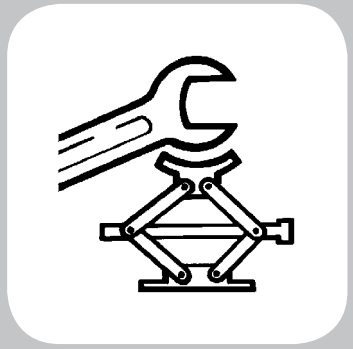


MAINTENANCE

MODIFICATIONS - DIY WORK

Owners need to be aware that carrying out DIY modifications to your caravan may in certain instances, invalidate the warranty cover and could also affect the safety and structure of the caravan.

WD40 is not recommended for external or internal use

WD40 attacks paintwork and sealants.

If a lubricant is required for Interior hinges, Sliding door tracks, Bottle box hinges, Exterior door hinges, Plastic tracking etc. We recommend "Ambersil 40+" this is readily available from most DIY/ Automotive spare part retailers

Before carrying out any DIY work within the warranty period (3/5) years please check with your Swift Group dealer.

SHOCK ABSORBERS/ CARAVAN MOVERS

If thinking of installing shock absorbers or a caravan mover as an after fit it is advisable to consult a dealer, each are capable of being installed separably but it may not be possible to install both together.

CARAVAN EXTERIOR

Aluminium Panels
The stove enamelled paintwork is very durable and easy to clean owing to the high gloss properties.

Plastic Panels (GRP/ABS)
These are used for front and rear panels and, in some cases for the roof.

Cleaning
For both aluminium panels and plastic panels.

1. Wash the caravan regularly with mild detergent. Rinse with cold water and leather off.
2. For better protection a similar coloured good quality car wax may be applied.

For sealed areas a mild soap is the best way to clean without affecting the sealant.

Acid or alkaline based cleaners or solvents should not be used.

WARNING: Under no circumstances use any abrasive cleaning agents or solvents on the exterior panels.

Care should be taken as the silicon in some polishes can attack the rubber used on the exterior for seals and gaskets.

Mouldings
All mouldings are of anodised aluminium and will retain their lustre for a long period if no abrasive materials are used to clean them.

Acrylic Windows
Wash windows carefully, as you would with the paintwork of your car, do not scrub windows prior to removing surface dirt and film with a hose pipe - trapped dirt could cause scratching.

Wash with a solution of warm soapy water, windows can then be dried off with a leather.

Small scratches can be removed, consult your dealer.

Catches and stays do not require any special attention or lubrication.

Condensation

What is condensation
Condensation is the change of water from its gaseous form (water vapour) into liquid water. Condensation generally occurs in the atmosphere when warm air rises, cools and looses its capacity to hold water vapour.

As a result, excess water vapour condenses to form droplets.

Why condensation occurs
Condensation occurs when warm moist air meets a cold surface. The risk of condensation

therefore depends upon how moist the air is and how cold the surfaces of the vehicle are. Both of these depend to some extent on how the vehicle is used. In a Caravan with a cold outside wall, if the temperature of the wall falls below the dew point temperature, it is quite normal for condensation to occur predominantly on the external walls.

When condensation occurs
Condensation occurs usually in winter, because the Caravan is cold and because skylights, windows and doors are opened less and therefore the moist air cannot escape.

How condensation occurs
Condensation occurs often for short periods in bathroom and kitchen areas because of the steamy atmosphere, and quite frequently for long periods in unheated areas; it also occurs in cupboards or corners of rooms where ventilation and movement of air is restricted.

What is important
Two things are particularly important:

- To provide ventilation so that moist air can escape.
- To use the heating reasonably

How can you prevent condensation
Provide ventilation so that moist air can escape.

a) Good ventilation of kitchens when washing, cooking or drying damp clothes is essential. Use the electric element of the space heater will help, when washing, cooking, or drying damp clothes, and particularly when the windows show signs of misting up.

b) If there is no mains electric supply and therefore you cannot use the electrical element of the space heater, open the skylights or windows slightly, but keep the door closed as much as possible.

c) After showering, keep the bathroom window or skylights open, and shut the bathroom door long enough to dry off the room.

d) In all other areas provide some ventilation. Fixed ventilation is provided in accordance with BS EN 721: 1998 this is through skylights and ‘heki roof lights’ in the roofs and from ventilators through the floor under cookers, doors and in bed boxes it is important not to block these.

Too much ventilation in cold weather is uncomfortable and wastes heat. All that is needed is a very slightly opened window or skylights. Opening a skylight or ‘heki; rooflights partially or windows opened to about 1cm opening will usually be sufficient.

Provide reasonable heating

a) Do not use of portable paraffin or flueless gas heaters at all.

b) If drying damp clothes or towels, open a window enough to ventilate the area and turn on the electric element of the space heater but do not hang items over the heater.

c) Try to make sure that all areas are at least partially heated. Condensation most often occurs in unheated areas.

d) To prevent condensation, the heat has to keep room surfaces reasonably warm. It can take a long time for a cold caravan to warm up, so it is better to have a small amount of heat for a long period than a lot of heat for a short time.

Caravans use only carefully selected insulation materials but unlike most rooms at homes they have all outside walls, so they lose heat through all walls as well as the roof and floor.

Even in a well insulated Caravan with reasonable ventilation it is likely during cold weather if the temperature is less than 10°C that condensation will occur. Ideally the temperature should be kept about 20°C although this is not always possible.

Mould growth
Any sign of mould growth is an indication of the presence of moisture and if caused by condensation gives warning that heating or ventilation, may require improving.

New vehicles
New Caravans often take a long time before they are fully ‘dried out’ because of moisture in the materials used in the manufacture. While

this is happening they need extra heat and ventilation. At least during the first winter trips and may require more heat than they will need in subsequent winters journeys. Allowance should be made for this.

WARNING: Do not wash your caravan with a high pressure washer as these can permanently damage the seals of your caravan.

Changing Exterior Bulbs
ALWAYS REPLACE LIKE FOR LIKE

For individual replacement bulb specification, refer to your Service Handbook.

CARAVAN INTERIOR

Follow these guidelines to ensure your investment is receiving the very best attention.

Side Walls, Roof Lining
A simple wipe over with a damp cloth and a very mild detergent is all that is needed.

Soft Furnishings
Should be vacuumed occasionally to remove grit and sand and help to keep its smart appearance and ensure long life. The upholstery can be cleaned with a mild, reputable upholstery cleaner. It is recommended that the curtains and pelmets are specialist cleaned only. The foam used in cushions is manufactured to meet fire regulations. It requires time to return to its normal position after prolonged use.

Work Surfaces
You should not stand very hot items on any of the work surfaces, especially models with polycarbonate moulded sinks and drainers.

Cupboard Catches
It is advisable to lightly oil all cupboard catches, sliding bolts and hinges from time to time.

Kitchen Equipment
All the thermoplastic parts in these areas have easy clean surfaces. To ensure long life and to prevent damage you must not use any cleaning materials at all and ensure water temperatures do not exceed 70ºC (putting cold water in first is suggested). After every use it is essential that you rinse with clean water only and wipe with a soft damp cloth. Failure to follow these simple instructions may result in premature failure or cracking which will not be covered by any guarantees (including extended warranties).

Bathroom/Shower
These products should be cleaned immediately after use. Apply a warm, mild soapy water solution with a soft cloth and rinse with clean water immediately. Abrasive materials must never be used. For stubborn stains “Thetford Bathroom Cleaner” is recommended as the use of other cleaners may harm these products, cause premature failure and will invalidate the warranty. “Thetford Bathroom Cleaner is available from most caravan dealer shops.

Furniture
A simple wipe over with a damp cloth should be all that is required. Polishing with a proprietary brand of wax polish enhances and maintains furniture in showroom condition.

It must be remembered that because the frames of the doors are made of ash, which is a natural product, they can be affected by temperature and humidity and may bow under certain conditions. As conditions change they should revert to their original positions.

Kitchen Drainer and Cutting Board
You should not stand hot items on to the removeable plastic kitchen drainer. To wash use only warm soapy water, do not use chemicals and bleach.

Changing interior bulbs
Remove the lens or lampshade to access the bulb.

ALWAYS REPLACE LIKE FOR LIKE

For individual replacement bulb specification, refer to your Service Handbook.

Locker Header Fluorescent Tube Replacement

- Ensure power supply to light is switched off.
- Open locker, light is mounted above.

Locate fixing screws (orientated towards ceiling) and remove.

- In the case of a side locker, a small furniture component onto which the light fitting is secured can now be removed.
- In the case of an upper welsh dresser (or similar), a larger component carrying all the lights from above that piece of furniture may detach.
- Once the appropriate light fitting has been accessed, the tube should be twisted along its length to release the tube and allow it to be lifted from the fitting.
- Please see the bulb replacement chart for details of the type of tube fitted. In addition, different 'colour temperatures' of bulb are available. For a consistent appearance replace tubes with those of equivalent colour temperature: This will be stated on the fitted tube in the format '4200K' or similar.

WINTERISATION/STORAGE

This is probably an opportune moment to arrange for the caravan to have its annual service at your appointed dealer.

The following applies wherever your caravan is stored particularly during the winter months.

Do not park near trees or larch type fences, due to possible wind damage.

Keep any grass around the floor of the caravan short, to maintain air flow and stop any possible damp getting into the caravan.

It is advised that the caravan is ventilated regularly throughout the winterisation /storage period, opening windows, doors and rooflights when possible.

General
All moving parts should be checked for free operation.

Clean all cooking appliances and refrigerator.

Lubrication should be carried out at the points illustrated in the general notes on chassis maintenance (page 137).

Charge up the on-board battery every 2 months.

Check alarm battery condition every 2 months and charge if necessary.

Leave the refrigerator door open.

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

Soft Furnishings
Clean and dust the upholstery and if possible remove before placing the caravan into winter storage. Alternatively, stand the cushions on their edges to allow circulation of air. This will reduce the possibility of dampness from condensation.

Keep curtains or blinds closed, to minimise fading of furniture.

If the blinds and/or flyscreens remain down for a prolonged period of time, re-tensioning of the springs will be necessary before re-use.

Wheels and Tyres
Do not store in one position with partially deflated tyres. The tyre walls will suffer and do present a real danger of blow outs, especially when travelling at faster speeds than are allowed in the UK.

The wheels should be turned every couple of weeks or even better, the wheels removed and the caravan placed on "winter wheels" or axle stands.

If you are removing the wheels, follow the jacking procedure for changing a wheel.

Check your tyres regularly for signs of age and deterioration, particularly wear, cracking and blistering. If in doubt consult a reputable tyre fitter.

Water System
Remove chopping board from bowl.

All single lever mixer taps, including the shower mixer, should have the lever moved to the central position and lifted to the open position for hot and cold.

Locate the system drain valves if fitted, mounted above the floor. Rotate the handle clockwise on each to the open position.

Drain water heater. Open yellow handle on inline valve adjacent to water heater. Valve is open when handle is vertical.

Drain water tank. Open tank isolation valve. Valve is open when handle is inline with body of valve.

Run pump for a short time to assist purging water from pipework.

Remove shower head. Let the shower hose drain into the shower tray and then return to holder.

The pump manufacturer recommends that after draining the caravan, the plumbing connection at the outlet from the pump should be disconnected (This can be done by unscrewing the fitting which connects the plumbing to the accumulator). With a suitable container present to collect any remaining water, the pump should then run for a short time. This ensures that the majority of water is removed from the pump head which will minimise the risk of frost damage to the pump.

Before recomissioning the system reverse all above actions. (See Taps in Services section)

The Thetford Cassette porta potti is easily winterised for storage. Empty the fresh water tank using the drain tube/fresh water tank level indicator (level indicator on electronic models only). Pull the lever indicator/drain tube down from top plug position and outward through door opening to drain water from the tank.

Empty the water fill funnel by pulling the bottle away from tank. Remove the small water cap on the filler bottom, allowing water to drain from the water funnel. (Not C-200 toilet).

Do not tighten caps, this helps in keeping unit dry.

The pour out spout and vent plug can be removed. Seals should be greased if necessary with acid-free vaseline.

Recomissioning the Water System
Fill the fresh water tank on the Thetford Cassette porta potti using a hose or jerrycan until the water in the funnel reaches the neck. Tank capacity is 15 litres. Aqua Rinse may be added to improve cleaning of bowl and flushing of unit.

Replace cap. Swing back the water fill funnel until it touches the water tank.

Add Aqua Kem (100 ml) into the Cassette (or 120 ml if using Aqua Kem Bio) through the pour out spout. Add small amount of water through the pour out spout and replace the cap.

It is advisable after storage to flush the water system initially with a sterilising agent (such as Milton), and then with water repeating until the system is well flushed through.

Connect the pump.

Fill the system with water until water flows freely from the hot taps. About 2 gallons of water will be required. Close the hot taps.

Appliances
Before starting caravanning after storage check all gas appliances and electrical points.

Note: Preferably not less than once a year, the electrical installation should be inspected and tested by a qualified electrician.

After storage it is advisable to air the caravan and clean throughout, especially cooking appliances and the refrigerator.

Replace the bedding and wheels if they were removed for storage.

Important
Always follow the manufacturers recommended procedures after use of fitted equipment in the caravan and before storing for any length of time.

AL-KO RUNNING GEAR

Care & maintenance instructions for your al-ko chassis and components

General Information
The AL-KO lightweight chassis has been perfected by many years of research and development, supported by an exhaustive test programme.

Manufactured from high quality steel, the chassis has extra deep sections to provide strength at points of maximum stress. Large elongated holes are punched in the longitudinal chassis members, to reduce weight to a minimum. Each hole incorporates a return flange to maintain the required strength and provide rigidity in the extra deep sections.

The chassis frame is of a bolted construction which allows replacement of individual parts should the need arise.

The chassis is Hot Dipped Galvanised. This is regarded as one of the best forms of corrosion protection. It does however require minimal maintenance in certain circumstances and should, if properly maintained, last the lifetime of the vehicle.

When new, the chassis is of a bright and shiny appearance. As the galvanising cures during the initial 2/3 month period, this will gradually change to a medium/dark grey colour. This grey finish is the ideal, giving the correct protective coating. During this curing period the surface should be protected to avoid possible wet storage stain, in the form of a soft, light coloured, porous, oxidation layer. If the chassis members are in contact with any salt deposits from roads this should immediately be washed off with a high pressure washer. Salt attracts moisture allowing the surfaces to remain wet, this prevents curing and also allows formation of wet storage stain.

It is recommended that the chassis/ components are washed off, using a pressure washer on an annual basis (especially after winter usage), to avoid undesirable build up of salt and dirt deposits.

The galvanised chassis should not be painted or subjected to any other protective treatment.

Should the galvanising become superficially damaged exposing the steel core, this should be cleaned and treated with a Cold Galvanising Spray obtainable from vehicle accessory outlets.

Damage to chassis members through impact etc, MUST NOT be straightened or welded. Damaged chassis members MUST be replaced.

Drilling or Welding of Parts or Accessories
The chassis is designed and built to precise tolerances and must not be drilled or welded (except in accordance with certain AL-KO Accessory Operating Instructions). Failure to comply will invalidate all warranties.

Independent Suspension
The AL-KO rubber suspension is designed and developed to suit all types of road conditions and is maintenance free. Three rubber elements are contained within a hexagonal axle tube. These provide suspension and have inherent damping characteristics. (Only the hubs and wheel brakes require attention - see axle section).

Loadings on Coupling Heads, Overrun Assemblies and Axles
The permitted 'nose' weights of the coupling head/stabiliser, overrun assembly and drawbars, must never exceed the lowest value stamped on the assemblies.

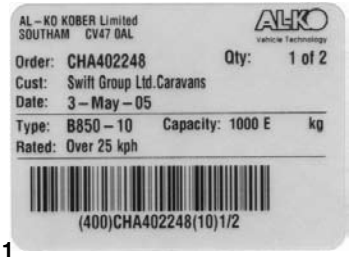


Fig. 1

The maximum axle loading is that stamped on the plate (Fig. 1 example axle plate) located in the centre of the axle, facing rearwards.

Do not attempt to remove as this will void the plate.

The third line down marked "Capacity" is the maximum permitted axle loading and must not be exceeded.

The caravan manufacturer may have stated a lower maximum loading weight on the plate fitted adjacent to the entrance door, this then becomes the maximum permitted load and

must not be exceeded. We recommend you record the Axle details for future reference.

It may be possible if required for the caravans MTPLM to be upgraded.

Your caravan dealer will require the following details from the axle plate.

(Example of information ref Fig 1)

- Order - CHA402248
- Qty – 1 of 2
- Date - 3 May 05
- Type - B850-10
- Capacity - 1000E

Loading
Loads to be carried in the caravan should be placed directly over, or as close as possible to the axles, otherwise the handling will be impaired. Maximum gross weight, as advised by the caravan manufacturer, must not be exceeded without approval from AL-KO.

Maximum loading is defined as the difference between ex-works weight and the permitted total weight.

Load Too Far Forward (Fig 2)
Steering and braking ability reduced. Increased loading on the rear axle and chassis of the tow vehicle.

Fig. 2

Load Too Far Back (Fig. 3)
High skid risk together with poor braking effect.

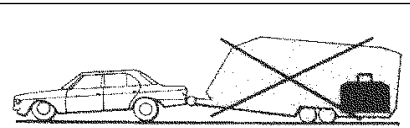


Fig. 3

Load Over Axle (Fig 4)
Optimum road holding together with maximum braking effect. Exceptionally heavy loads should packed directly over the axle.

Attention should be paid to the legal regulations regarding the permitted pressure exerted by the towbar on the towed unit.

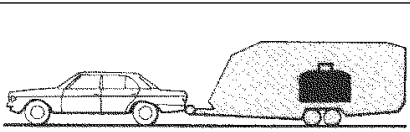


Fig. 4

Axle types

Safety Precautions
No welding is permitted on AL-KO Axles

It is important that the wheel and hub/ brake drum are compatible. This mean that the PCD, wheelbolts and inset must all be compatible with both the hub/brake drum and the wheel rim.

Particular attention must be paid to the recommended torque figures for the wheelbolts (see pg 19).

The axle type details shown on axle type plates must not be obscured or made illegible by application of any additional surface finish.

Operating Instructions

Service Brake
When the towing vehicle is braking or travelling down hill, the overrun device shaft is pushed in (dependent on the magnitude of the thrust on the shaft) and presses on the overrun lever. This acts on the bowden cables and expander mechanism, which in turn expands the brake shoes applying the wheel brakes.

Hand brake
With the gas strut version, pull the handbrake lever until upright. With the spring cylinder version, pull the handbrake lever right up to the last tooth. The caravan is then braked.

IMPORTANT NOTE
Please note that with the handbrake fully

applied, the caravan/trailer is able to move backwards by 25 cms until the spring cylinder/ gas spring takes effect.

Maintenance and Cleaning
Maintenance of Euro-Plus/Euro-Compact and Euro-Delta.

The above semi-trailing axles come fitted with maintenance free wheel bearings (greased and sealed for life) and no adjustment is necessary.

NOTE: The hub bearing is not protected against water ingress. Check wheel brake linings for wear every 10,000 kilometers or every 12 months via the inspection hole

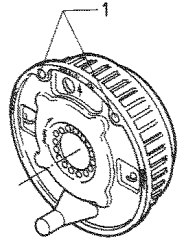


Fig. 5

(Fig. 5/Item 1). Adjust if necessary. Where continuous travel in hilly regions or high mileage is experienced, earlier inspection and adjustment may be necessary.

NOTE: The flanged hub-nut, located under the dust cap, used to keep the brake drum in situ, is a ONE-SHOT NUT (ie. must only be used once). If removed it must be replaced with a NEW flanged nut - torqued to 290 ± 10 Nm (214 +/- 1 7.5 lbs/ft). A small amount of special mineral grease, available from AL-KO must be applied to stub axle thread prior to fitting the new flanged nut. After fitting excess grease must be removed with white sprit.

The rear hexagon cap head bolt located under the black plastic cap MUST NOT BE DISTURBED under any circumstance. Interference with this nut will result in immediate tyre wear and damage to the braking system and WILL INVALIDATE ALL WARRANTIES. Should the rear nut accidentally be disturbed then the complete axle must be returned to AL-KO for resetting of the toe-in and camber.

No attempt should be made to remove the bearing. In the event of damage to the bearing or drum, only the drum complete with bearing and circlip will be available as a spare. No grease is used in the hub other than the mineral grease on the stub axle. No grease should be placed in the DUST cap. This is not a grease cap as used in all previous hubs

Spare parts
Spare parts are safety critical parts! For this reason when fitting spare parts in our products we recommend the use of original AL-KO parts or those parts that we have explicitly approved.

The reliability, safety and suitability of parts designed especially for our products, has been determined using a special test procedure. In spite of constantly monitoring the market we are unable to assess or vouch for other products.

If repair work or servicing is required, AL-KO have a large network of AL-KO service stations throughout Europe.

To establish the correct spare parts required for your axle you should always quote the axle type (axle identification plate Fig. 1, page 135) and Spare Part Identification no. (ETI No.), which will be stamped onto the wheel brake or on the identification plate (Fig. 6). Please establish these numbers before contacting AL-KO or a Service Agent.

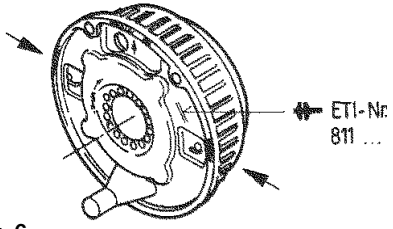


Fig. 6

The AL-KO rubber suspension axle has been designed and developed to suit all types of road conditions and is maintenance free.

Three rubber elements are contained within an

hexagonal axle tube. These provide suspension and have inherent damping characteristics.

Figs. 7, 8 & 9 show the deformation of the rubber elements at the extremes of suspension movement.

The axle is designed to ride with the suspension drop arm at, or slightly below, the horizontal position.

For Trouble Shooting & Fault Finding please see Table 1 on page 176.

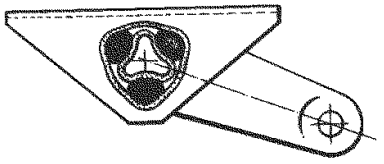


Fig. 7

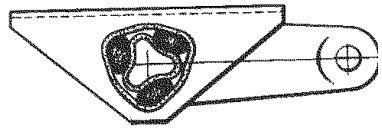


Fig. 8

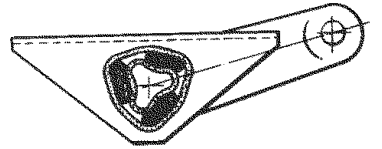


Fig. 9

AL-KO braking system adjustment

1. Ensure the towing shaft with coupling head is pulled FULLY FORWARD. (Fig. 10).
2. Release the handbrake to the FULLY OFF position. If the handbrake will not go down the whole way because of the fairing or any other obstruction; then the fairing must be cut away and/or the obstruction removed to achieve this desired position. It will not be possible to set up the braking system properly when the handbrake is not in the FULLY OFF position. (Fig. 10).
3. Jack up one side of the caravan, using the AL-KO Side Lift Jack System. (see Jack Operating Instructions).
4. Remove the inner plastic bung from the backplate to expose the “starwheel” adjuster access. (Figs. 10 & 11).
5. ALWAYS rotating the road wheel in the forward direction - NEVER backwards; adjust the starwheel with a suitable screwdriver, in the direction of the arrow embossed on the backplate until there is resistance in the wheel rotation. (Fig. 11).
6. Slacken off the starwheel adjuster until the road wheel turns freely in the FORWARD direction. (Fig. 11).
7. Check the adjustment at the end of the brake cable where it is secured to the abutment (bracket), welded to the centre of the axle.

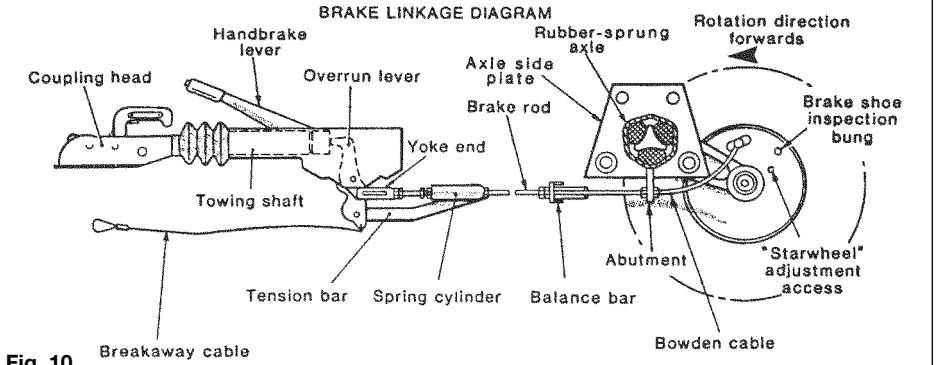


Fig. 10

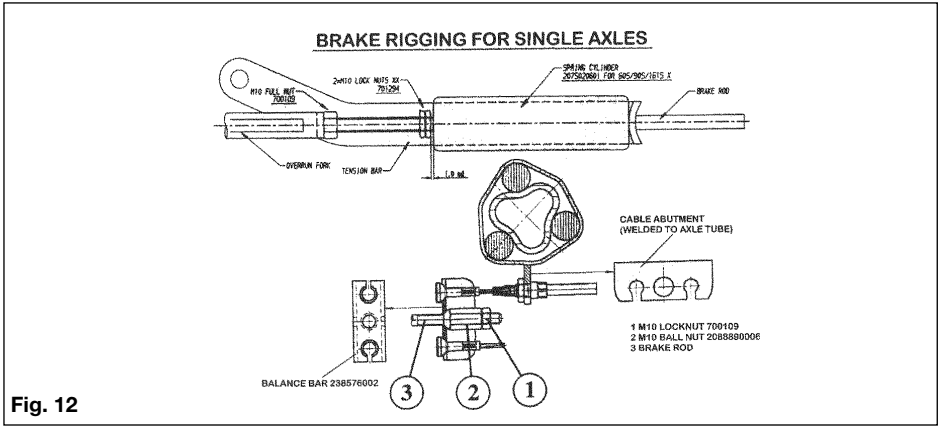


Fig. 12

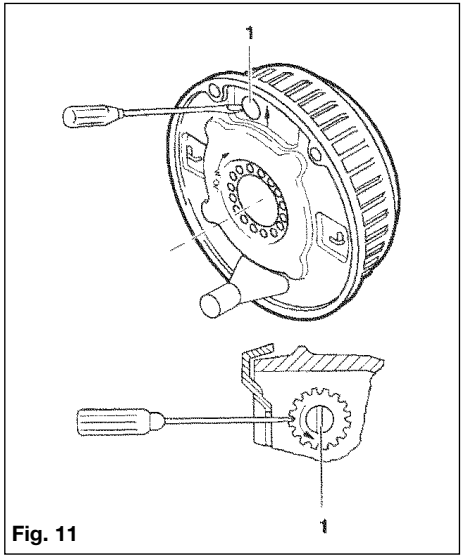


Fig. 11

When the inner cable is pulled out it should extend between 5 and 8 mm. (Fig.12). (On tandem axles a double abutment (bracket) is fitted to the front axle ONLY).

8. Repeat for other wheel or wheels.
9. On tandem axles the brake cables from the rear axle should pass over this axle and cross over each other, before being connected to the abutment (bracket) on the front axle.

10. Ensure the balance bar (compensator) is being pulled evenly (Figs.10 & 12). Excessive movement to this bar (double on tandem axles) would indicate possible incorrect adjustment (if appropriate, repeat step No. 7 - Fig. 12).
11. Check the brake rod support bracket, (fixed to the floor) IS supporting the brake rod evenly. The brake rod MUST ALWAYS run straight, NEVER bent or curved under any fittings. On tandem axles, using the double balance bar, a brake rod support tube (Part No. 228827) MUST ALWAYS be fitted on the end of the brake rod, passing through the centre aperture on the abutment.
12. Remove the slack in the brake rod by adjusting the long ball nut, rear of the balance bar, ensuring the overrun lever makes contact with the end of the towing shaft. Note! Over adjustment to the long ball nut (Fig. 12/Item 2) could induce movement of the inner brake cable, reducing the effective clearance of the brake shoes. If the overrun lever will not make contact, it is possible the two lock nuts, forward of the spring cylinder, are incorrectly adjusted. Loosen the nuts and adjust brake rod as above (Figs. 10 & 12).
13. Adjust the two locking nuts, forward of the spring cylinder (Fig. 10), (on some chassis a single Nyloc nut is used) to give 1 mm of clearance on the spring cylinder. This cylinder (the energy store for the handbrake operation) must be able to rotate ONLY, not slide on the brake rod. (Fig. 12). (If the overrun assembly is fitted with a gas strut handbrake then no spring cylinder is fitted - therefore ignore this paragraph).
14. CORRECT ADJUSTMENT of the linkage is checked by operating the handbrake lever so that when the second or third tooth is engaged, a slight braking force is felt on the road wheels.
15. OVER ADJUSTMENT of either the wheel brakes or linkages, will result in difficult reversing causing the wheels to “lock-up”.
16. When parking, the handbrake lever MUST ALWAYS be engaged into the fully upright position (90°). This is to compress the spring within the spring cylinder and thereby create an energy store which will automatically engage the brakes further should the caravan move. If difficulty is experienced in this operation, try easing the caravan backwards with one hand while engaging the handbrake fully with the other. This manoeuvre should not be attempted on a rearwards facing slope. In this case wheel chocks should be used combined with the handbrake. See page 173 for all handbrake operations.
17. Finally, if the road wheels have been removed, re-tighten using a calibrated Torque Wrench to 88 Nm (65 lbs/ft) - on all M12 wheel bolts. Remember to over-tighten is just as dangerous as to under-tighten, as this can distort the wheel rims. Avoid the use of power wrenches.

    IMPORTANT - The torque settings should be rechecked after 50 Km. Wheel bolts should NEVER be lubricated.

OPERATING INSTRUCTIONS FOR AK160

Coupling Up

Open coupling handle. To do this pull the coupling handle up (Fig. 14) in the direction of the arrow.

The coupling mechanism has a fixed open position, ie. as long as the coupling head is not placed on the ball the coupling will remain open.

Put the open coupling onto the towball. The coupling handle automatically and audibly clicks into position. In the interests of safety, press the handle down by hand (Fig. 14).

The coupling head is correctly connected when the green cylinder part of the safety indicator is visible (when viewed from the side - Fig. 14/Item 2).

The coupling mechanism is correctly engaged

when the coupling handle can no longer be pressed down any further (by hand).

Caution

If the coupling head is not correctly hitched onto the towball, then the caravan/trailer can become disconnected from the towing vehicle.

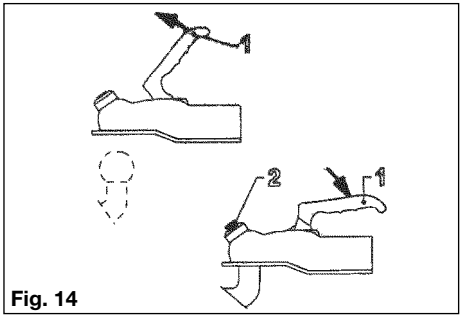


Fig. 14

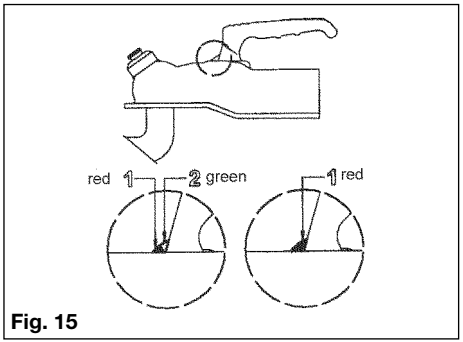


Fig. 15

Uncoupling

Open the coupling handle and lift the coupling head from the towball. When there are higher nose loads, coupling and uncoupling can be made easier by using the jockey wheel.

Wear Indicator

A wear indicator on the coupling head (Fig. 15) shows whether the wear limit of the towing vehicle's towball or the trailer coupling has been reached or not.

For this purpose, hitch up the trailer to the towball and drive the unit for approx. 500 m. This will set the coupling head adjustment. Following this, check the wear indicator as follows.

If the green indicator is visible on the coupling (with the coupling engaged Fig. 15), the coupling head is in good condition or the wear on the towball is within permissible limits.

When the green indicator on the coupling handle is completely covered over and only the red portion is visible (Fig. 15), this could be caused by the following:

- The towball has reached the lowest wear limit of 49.61 mm dia.
- Both coupling head and towball are showing signs of wear.
- Towball is in good condition with 50mm dia, but the coupling head is showing an excessive level of wear.

Caution

Under these circumstances, the coupling head can become detached from the towball and the caravan/ trailer can breakaway from the tow vehicle. The coupling head and towball must therefore be checked IMMEDIATELY before future use. Any faulty parts must be changed IMMEDIATELY.

All maintenance work should be carried out by AL-KO Approved Workshops.

Operation

For coupling types AK7, AK 10/2 or AK252. (This type of coupling is normally fitted to trailers or older model caravans).

Coupling Up

Push the safety lever (Fig. 16/Item 1) up with the index finger and lift the handle up and forwards. Put the opened coupling onto the towball with the handle pulled up and in addition press down by hand. The coupling will close by applying a light pressure. Press the handle down by hand until the catch snaps out (Fig. 16).

The coupling head is correctly engaged when the green cylinder part of the safety indicator is visible (Fig. 16/Item 2).

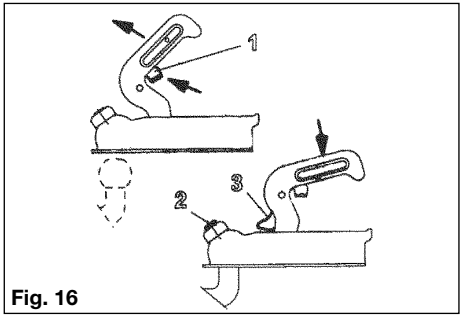


Fig. 16

Caution

It is most important to check that the coupling head is properly engaged on the towball each time.

Uncoupling

Lift coupling handle fully and remove the coupling head from the towball. Where there are higher nose loads, coupling and uncoupling can be made easier by using the jockey wheel.

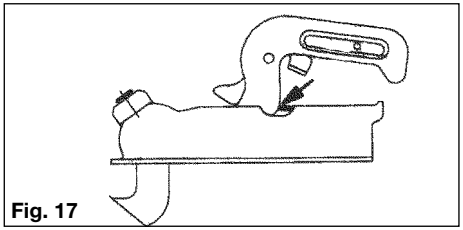


Fig. 17

Wear Indicator:

If the handle reaches the back of the cutaway portion of the housing, when the coupling head is engaged (Fig. 17) there will be play between the towball and coupling head. Automatic re-adjustment is no longer possible and the assembly will need inspecting.

Caution:

Under these circumstances, the coupling head can become detached from the towball and the caravan/ trailer can breakaway from the tow vehicle. The coupling head and towball must therefore be checked IMMEDIATELY before future use. Any faulty parts must be changed IMMEDIATELY.

All maintenance work should be carried out by AL-KO Approved Workshops.

Servicing & Cleaning

Lubrication Points (Fig. 18)

Clean Towball

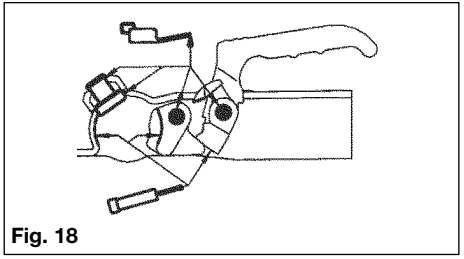


Fig. 18

Lightly grease, or oil ball socket, joints and bearing points as appropriate. General purpose grease to DIN 6=51825 KTA 3K.

For Troubleshooting and Fault Finding please see Table 2 on Page 177.

OPERATING INSTRUCTIONS FOR AKS 3004

Regulations

1. The AKS 3004 must be used in conjunction with 50 mm dia. towballs which conform to EC Directive 94/20 (DIN 74058 or local equivalent).
2. Suitable for attachment to drawbars or approved overrun braking equipment for single (and tandem axle) caravan/trailers, with a minimum weight of 200 Kg and a maximum permissible weight of 2000 Kg.
3. EC design approval has been given to the AL-KO AKS 3004 coupling under permit No. e1*94/20*0930*00.

Restrictions of use

1. The trailer coupling may only be connected to towing vehicles where the clearances for the stabiliser can be observed, in accordance with EC Directive 94/20 (DIN 74058). If these clearances are infringed by special attachments, then the use must be checked separately.

Clearances for Stabiliser Handle (Fig. 19)

The area above the towball of the vehicle must be free from vehicle components or attachments (A) (eg spare wheels, platforms etc.)

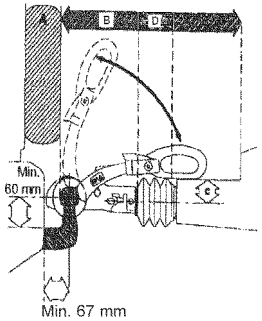


Fig. 19

The clearance for the stabiliser handle must be at least 330 mm (B) + the stroke movement (D) (85mm-100mm), which equates to 440 mm when used in conjunction with an AL-KO overrun.

Max. 50 mm (C) clearance between the centre of the towball and top of the overrun assembly or fairing, to ensure both coupling handle and stabiliser handle do not foul on operation.

Maintain the same clearances for other manufacturers' overrun assemblies.

2. Not suitable for use with overrun devices which can revolve above 25 (Fig. 20).
3. Swan Neck towbars (fixed or detachable) are suitable for use with the AKS 3004 providing they comply to EC Directive 94/20 and have the required minimum 60 mm clearance, measured from the centre of the towball (Fig. 20).

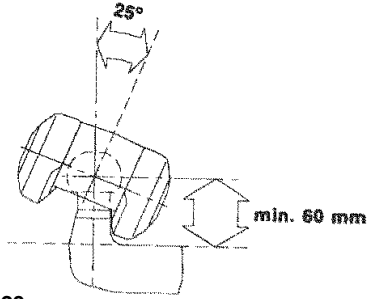


Fig. 20

Safety warnings

1. In accordance with EC Directive 94/20, couplings of type A 50-1 cannot be used (see Fig. 21), your warranty will be invalid if this type of towball is used.
2. For UK use, please use the extended neck towball (type A50-X).
3. A bolted-in type ball coupling (Fig. 22) is only permissible if the thread is locked or welded.

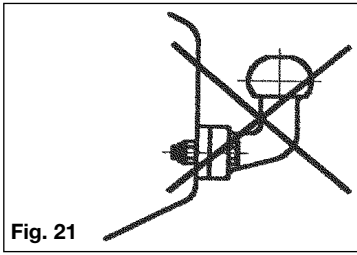


Fig. 21

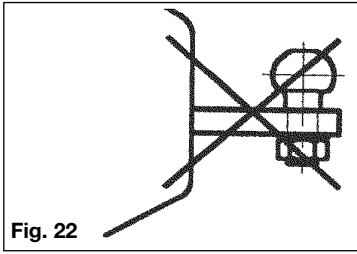


Fig. 22

4. The AKS 3004 cannot be used with a laterally attached reversing lever, on the left side, when facing direction of traffic.
5. The towball must be free from grease, paint and other residue, otherwise the stabilising effect will be greatly reduced.
6. If friction pads become contaminated with grease, they should be replaced.
7. The AKS 3004 should only be operated by one person, when opening or closing the handle, to reduce injury risks.

AKS 3004 Delivery Specifications
Coupling handle (Fig. 23/Item 1),
Stabiliser Lever (Fig. 23/Item 2)

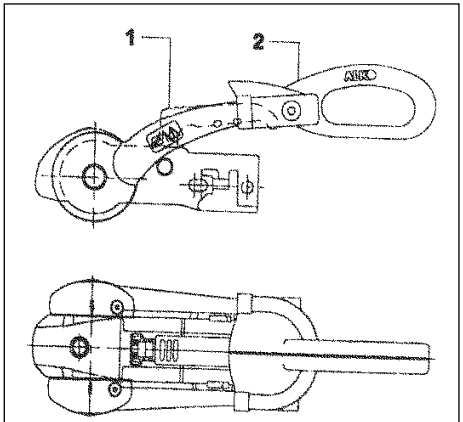


Fig. 23

Preparation for coupling/uncoupling
The Stabiliser lever (Fig. 24/Item 2) must be in the uppermost position (open).

Coupling
Pull the coupling handle (Fig. 25/Item 1) up in the direction of arrow. The coupling mechanism has an open position ie. as long as the AKS 3004 is not placed on the ball, the handle will remain open. Put the opened coupling onto the clean towball. The handle must now make an audible click and return to the flat position.

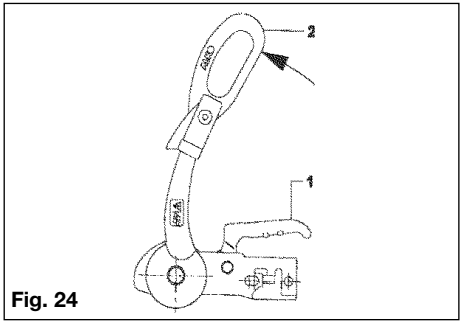


Fig. 24

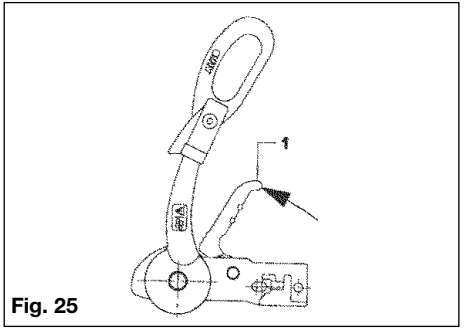


Fig. 25

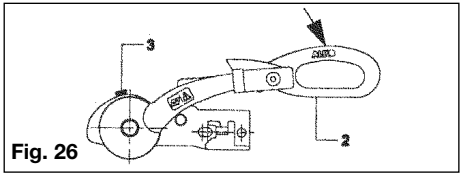


Fig. 26

Warning: The coupling is correctly engaged when the green edge of the safety indicator button is visible (Fig. 26/Item 3).

Stabiliser Unit
To operate the Stabiliser (once coupled to the towball), simply press the stabiliser lever down as far as it will go (Fig. 26/Item 2).

Uncoupling
Pull the stabiliser lever handle up as far as it will go, open the coupling handle and lift the AKS 3004 from the towball. With larger nose loads, coupling and uncoupling can be made easier by using the jockey wheel to assist lifting.

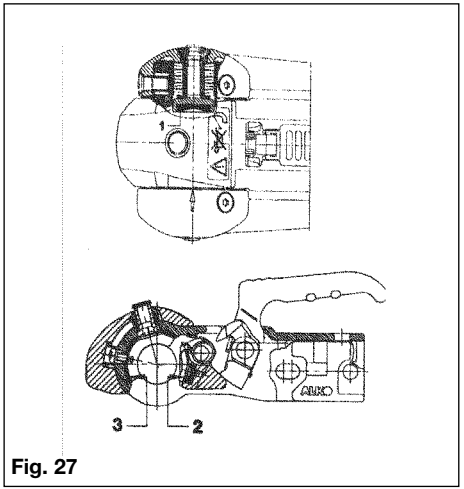


Fig. 27

Please Note: The friction pads (Fig. 27/1,2,3) are pressed against the towball and hence generate a stabilising/damping force. These pads are therefore subject to wear over time, however they will have a long service life (circa.30,000 Miles), provided they are well maintained and kept free of grease/dirt.

Checking the efficiency of the left/right friction pads

1. Couple up AKS 3004.
2. Open Stabiliser lever (Fig. 28/Item1).
3. Close Stabiliser lever until resistance is felt (ie friction pads are in contact with the ball but not yet under pressure).

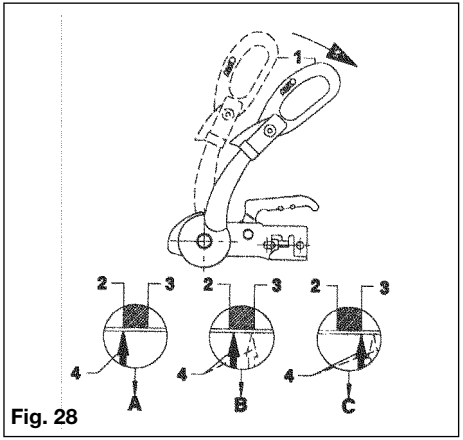


Fig. 28

4. If the arrow on the arm (Fig. 28/Item 4) is before or on the marked area (Fig. 28/Item 2) the friction pads are still as new (See A)
5. The arrow on the arm should lie between the marked area on the soft dock (See B)
6. If the arrow on the plate reaches or passes the marked area on the soft dock then the friction pads need replacing (See C).

   Please Note: It is not necessary to adjust the friction pads

Manoeuvring

For easier manoeuvring (on campsites etc), pull the stabiliser lever to the 'up' position.

Please do not use the stabiliser lever as an manoeuvring handle. Please use the handles on the Caravan or fit the AL-KO manoeuvring handle to your jockey wheel (available separately).

1. During opening or closing, the AKS must only be operated by one person.
2. Press stabiliser lever down by hand force only DO NOT use your foot or an extension bar, this will damage the components (Fig. 29).
3. When opening or closing the stabiliser lever, please ensure your hand does not touch the coupling handle - you may accidentally trap your fingers! (Fig. 29).

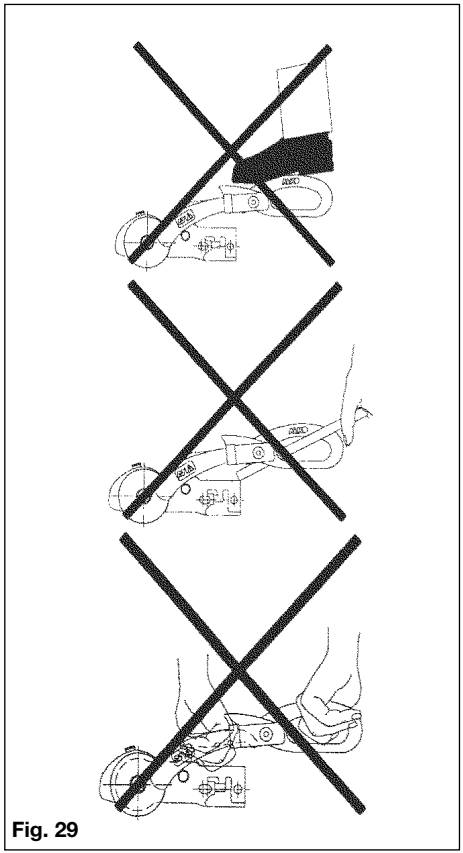


Fig. 29

Noises whilst driving
As a rule, the friction pads of the AKS 3004 do not make a noise during driving. Any clicking, creaking or squeaking noises that do arise may be due to the following:

a) Foreign bodies or dirt between the friction pad and tow ball.

b) Dry operation of the drawshaft inside the overrun device.

c) A detachable towball which has too much play in the locking mechanism.

Remedial Action

a) Clean the tow ball and friction pads by lightly rubbing the surface (100-120 grit emery paper).

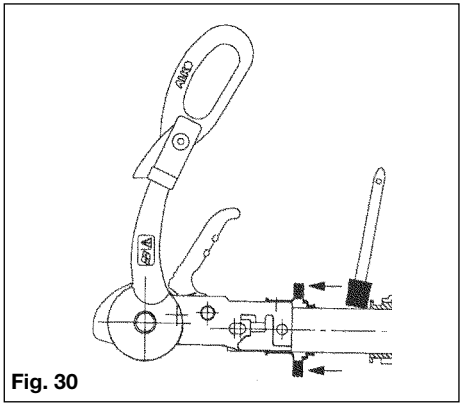


Fig. 30

b) Lubricate the drawshaft sleeve via the grease nipples. In addition, push the gaiter forward and grease (DIN 51 825 KTA 3K) the exposed part of the shaft (Fig. 30).

c) Visit a specialist workshop to have the ball holding area checked for damage and the locking mechanism for function. If necessary, change the towball.

Servicing and Cleaning
Friction Pad Replacement (please replace one at a time)

1. Uncouple AKS 3004.
2. Remove protective caps (Fig. 31/Item 1) with the aid of a small screwdriver.

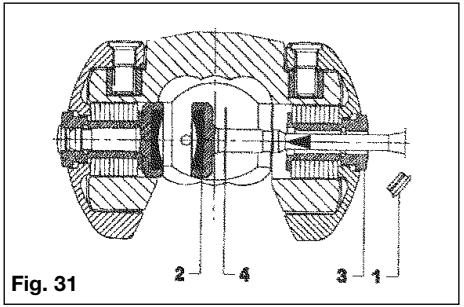


Fig. 31

3. Press worn out pad inwards and remove (use punch and hammer) (Fig. 31/2)
4. Insert new friction pad from below (after first re-inserting shim washers if they were present) and press in as far as it will go (Fig. 31/Item 4 & Fig. 32).

Checking the efficiency of the front/rear friction pads

1. Couple the AKS 3004 to the towball but do not activate the stabiliser.


Fig. 32

2. If a green indicator is visible (on the handle), then the AKS 3004 is in a new condition or the pads and towball are within the permissible limits (Fig. 33/Item 2).
3. If only a red indicator is visible (Fig. 34/Item 3), then this may have the following causes:

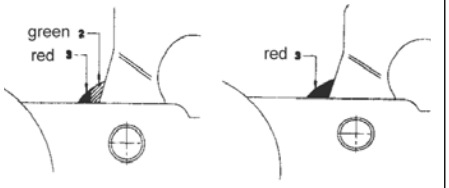


Fig. 33 Fig. 34

a) AKS 3004 is okay but the towball has reached the lowest limit of 49.61mm

b) AKS 3004 shows signs of wear

c) Towball is in a new condition (50mm) but the front/rear friction pads show a high degree of wear.

Establish the diameter of the towball so that conclusions may be drawn as to the wear of the friction pads (ball diameter must not be less than 49.61mm)

Friction Pad Replacement (Front/Rear only)

1. Uncouple the AKS 3004
2. Remove the rubber soft dock (pull up and off) Fig. 35/Item 1 & Fig 36.

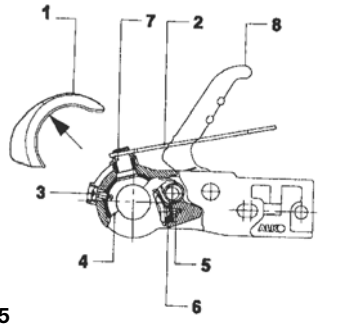


Fig. 35

3. Press the safety indicator outwards and secure with SW14 hex. spanner (not included), (Fig. 35/Item 2).
4. Remove cheese-head screws (Fig. 35/ item 3 & Fig 36), using special torx tool.


Fig. 36


Fig. 37

5. Press friction lining recess (Fig. 35/Item 4) inwards and pull down and out.
6. Open coupling handle (Fig. 35/Item 8).
7. Remove countersunk head cap screw using special torx tool (Fig. 35/Item 5 & Fig. 37).
8. Press friction pad inwards with a screwdriver and remove from ball cup.
9. Fitment of new linings takes place in reverse. Tighten screws 3 & 5 to 5 Nm.
10. Replace rubber soft dock, insert top section first then bottom.

Important Maintenance and Cleaning Advice:

1. The towball should be cleaned regularly to remove grease or other residue, the use of Thinners, White Spirit or Brake Cleaner is recommended - otherwise the stabilising effect will be severely reduced.
2. If friction pads are contaminated, they should not be cleaned but replaced.
3. The surface of the towball must be free of grooves, rust or seizing marks.
4. Towballs coated (with paint or similar) must have this surface completely removed (use 100 or 120 grain emery paper). If this is not done, increased towball wear will occur and may cause damage to the AKS 3004 components.
5. In Winter, carefully spray only the visual indicator with de-icer.

Lubrication

Should lubrication of the stabiliser parts become necessary, then the following must be observed.

a) Clean all parts thoroughly.

b) Areas may only be covered with a thin film of grease (Fig. 38).

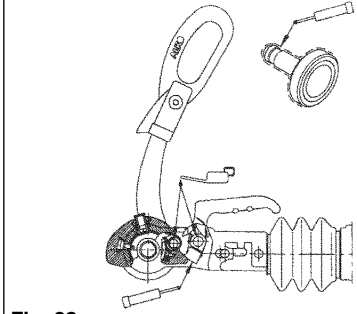


Fig. 38

c) Use multipurpose grease DIN 51825 KTA 3K.

Warning: When lubricating, ensure none gets into the friction pad or towball holding area.

AL-KO secure imobiliser
Refer to the User Instructions Kit supplied.

Overrun Devices
In the importance of Safety, please familiarise yourself with the operation of this overrun device BEFORE using your caravan/trailer.

Safety Precautions
When parking your tow vehicle and caravan/ trailer on site, you must apply the caravan handbrake. If the unit is parked but disconnected from the tow vehicle, it is strongly recommended that each wheel is chocked using AL-KO or suitable wheel chocks.

If a 'detachable' type drawbar is fitted (as with catering trailers). the drawbar must not be removed from the trailer with the hand-brake applied.

Caution: Please note when parking the caravan/ trailer, the wheelbrake auto-reverse mechanism will allow the caravan/trailer to travel backwards for approximately 25 cm (please allow sufficient clearance when parking).

Operation
AL-KO overrun devices are a mechanical type, using a hydraulic damper.

Coupling Up
Manoeuvre towing vehicle or trailer to coupling point.

Overrun devices fitted with 50 mm coupling head

Fully open coupling head handle and secure hitch onto the towball. See page 19 (coupling up).

Thread the breakaway cable through the breakaway cable guide provided (Fig. 40) and connect it to attachment point provided on towing bracket (Fig. 39). Please refer to 'Braked Trailers Use of Breakaway Cables' for further detail.

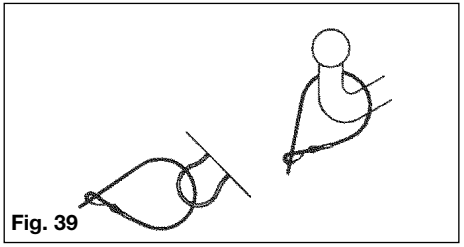


Fig. 39

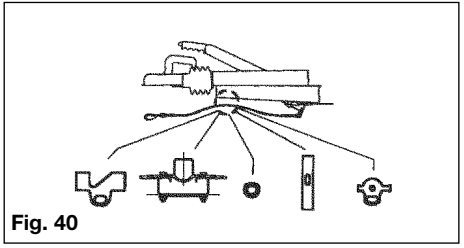


Fig. 40

Caution: The breakaway cable operates the handbrake (emergency brake), in the event of the caravan/trailer becoming detached from the towing vehicle during towing. For this emergency brake to work correctly, it is absolutely essential that the following points are observed:

1. The breakaway cable MUST run through the breakaway cable guide.
2. The breakaway cable MUST NOT be wrapped around the jockey wheel, as this disables the emergency brake (Fig. 41).

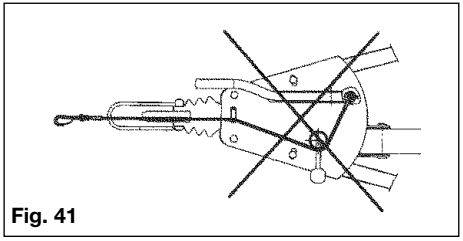


Fig. 41

3. The cable MUST run as straight as possible and not be restricted.
4. Ensure the cable is long enough to allow for cornering and will not become taut or snag during use, as this could result in the handbrake operating whilst towing.

   Please refer to 'Braked Trailers Use of Breakaway Cables' Information sheet, supplied with your caravan/trailer.

Overrun Device Fitted with 50 mm Coupling Head
Connect trailer electric plug controlling lights and indicators etc. into towing vehicle socket.

Wind the jockey wheel up fully and clamp securely in position, ensuring that it does not foul the brake rod or breakaway cable.

Ensure handbrake is fully off by pushing it fully down (Figs. 42-46).

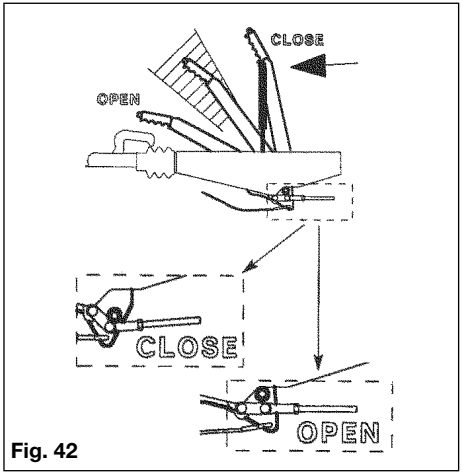


Fig. 42

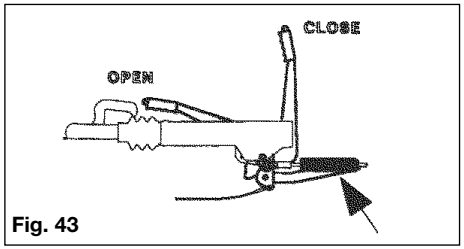


Fig. 43

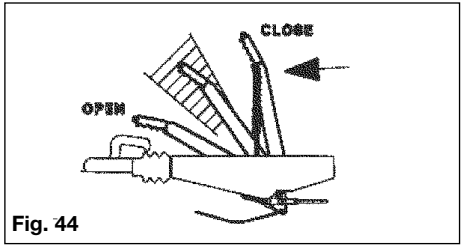


Fig. 44

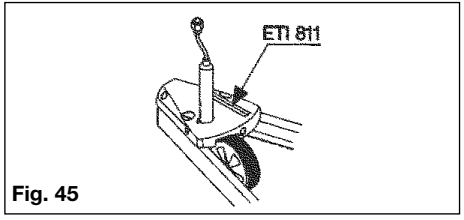


Fig. 45

Remove wheel chocks if fitted and stow safely.

Caution: Failure to comply with this could result in the brakes overheating.

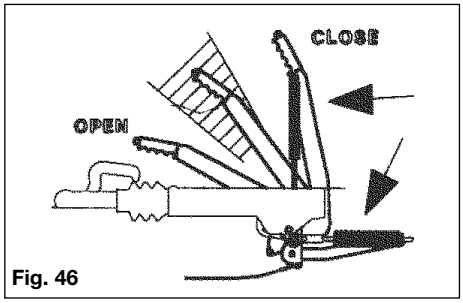


Fig. 46

Coupling Up (Euro-Overrun Devices)
Fully retract Jockey Wheel inner tube so that it locks against Jockey Wheel outer tube.

Slacken Jockey Wheel Clamp handle and raise complete assembly through cutout in body to its highest position (ensure it doesn't come into contact with the brake rod assembly), fully tighten Jockey Wheel Clamp handle to ensure the Jockey Wheel is firmly held in position (Fig. 45).

Uncoupling (All Types)
Secure caravan/trailer by chocking both wheels. Apply handbrake fully. There are 4 different handbrake systems (See Figs 42-46). With all four systems please observe the following:

Handbrake Lever With Gas Strut (Fig. 42)
Ensure handbrake is fully applied (as highlighted). This will ensure that the gas strut will automatically re-apply the wheel brakes if the trailer starts to roll backwards.

To Release
Press the handbrake push button fully home and firmly press the handbrake lever back into the off position (handbrake horizontal).

Caution: If the handbrake is not fully applied as detailed above, there is danger that the trailer could roll backwards!

Caution: The brake rod must not be under tension/bowed when the handbrake is disengaged, otherwise the breakaway mechanism will not function.

Handbrake Lever With Spring Cylinder (Fig. 43)
Apply handbrake fully ensuring that handbrake is in the vertical position. This will ensure that the spring cylinder energy store is fully loaded and will automatically re-apply the wheel brakes if the trailer starts

Caution: If the handbrake is not fully applied as detailed above, there is danger that the trailer could roll backwards!

Automatic Handbrake Lever (Fig. 44)
Ensure handbrake is fully applied (as highlighted). This will ensure that the gas strut or spring cylinder will automatically re-apply the wheel brakes if the trailer starts to roll backwards.

Caution: If the handbrake is not fully applied as detailed above, there is danger that that the trailer could roll backwards!

To Release
Firmly push the handbrake lever back into the off position (Handbrake horizontal).

Handbrake Lever With Spring Cylinder and Gas Strut (Fig. 46), normally fitted to commercial units:

Ensure handbrake is fully applied (as described). This will ensure that the gas strut or spring cylinder will automatically re-apply the wheel brakes if trailer starts to roll backwards.

Caution: If the handbrake is not fully applied as detailed above, there is danger that the trailer could roll backwards!

To Release
Press the handbrake push button fully home and firmly press the handbrake lever back into the off position (handbrake horizontal).

Servicing
Every 10,000 - 15,000 Km or every 12 months: Lubricate/grease all sliding and moving parts of the overrun device as show in Fig. 47.

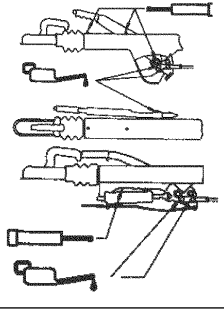


Fig. 47

Recommended lubricant. General purpose grease to DIN 51825 KTA 3KA.

Servicing and care of hot dip galvanised parts

The formation of white rust is only a surface coating and has no adverse effect on the anti-corrosion properties of galvanising. In order to minimise the potential for the formation of white rust the following precautions should be taken:

- Ensure there is adequate air circulation when storing hot dip-galvanised parts.
- After winter journeys it is recommended that surfaces are washed with clean water.

Spare Parts
Spare parts are safety critical parts! For this reason when fitting spare parts in our products we recommend the use of original AL-KO parts or those parts that we have explicitly approved. The reliability, safety and suitability of parts designed especially for our products, has been determined using a special test procedure. In spite of constantly monitoring the market we are unable to assess or vouch for other products.

If repair work or servicing is required, AL-KO have a large network of AL-KO service stations throughout Europe. To establish the correct spare parts required you should always quote the model and type of overrun device in question along with the ETI No. which is stamped into the overrun device housing. The

ETI number for the Euro Overrun can be found on the handbrake lever (See Fig. 32).

For Troubleshooting and Fault Finding, please see Table 3 on Page 178.

TROUBLESHOOTING & FAULT FINDING

Table 1 Axles

Fault	Cause	Remedy
Poor Braking	Linings worn or damaged.	Replace Brake Linings.
	Brake Linings not bedded in.	Will pass after braking a few times.
	Brake set up incorrect.	Reset Brakes as page 160 & ensure system is lubricated.
Difficulty in Reversing	Braking system set too tightly.	Reset Brakes as page 160.
	Auto-Reverse lever too stiff.	Lubricate and free off Reverse Lever.
Brakes Overheating	Incorrect setting.	Reset Brakes as page 160.
	Braking system not fully released.	Check Handbrake has been released & the system is running freely.
	Overrun lever stuck.	Lubricate and free off Reverse Lever.
	Damage or Corrosion to braking system	Check system as page 160 and repair or renew parts as necessary.
Handbrake Force Low	Incorrect setting of the brakes.	Reset brakes as page 160 and lubricate as necessary.
	Linings not bedded in.	Will pass after braking a few times.
Uncomfortable ride or Uneven Braking	Loose braking adjustment.	Reset brakes as page 160.
	Damper defective.	Check and replace damper if necessary.
	Axle shock absorbers defective.	Replace shock absorber.

Table 2 Coupling Heads

Fault	Cause	Remedy
Coupling does not engage onto ball	Ball diameter too large.	Change ball to correct size.
	Ball could be damaged or deformed.	Fit new ball.
	Coupling head dirty or defective.	Clean & Lubricate coupling and replace if necessary.
Difficulty in Uncoupling	Ball damaged or deformed.	Fit new ball.
	Coupling damaged or deformed.	Replace if necessary.
	Coupling head under pressure from damper.	Pull forward a few inches to to relieve pressure
Too much play in the coupling	Coupling damaged or deformed	Replace if necessary.
	Ball too small	Fit new ball.

Table 3 Overrun Devices

Fault	Cause	Remedy
Poor Braking	Overrun shaft tight. Overrun shaft corroded. Body housing damaged.	Lubricate overrun shaft and replace any damaged parts.
Brakes Overheating During Towing	Handbrake not fully released. Braking system incorrectly set. Incorrect attachment of breakaway cable.	Release handbrake. Reset brakes as page 160. Ensure correct attachment as listed on page 22 or refer to Braked Trailers Use of Breakaway Cables sheet.
Handbrake Force Low	Defective gas strut. Incorrect setting of spring cylinder.	Replace gas strut. Reset spring cylinder as page 160.
Brakes Apply During Deceleration or Downhill Travel.	Overrun damper is defective.	Replace the overrun damper.

ACCESSORIES

Corner Steadies
Corner Steadies are as stated, for the purpose of steadying the caravan corners. They are NOT JACKS AND SHOULD NEVER BE USED AS SUCH. The screw and pivot pins should be lubricated periodically to ensure their satisfactory operation. (See also Jack Operation).

Shock Absorbers
All AL-KO chassis have pre-punched holes to accommodate Shock Absorbers, in front of the axle. On the Euro-Axle System, axle swing arms have a removable rectangular plastic cap exposing a slot to accommodate retro-fit brackets for the Octagon Shock Absorbers. (See Accessory Price List). Delta Axles have Shock Absorbers fitted as standard which MUST NOT BE REMOVED.

Road Wheels
In most instances the road wheels and tyres are supplied by the Caravan Manufacturer. The condition of wheels and tyres should be checked regularly, particularly for distortion of flanges and the wheel dish. Wheels that are damaged or distorted, or have wheel bolt seatings cracked or deformed must not be repaired or used in service - these must be replaced.

Important: Standard AL-KO caravan chassis use M12 wheel bolts. These must always only be tightened to the correct torque setting:

- Steel wheels 88 Nm (65 lbs/ft)
- Alloy wheels 115 Nm (85 lbs/ft)

in sequence, (i.e. North, South, East, West); NEVER clock or anti-clockwise. ALWAYS use a calibrated torque wrench, do not use a corner steady brace, power or electric wrench. It is as dangerous to overtighten wheel bolts as it is to not tighten them sufficiently.

Important: The torque settings should be re-checked after 50 Km.

If other wheel bolts are used please ensure the torque settings are as follows:

M10 - 49 Nm (36 ft. lb)
M14 - 135 Nm (99.5 ft. lb)
M16 - 210 Nm (155 ft. lb)

Special Note -Aluminium Wheels
For aluminium wheels use M12 x 1.5 pitch 26mm thread length 10.9 Grade 60° conical fixing.

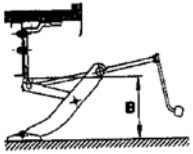
The standard M12 x 1.5 60° Conical Wheel bolts are NOT SUITABLE for aluminium wheel rims. Special wheel bolts should be used.

Jacks
The Corner Steadies Should never be used to jack up the caravan. When jacking becomes necessary use the AL-KO Side Lift Jack or 2-Tonne Jack system.

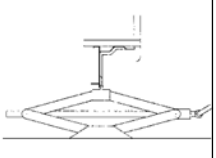
NOTE: It is essential that the car and caravan are hitched together before commencing jacking. All AL-KO chassis from 1992 onwards have 2 holes punched in the chassis members, each side (rear of the axle); to accept the brackets for the Jack(s). (See Accessory Price List).

Corner Steadies may be used for stability ONLY, when the caravan is in the jacked position.

The caravan should never be lifted by jacking up under the chassis member.

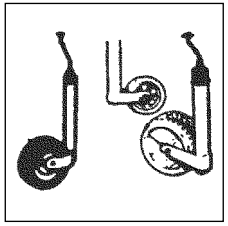


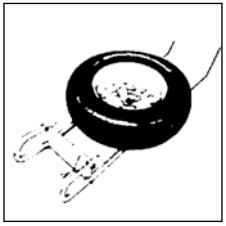
Side Lift Jack


2 Tonne Jack

If working under the caravan in an elevated position, axle stands must be used for safety. Wheel chocks for the opposite wheel(s) are also advisable.

Jockey Wheel
Lubricate screw thread and wheel spindle periodically.





Spare Wheel Carriers
The telescopic frame tubes should be lubricated periodically.