operation. Otherwise, set the energy selector switch to 230v mains electricity.

GAS OPERATION

In Europe, gas operation is permitted while travelling only when the gas system of the vehicle is equipped with a drive safe regulator, as fitted to the Airstream, which will stop the flow of gas at the regulator if the piping is damaged/ ruptured in an accident.

Do not use the refrigerator on gas operation in petrol stations.

Due to physical reasons, ignition faults could occur starting from an altitude above sea level of approx. 1000m/ 3280 ft.

The refrigerator should only be operated using liquid gas (propane or butane), do not use Autogas, town gas or natural gas.

GENERAL ADVICE

- Switch the refrigerator on about 12 hours before filling it.
- When possible, pre-cool items to be stored, i.e. store them in your home refrigerator before placing them in the refrigerator in the Airstream.
- Allow foods that have been warmed up to cool before storing.
- Store quickly perishable foods directly next to the cooling fins.
- The refrigerator is not suitable for the proper storage of medications.

Frost builds up on the cooling fins when the fridge is in use. If the layer of frost reaches 3mm thickness, the refrigerator should be switched off and defrosted.

FREEZER COMPARTMENT

The freezer compartment is suitable for making ice cubes and for short-term storage of frozen food. It is not suitable as a means of freezing foods.

Ice cubes are best frozen overnight. At night, the refrigerator has less work to do and the unit has more reserves.

When ambient temperatures are lower than + 10 degrees centigrade, an even regulation of freezer temperature cannot be guaranteed, if the refrigerator is exposed to these temperatures for a long period of time. This can cause the temperature in the freezer to rise and the stored goods to de-frost.

FRAME HEATING

Some models are equipped with frame heating around the freezer compartment.

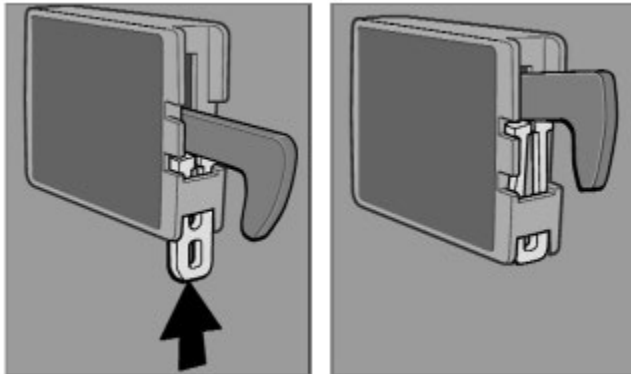
We recommend that the frame heating is left on, whenever the fridge is in use. During summer months especially with high temperatures and humidity, water droplets may form on the metal frame and door seals which will over time will damage the door seal, requiring replacement of the seal, or door.

The frame heating is turned ON/ OFF with button **(6)** and can be set to 2hour (press once), 5hour (press twice), or continuous operation (press 3 times). The frame heater is active for 30 minutes after switching on and then switches itself off and on again at time intervals of 5 minutes.

The frame heating will draw 12v DC constantly @ 0.3amps when on, so do not leave it set to continuous operation unless you have mains electricity connected to charge your leisure battery(ies).

DOORLOCK HOOK

When the Airstream is parked, the locking hook can be disabled by engaging the lockbar, which allows the door to be opened by just pulling it (no need to press the locking button).



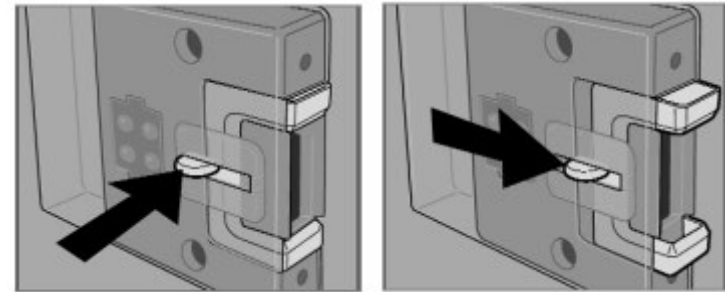
VENTILATION GRILLES

When washing the exterior of the Airstream, do not direct high pressure water at the ventilation grilles, as this will cause water to enter the interior.

STORAGE

If you will not be using the refrigerator for a period of time, for example if the Airstream is in storage, carry out the following actions:

- Remove all food
- Switch off the refrigerator
- Clean the refrigerator
- Shut off the gas manifold tap serving the refrigerator
- Leave the door(s) of the refrigerator ajar, using the ajar door closure position of the refrigerator door lock (see images below)



MAINTENANCE & SAFETY ADVICE

Keep the refrigerator clean and defrost the refrigerator as often as is necessary. Defrost the refrigerator only by turning it off, leaving the doors open and when defrosted, wiping compartments dry with a cloth.

Do not forcibly remove ice or accelerate defrosting using a heat source!

Check periodically that the refrigerator door(s) close properly, or ice will form in the refrigerator. Close with door with a piece of paper between the door and body of the refrigerator. Pull at the piece of paper. If you feel resistance, the door closes properly. Repeat on the other 3 sides of the refrigerator door.

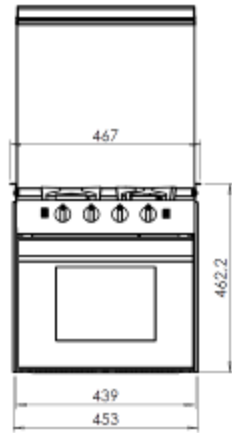
In the event of leakage of ammonia (easily identifiable from the unpleasant odour) switch off the appliance, open windows and contact your dealer.

The gas burner to the refrigerator must be cleaned at least once a year, this is normally done during the annual service.

! WARNING Work on the gas, flue system and electrical components must only be carried out by qualified service personnel.

M3 – Cooker

COOKER NORMAL OPERATION



The cooker has 3 x LPG hotplate burners, plus a combined oven and grill.

Before using the appliance for the first time, remove all accessories and packing in the grill and oven, including any surface protection film, i.e. plastic coating.

The control tap on this appliance operates both the Grill and Oven burners. To ensure safe operation it is not possible to operate both burners at the same time.

The oven/ grille pan supplied with the appliance may have a removable handle. Always remove the handle when the pan is in use.

The oven shelf is fitted with a raised bar to prevent trays or dishes making contact with the back of the oven.

VENTILATION

The use of a gas cooking appliance results in the production of heat and moisture in a room in which it is installed. Ensure that the kitchen area is well ventilated - turn on mechanical ventilation (extractor hood or ceiling exhaust fan) and during prolonged use, open a window to increase ventilation.

GLASS LID

Glass lids may shatter when heated. Turn off the hotplate and allow it to cool before closing the glass lid.

GRILL

The grill **MUST** only be used with the door open.

The heat deflector guard below the fascia should be pulled out prior to lighting the grill. Never adjust the heat deflector position without using hand protection – i.e. oven gloves.

OVEN TEMPERATURE CONTROL

The temperature in the oven is controlled by a thermostatic gas tap and is variable over the range 130°C to 240°C. Approximate temperatures for the settings on the control knob are shown in the table below. The temperatures indicated refer to the centre of the oven and at any particular setting the oven will be hotter at the top and cooler towards the base. The variation between top and centre, and centre to bottom is approximately equivalent to one gas mark.

Gas Mark	Temperature			
¼ - ½	265-275°F	130-135°C	Very cool	Meringues
1	285	140	Cool	Stewed fruit
2	300	150	Cool	Rich fruit cake
3	330	165	Warm	Baked custard
4	355	180	Moderate	Victoria sandwich
5	385	195	Fairly hot	Whisked sponges
6	410	210	Hot	Short crust pastry
7	430	220	Hot	Bread, scones
8	445	230	Very hot	Puff pastry
9	465	240	Very hot	Quick browning

DO'S AND DON'TS

- DO read the user instructions carefully before using the appliance.
- DO allow the oven to heat before using for the first time..
- DO clean the appliance regularly.
- DO remove spills as soon as they occur, clean with warm soapy water.
- DO always use oven gloves when removing food shelves and trays from the oven.
- DO check that controls are in the off position when finished.

- **DO NOT** allow children near the cooker when in use. Turn pan handles away from the front so that they cannot be caught accidentally.
- **DO NOT** allow fats or oils to build up in the oven trays or base.
- **DO NOT** use abrasive cleaners or powders that will scratch the surfaces of the appliance.
- **DO NOT** under any circumstances use the oven as a space heater.
- **DO NOT** put heavy objects onto open grill and oven doors.

Refer to the appliance manufacturer's operating instructions contained in your Owner's pack.

Section N – Awnings



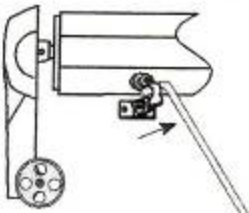
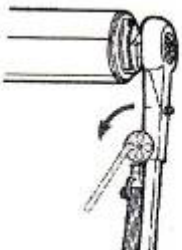
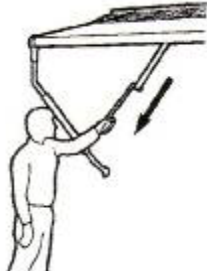

Zip Dee patio awning




N1

N1 – Zip Dee patio awning, opening

OPENING THE AWNING




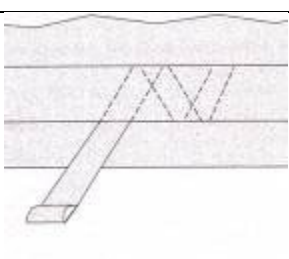
Follow the step by step instructions below and with a little practice, you will find it quick and easy to single handedly erect and stow the Zip Dee awning.

<p>1. Open the travel latch. You can stand on some portable steps..</p> <p>Or use the pull rod provided – insert the pull rod into the travel latch loop and rotate to open.</p>	
<p>2. Release the clamp wheels (if present, one at each end). Turn the clamp wheel anti clockwise and swing the wheel assembly toward the centre of the trailer, to free the hardware.</p>	
<p>3. Unroll fabric. Insert the pull rod into the loop of the centre strap and pull towards you, to unroll the awning.</p>	
<p>4. Walk to one end. Step under the awning, fold the centre strap and tuck it into the loop. This will stop the awning rolling back up as you walk to one end.</p> <p>Alternatively, place your hand on the back side of the roller as you walk to one end.</p>	

<p>5. Extend rafter arm. Lift the claw of the rafter arm off the stud on the main arm bar. <i>Do not let go of the rafter arm tube assembly, or it will drop onto the ground.</i></p> <p>Roll the roller out slightly with one hand as you lift the rafter arm and place the claw over the shaft of the roller.</p> <p>Repeat at the other end.</p>	
<p>The awning is now in the ‘half out’ position. Use this position if there is some wind, or a risk of wind developing. In this position, the main arm bars are protected being fully inside the main arm tubes.</p>	
<p>6. Extend and lock rafter arm. Step out from under the awning, so you are facing the Airstream. Grasp the head casting at one end and pull towards you to extend the awning.</p> <p>When the roller is fully extended, lean back (see photo) pulling on the rafter arm until the ratchet stud engages (listen for click).</p> <p>Repeat at the other end.</p>	
<p>The awning is now in the ‘run off’ position. Use this position after washing the awning, or after rain before you stow the awning, to allow water to run off.</p>	
<p>7. Raise roller. Finally, raise the awning to the desired height. Step back under the awning, bend at the knee and with a straightened arm place your hand on the underside of the roller.</p> <p>With your other hand, release the snap stud on the main arm, then straighten your knees to stand up. Release the snap stud into one of the holes in the main arm bar (up to 3 holes of the main arm bar can be exposed).</p> <p>Repeat at the other end.</p>	

CLOSING THE AWNING

To close the awning, follow the instructions below.

<p>1. Lower the roller.</p> <p>Release the snap stud of the main arm and lower the roller to its lowest position.</p> <p>Repeat at the other end. You are now back to the 'run off' position.</p>	
<p>2. Release ratchet studs of rafter arms.</p> <p>Place one hand on the outer tube of the rafter arm close to the ratchet stud. With the other hand, pull downward on the ratchet stud to release it.</p> <p>Repeat at the other end. The awning will roll in. You are now back to the 'half out' position.</p>	
<p>3. Lower and store rafter arms.</p> <p>Lift the claw of the rafter arm off the roller shaft and place the claw on the height adjustment stud located on the inside of the main arm.</p> <p>Repeat at the other end. As you do so, place your hand on the back side of the roller and walk to the middle of the awning.</p>	
<p>4. Half close the roller.</p> <p>Un-roll the centre strap if it is rolled up. Hold the end of the centre strap and move from left to right as the awning rolls up, so the strap does not all gather in the same place.</p>	

5. Rear clawbar clearance. As you close the awning, watch that the claw of the rear rafter arm does not touch and snag on the rear main arm bar.

There is less clearance here, than between the claw of the front rafter arm and front main arm bar, due to the way the claw casting is made.



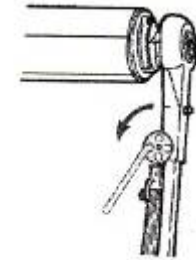
6. Fully close the roller. When all but the last 150mm/ 6" of the awning fabric has been rolled up, release the strap and let the roller spring tension close the awning.



7. Lock wheel clamp.

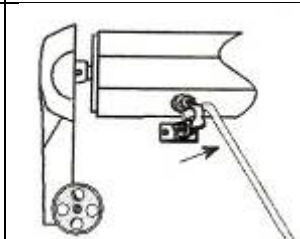
Swing the clamp wheel assembly (is present) toward the hardware and fit into place. Then turn the clamp wheel clockwise to tighten.

TIP: If your awning does not have wheel clamps, ask your Airstream dealer for Zip Dee 'Zip straps', for strapping the rafter arm to the main arm when travelling. Sold as a set of 2.



8. Lock travel latch.

Insert the pull rod into the travel latch loop and twist shut.



Your Airstream dealer will demonstrate the Zip Dee awning opening and closing procedure at the handover. If you need another demonstration later, just ask!

N1 – Zip Dee patio awning, maintenance

STORM PRECAUTIONS

Please take precautions to prevent damage from occurring due to wind, rain or storm.

If you are leaving the Airstream un-attended, or retiring for the night, close the awning.

If for some reason you can't close the awning fully, lower both ends of it – so the awning is in the **'run off' position** described in the previous pages. This will create a sufficient slope for water run-off and the main arm bars (which can bend) are fully retracted back into the main arm bar tubes. Water weighs 1kg per litre and your awning was not designed to take the weight of water than could accumulate.

MAINTENANCE

At the end of each trip, open the awning fully, both to ensure the fabric is cleaned and dry before being rolled and stored (see fabric care instructions below) and to clean and lubricate the telescopic arms.

Extend all telescopic arms as far as possible, then wipe off accumulated sand and dirt that can clog and scratch the protective aluminium finish and hinder free movement.

Lubricate the main arm bars with Spray Silicone, available in cans from most auto parts stores.

Tighten any loose bolts or screws that you notice, for example:

- Travel latch – if this becomes loose, loosen the holding screw, apply locktite adhesive and re-tighten the holding screw.

Inspect the claws at the end of the rafter arms closely for any fractures in the alloy castings.

Clean the aluminium parts not less than annually with a quality non abrasive chrome or aluminium polish.

Check the fabric for punctures, small tears or stains. Contact your Airstream dealer if your awning fabric is damaged and needs patching. Follow the fabric care instructions.

FABRIC CARE

Zip Dee awning fabric is made of acrylic fibres which cannot rot or mildew. The awning can be rolled up wet if necessary, but open it up to dry as soon as possible.

The acrylic fabric is synthetic and cannot support mildew or plant growth, however mildew can find a home on any pollen, plant spores, grain dust or other airborne plant material that can accumulate on the awning. If mildew forms on these elements, it can leave a stain which can be unsightly and difficult to remove.

Therefore, keep your awning as clean and dry as possible by hosing it down frequently between seasonal washing.

On a monthly basis, loosen hardened dirt and dust with a dry medium bristle brush, then thoroughly rinse top and bottom with a hose.

For a thorough cleaning to remove any stains, use Zip Dee Washout Acrylic Awning Cleaner which can be ordered via your Airstream dealer. Wash both sides of the awning with the solution while scrubbing with a brush. Saturate the fabric and leave the solution on for 15-20 minutes (keep the fabric saturated by reapplying solution as needed). Rinse thoroughly. Repeat, if necessary.

SPARE PARTS

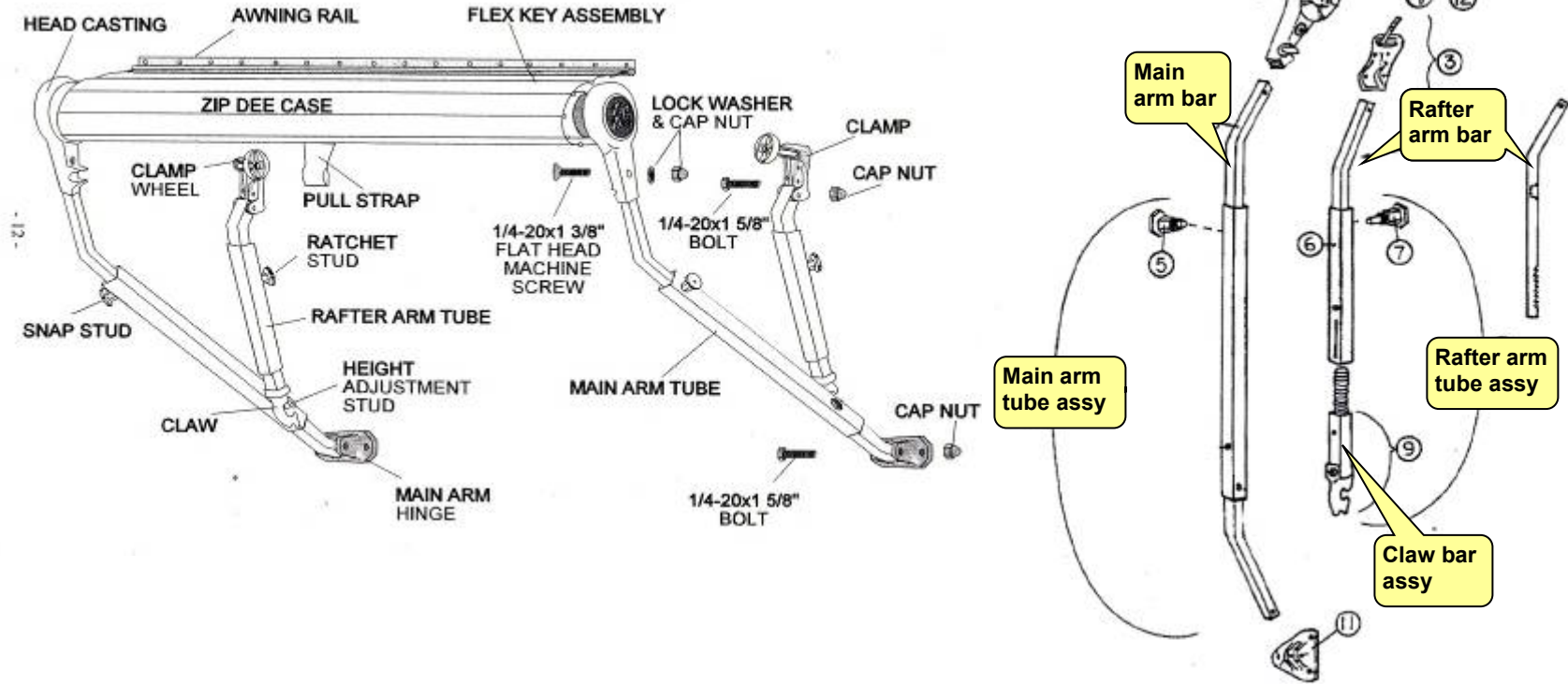
Zip Dee awnings are manufactured in the USA from bright aluminium and acrylic fabrics, the perfect choice to complement your Airstream travel trailer.

Use only genuine Zip Dee replacement parts when repairs are needed.

Zip Dee hardware varies on different models of Airstream. The hardware shown on the next page is one example only, to show names of commonly used parts. **Check your hardware serial number and hardware code number, you will find these on your front main arm bar tube. Copy them in the space below.**

Refer to Zip Dee's Owner's manual contained in your Owner's pack for fuller explanations on the construction, use and maintenance of the awning.

HARDWARE – NAMES OF COMMON PARTS



O1 – Service record

SERVICE

DATE:

Annual service carried out in accordance with manufacturer's recommendations

DEALER STAMP

SERVICE

DATE:

Annual service carried out in accordance with manufacturer's recommendations

DEALER STAMP

SERVICE

DATE:

Annual service carried out in accordance with manufacturer's recommendations

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Annual service carried out in accordance with manufacturer's recommendations

DEALER STAMP

01 – Service record

<p>SERVICE</p> <p>DATE:</p> <p>Annual service carried out in accordance with manufacturer's recommendations</p> <p>DEALER STAMP</p>	<p>SERVICE</p> <p>DATE:</p> <p>Annual service carried out in accordance with manufacturer's recommendations</p> <p>DEALER STAMP</p>	<p>SERVICE</p> <p>DATE:</p> <p>Annual service carried out in accordance with manufacturer's recommendations</p> <p>DEALER STAMP</p>
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AIRSTREAM[®]

428 West Pike Street

P.O. Box 629

Jackson Center, OH. 45334-0629

Phone: (937) 596-6111 Fax: (937) 596-6539

www.airstream.com