

## 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 of 88 Nm (65 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

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

## Tyres:

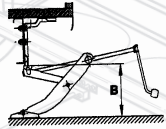
The legal requirements for tread depth on motor vehicles, also applies to caravan and trailers.

## Jacks:

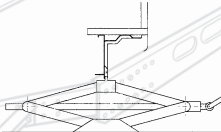
The **Corner Steadies Should never be used to jack up the caravan.** When jacking becomes necessary use the **AL-KO Side Lift Jack or 2-Tonne Jack system.** **NOTE: It is essential that the car & caravan are hitched together before commencing jacking.** All AL-KO chassis from 1992 onwards have 2 holes 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:

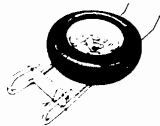
Lubricate screw thread and wheel spindle periodically.



## Spare Wheel Carriers:

Each caravan has a set of punched holes in the chassis member to facilitate the fitting of a spare wheel carrier. The assembly is of a strong, lightweight construction and zinc plated for all-weather protection.

There are 3 variants to suit most AL-KO chassis (record your tyre size on this booklet for future reference). The carriers can be fitted for left or right hand operation and are easy to fit. The telescopic frame tubes should be lubricated periodically.



RECORD YOUR SPARE WHEEL CARRIER INFORMATION HERE:	
Caravan Make (eg Bailey):	_____
Caravan Model (eg Pageant):	_____
Year of Manufacture:	_____
Tyre Size (eg 195R 13):	_____
Dimension 'X' in mm:	_____
(taken from following diagram)	
<b>Measurement X</b>	
<b>Hole Cluster for Spare Wheel Carrier</b>	

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# 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.**

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.

The **maximum axle loading** is that stamped on the oval (Fig. 1), (or square, if German production (Fig. 2)), plate located in the centre of the axle, facing rearwards. The third line down marked "Capacity" (on German plates "Achlast") is the **maximum permitted axle loading and must not be exceeded.**

Where the Caravan Manufacturer states a maximum loading weight, then **this is the maximum permitted load.** This figure **must not exceed the maximum axle load.**

Enter your Axle details for future reference:

AL-KO	
TYPE	_____
LE	_____
CAPACITY:	_____ kg
	_____ 25km/h

Fig.1

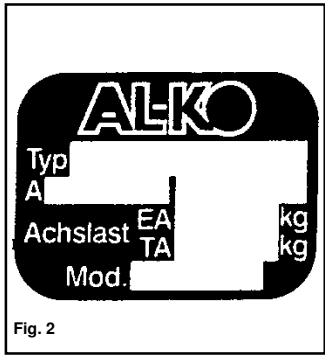


Fig. 2

**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.

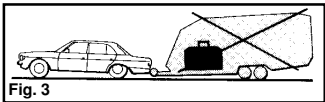


Fig. 3

**Load Too Far Forward Fig 3.**

Steering and braking ability reduced. Increased loading on the rear axle and chassis of the tow vehicle.

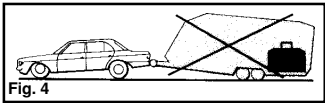


Fig. 4

**Load Too Far Back Fig. 4.**

High skid risk together with poor braking effect.

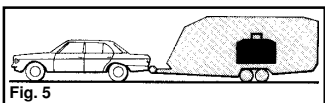


Fig. 5

**Load Over Axle Fig 5.**

Optimum road holding together with maximum braking effect. Exceptionally heavy loads should be 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.**

**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 means 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 16). 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:**

**Function:**

**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.

**Reversing:**

When the towing vehicle is reversing, the overrun device shaft is pushing in, applying the brakes via the overrun lever, brake rod system, bowden cables and the expander mechanism. The backwards rotation of the brake drum causes the secondary brake shoe to collapse cancelling out the braking effect, allowing the trailer to move backwards. At the same time the transmission lever swings back

and compensates for the entire travel.

**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. See page 12/13 for further details on different handbrake types.

**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. 6/Item 1).

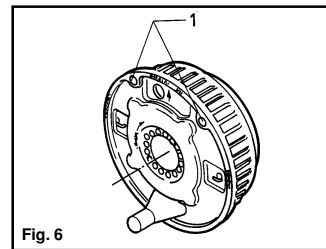


Fig. 6

Adjust if necessary. Where continuous travel in hilly regions or high mileage is experienced, earlier inspection and adjustment may be necessary.

**Trouble Shooting & Fault Finding:**

**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 (4). Ensure correct attachment as listed on page (12) 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 (4).
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.

**Stabilisers:**

AL-KO overruns can be fitted with a range of AL-KO Stabiliser devices (if not already fitted as standard), dependent on the maximum gross weight of the caravan. AL-KO stabilisers operate on a friction type basis, whereby friction pads grip onto a **Dry, Grease Free Towball**. It is important to note that the AKS range of stabilisers are suitable for use with swan neck, fixed or detachable type towbars or the special AL-KO Extended Neck Bolt-On Towball. We do not approve the use of any other bolt-on type towball, other than the AL-KO Towball. Failure to use the correct towball may result in product failure and will invalidate your warranty.

The AKS range is available in three different models: The AKS 1300 is suitable for caravans up to a maximum gross weight of 1360 Kg, the AKS 2700 up to 2700 Kg and the new AKS 2004 up to 2000 Kg. Each Stabiliser can also be retro-fitted with an AL-KO Security Device and Safety

ball, to ensure maximum theft Deterrent (please see our accessory price list for further details). All 'Red' coloured AL-KO Security Devices have full TUV and Sold Secure Approvals and are available from most good caravan dealers or direct from AL-KO Mail Order on 0800 074 4334.



**AKS 1300 & Security Device**



**AKS 2700 & Security Device**



**AKS 2004 & Security Device**

## Trouble Shooting & Fault Finding:

**Table 1 Axles:**

Fault	Cause	Remedy
<b>Poor Braking</b>	Linings worn or damaged. Brake Linings not bedded in. Brake set up incorrect.	Replace Brake Linings. Will pass after braking a few times. Reset Brakes as page (4) & ensure system is lubricated.
<b>Difficulty in Reversing</b>	Braking system set too tightly. Auto-Reverse lever too stiff.	Reset Brakes as page (4). Lubricate and free off Reverse Lever.
<b>Brakes Overheating</b>	Incorrect setting. Braking system not fully released.  Overrun lever stuck. Damage or Corrosion to braking system	Reset Brakes as page (4). Check Handbrake has been released & the system is running freely. Lubricate and free off Reverse Lever. Check system as page (4) and repair or renew parts as necessary.
<b>Handbrake Force Low</b>	Incorrect setting of the brakes.  Linings not bedded in.	Reset brakes as page (4) and lubricate as necessary. Will pass after braking a few times.
<b>Uncomfortable ride or Uneven Braking</b>	Loose braking adjustment. Damper defective.  Axle shock absorbers defective.	Reset brakes as page (4). Check and replace damper if necessary. Replace shock absorber.

**Table 2 Coupling Heads:**

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

**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  $290 \pm 10$  Nm ( $214 \pm 7.5$  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

### “Standard Axle” Maintenance (taper roller bearings)

**After 1500 km or 6 months:**  
Have the axial play of the hub bearing checked and adjusted if necessary.  
**After 10,000 km or 12 months:**  
Check quantity and quality of grease, renew if necessary.  
With boat trailers which are driven into fresh/salt water, the hub bearing should be regreased shortly after contact with the water (with the exception of waterproof hubs).  
Check the wear of the wheel brake linings every 10,000 Km or every 12

months through inspection hole (Fig. 6) and adjust if necessary. Where continuous travel in hilly regions or high mileage is experienced, earlier inspection and adjustment may be necessary.

### 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 Figs. 1/2) and Spare Part Identification no. (ETI No.), which will be stamped onto the wheel brake or on the identification plate (Fig. 7). Please establish these numbers before contacting AL-KO or a Service Agent.

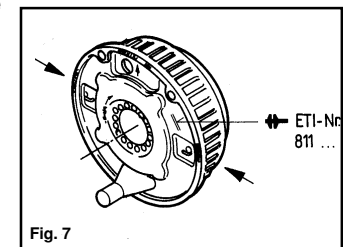


Fig. 7

The AL-KO rubber suspension axle has been designed & 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.

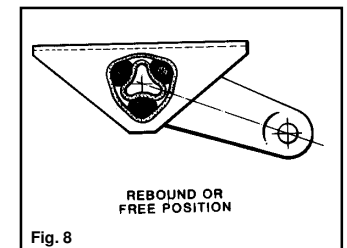


Fig. 8

Figs. 8, 9 & 10 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.

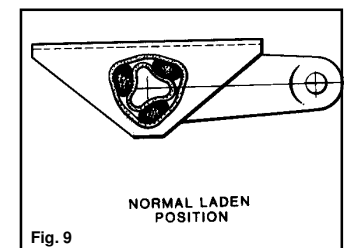


Fig. 9

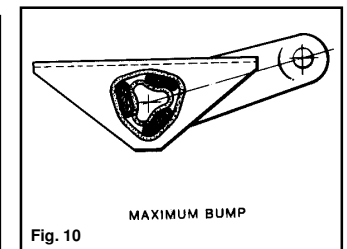


Fig. 10

For Trouble Shooting & Fault Finding - please see Table 1 on page 14.

## AL-KO BRAKING SYSTEM ADJUSTMENT

1. Ensure the towing shaft with coupling head is pulled FULLY FORWARD. (Fig. 11).

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. 11).

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. 11 & 12).

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. 12).

6. Slacken off the starwheel adjuster until the road wheel turns freely in the FORWARD direction. (Fig. 12).

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. When the inner cable is pulled out it should extend between 5 and 8 mm. (Fig. 13). (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. 11 & 13). Excessive movement to this bar (double on tandem axles) would indicate possible incorrect adjustment (if appropriate, repeat step No. 7 - Fig. 13).

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. 13/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. 11 & 13).

13. Adjust the two locking nuts, forward of the spring cylinder (Fig. 11), (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. 13). (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 12/13 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 - in sequence, i.e. North, South, East, West NOT clock or anti-clockwise (refers to steel rims only). 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.

### 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 Assy), fully tighten Jockey Wheel Clamp handle to ensure the Jockey Wheel is firmly held in position (Fig. 44).

### Uncoupling (All Types):

Secure caravan/trailer by chocking both wheels. Apply handbrake fully. There are 4 different handbrake systems (See Figs 41-45). With all four systems please observe the following:

Handbrake Lever With Gas Strut (Fig. 41):

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. 42):

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 to roll backwards.

#### Caution:

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

#### Automatic Handbrake Lever (Fig. 43):

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 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. 45), 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:

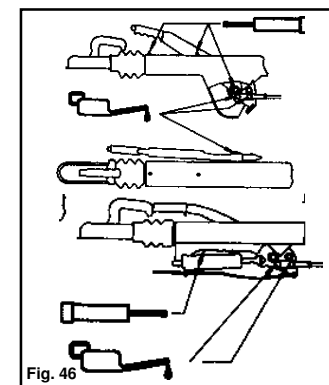
**If the handbrake is not fully applied as detailed above, there is danger that the trailer could roll backwards!**

#### 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. 46.



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

Servicing and care of hot dip galvanized 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-galvanized 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. 44). For Troubleshooting and Fault Finding, please see Table 3 on Page 15.

**Overrun Devices:**

In the importance of Safety, please familiarize 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 pages 6/7 (coupling up).

Thread the breakaway cable through the breakaway cable guide provided (Fig. 39) and connect it to attachment point provided on towing bracket (Fig. 38). Please refer to 'Braked Trailers Use of Breakaway Cables' for further detail.

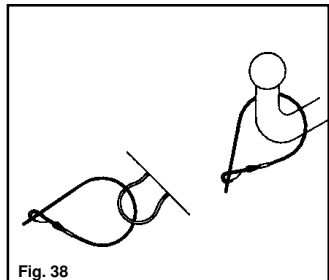


Fig. 38

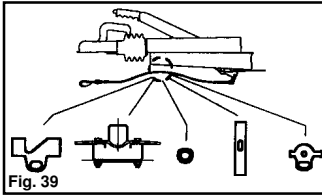


Fig. 39

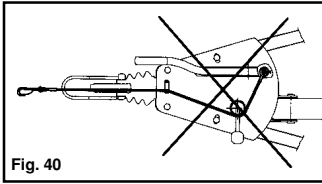


Fig. 40

**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. 40).
- 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.

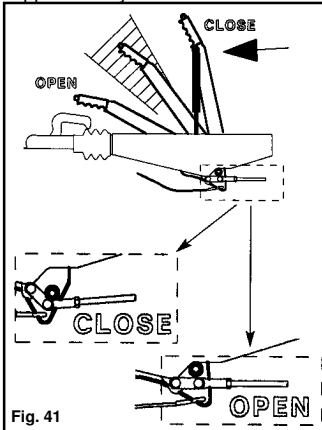


Fig. 41

**Overrun device fitted with Eye End:**  
Lock the eye end into the eye end jaw assembly and see operating instructions for vehicles fitted with eye end jaw assembly.

**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. 41-45).

Remove wheel chocks if fitted and stow safely.

**Caution:**

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

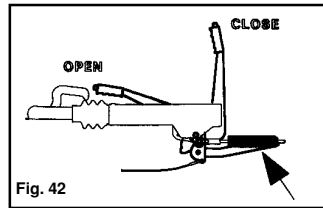


Fig. 42

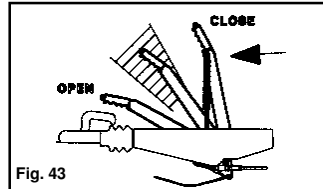


Fig. 43

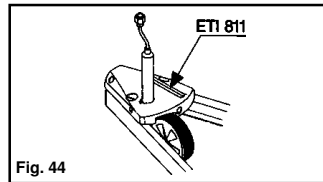


Fig. 44

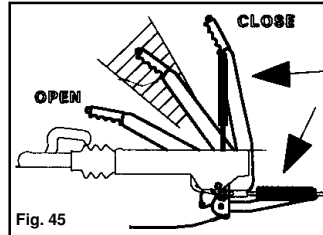


Fig. 45

**Brake Linkages:** It is recommended that all brake linkage threads are lightly greased for protection.

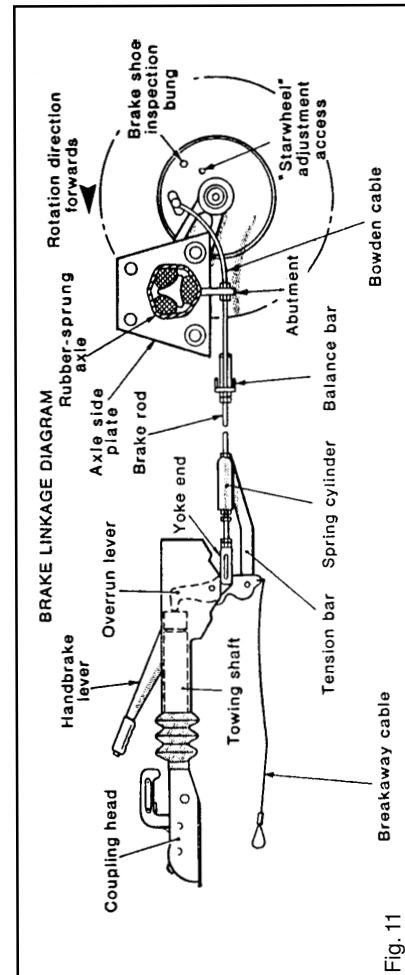


Fig. 11

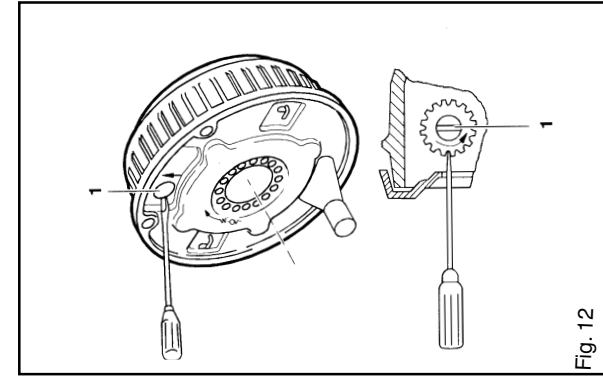


Fig. 12

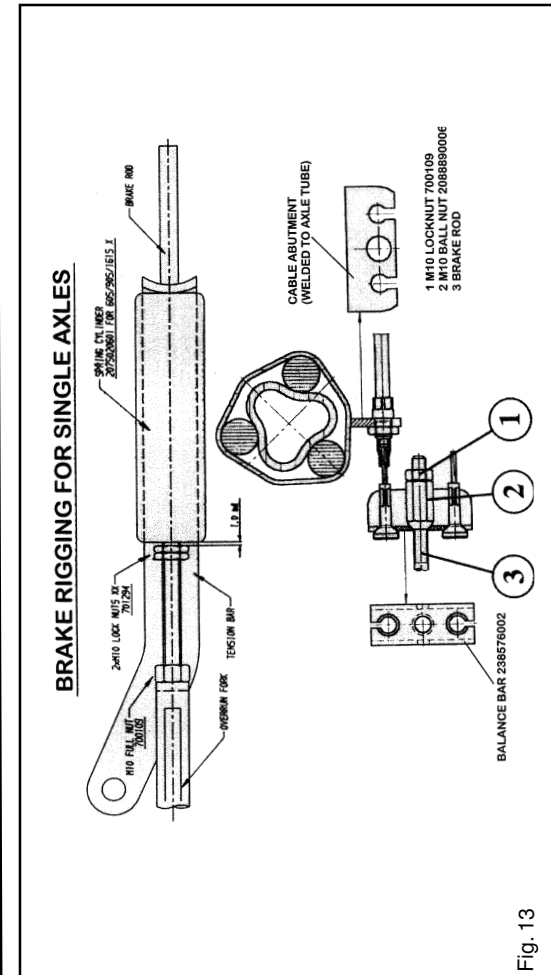


Fig. 13

## Coupling Heads/Combined Stabiliser Devices:

Your Caravan will be fitted with either a standard coupling head or a combined stabiliser/coupling unit. If your caravan is fitted with an AKS 1300 Stabiliser, please request Part No. 1385106 for full operating instructions. If fitted with AKS 2700, request Part No. 1385107.

## Safety Precautions:

Always ensure that the coupling head is properly connected to the tow vehicle's towball every time you couple up. If this procedure is not carried out correctly, the caravan/trailer may become detached from the towing vehicle! Maximum possible articulation of the coupling head must not exceed  $\pm 25^\circ$  vertically and  $\pm 20^\circ$  horizontally - see Fig 14.

If exceeded, components will be overloaded and the operation of the assembly adversely affected!

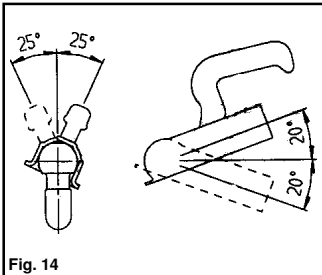


Fig. 14

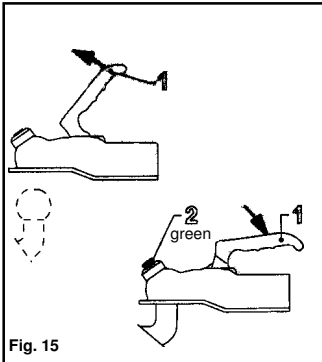


Fig. 15

**Operation:**  
For Coupling types AK160, AK300 & AK350.

## Coupling Up:

Open coupling handle. To do this pull the coupling handle up (Fig. 15) 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. 15).

The coupling head is correctly connected when the green cylinder part of the safety indicator is visible (when viewed from the side - Fig. 15/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.

## 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. 16) shows whether the wear limit of the towing vehicle's towball or the trailer coupling has been reached.

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 follow.

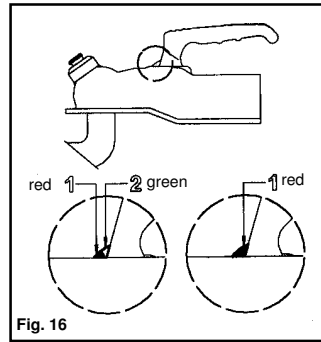


Fig. 16

If the green indicator is visible on the coupling (with the coupling engaged Fig. 16), 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. 16), 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 50 mm 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.

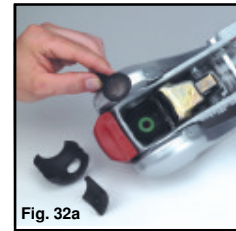


Fig. 32a

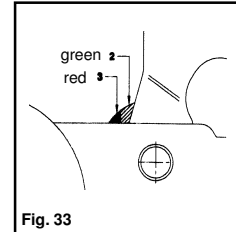


Fig. 33

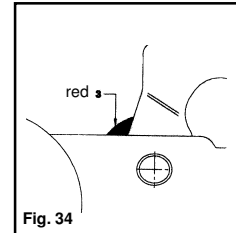


Fig. 34

## Friction Pad Replacement (Front/Rear only):

- 1) Uncouple the AKS 2004
- 2) Remove the rubber soft dock (pull up and off) Fig. 35/Item 1 & Fig 35a.
- 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 35a), using special torx tool.
- 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. 36).
- 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.

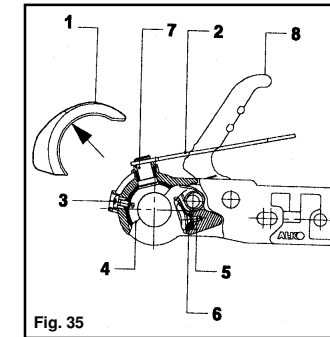


Fig. 35



Fig. 35a

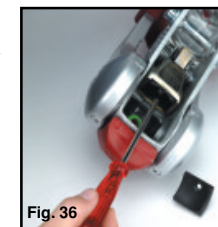


Fig. 36

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 2004 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. 37).
- c) Use multipurpose grease DIN 51825 KTA 3K.

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

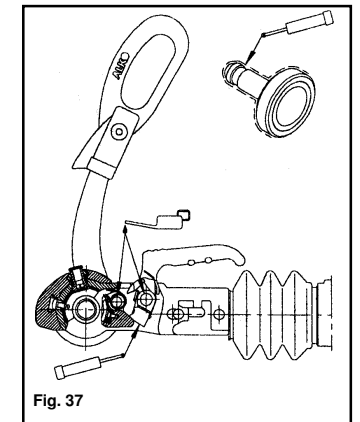


Fig. 37

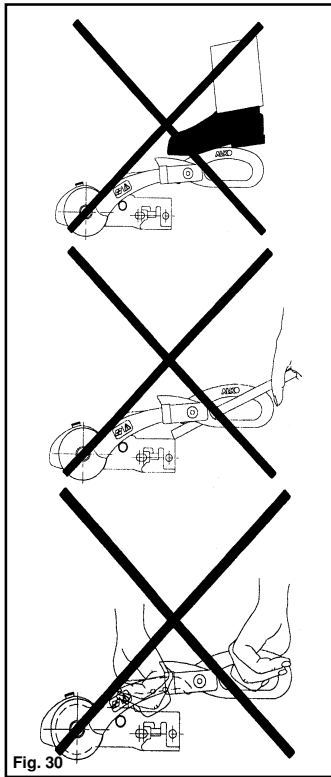


Fig. 30

**Noises whilst driving:**

As a rule, the friction pads of the AKS 2004 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).
- 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. 31).
- 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.

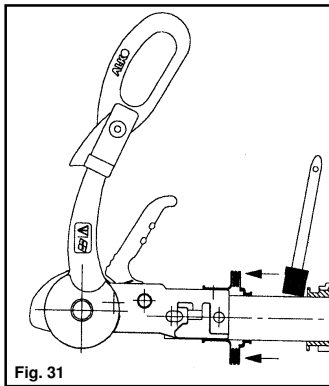


Fig. 31

**Servicing and Cleaning:**

**Friction Pad Replacement (please replace one at a time):**

- 1) Uncouple AKS 2004.
- 2) Remove protective caps (Fig. 32/ Item 1) with the aid of a small screwdriver.
- 3) Press worn out pad inwards and remove (use punch and hammer) (Fig. 32/2)
- 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. 32/Item 4 & Fig. 32a).

**Checking the efficiency of the front/rear friction pads:**

- 1) Couple the AKS 2004 to the towball but do not activate the stabiliser.
- 2) If a green indicator is visible (on the handle), then the AKS 2004 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:
  - a) AKS 2004 is okay but the towball has reached the lowest limit of 49.61 mm
  - b) AKS 2004 shows signs of wear
  - c) Towball is in a new condition (50 mm) 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 49.61 mm)

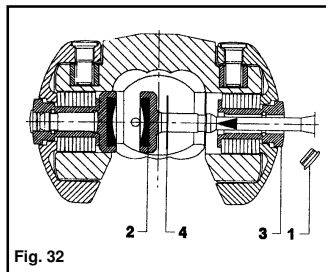


Fig. 32

**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. 17/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. 17/Item 3).

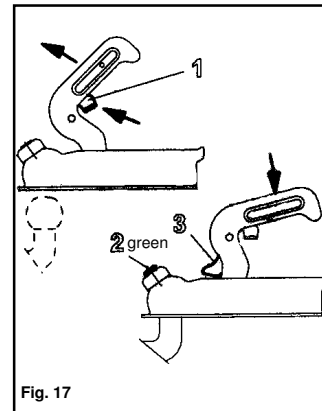


Fig. 17

The coupling head is correctly engaged when the green cylinder part of the safety indicator is visible (Fig. 17/Item 2).

**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.

**Wear Indicator:**

If the handle reaches the back of the cutaway portion of the housing, when the coupling head is engaged (Fig. 18) there will be play between the towball and coupling head. Automatic re-adjustment is no longer possible and the assembly will need inspecting.

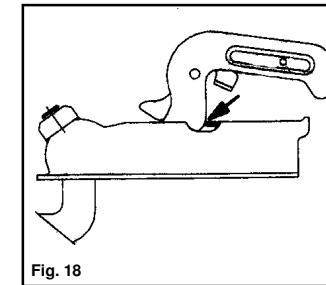


Fig. 18

**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. 19)**

**Clean Towball.**

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

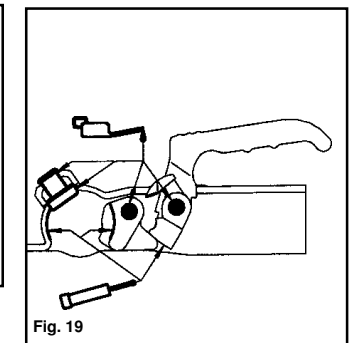


Fig. 19

For Troubleshooting and Fault Finding - please see Table 2 on Page 14.

**Operating Instructions for AKS 2004 (if applicable)**

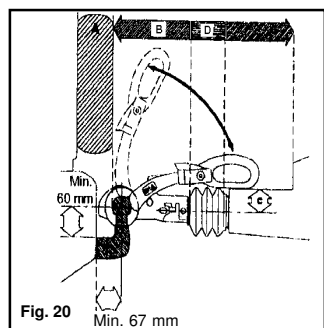
**REGULATIONS:**

- 1) The AKS 2004 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 2004 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. 20):**



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

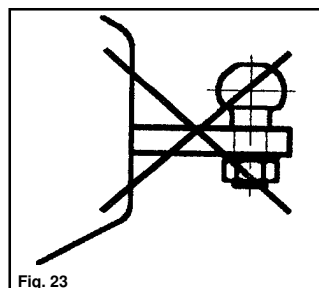
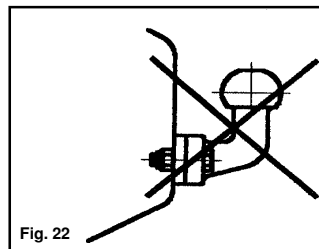
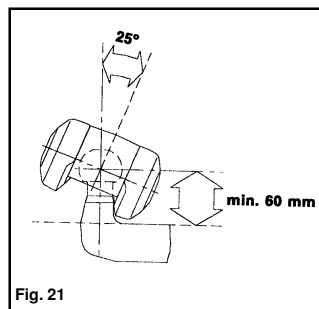
The clearance for the stabiliser handle must be at least 330 mm (B) + the stroke movement (D) (85mm-100mm), which equates to 440 mm when used in conjunction with an AL-KO overrun.

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. 21).

- 3) Swan Neck towbars (fixed or detachable) are suitable for use with the AKS 2004 providing they comply to EC Directive 94/20 and have the required minimum 60 mm clearance, measured from the centre of the towball (Fig. 21).



**SAFETY WARNINGS:**

- 1) In accordance with EC Directive 94/20, couplings of type A 50-1 cannot be used (see Fig. 22), 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. 23) is only permissible if the thread is locked or welded.
- 4) The AKS 2004 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 2004 should only be operated by one person, when opening or closing the handle, to reduce injury risks.

**AKS 2004 Delivery Specifications:**

Coupling handle (Fig. 24/Item 1), Stabiliser Lever (Fig. 24/Item 2)

**Preparation for coupling/uncoupling:**

The Stabiliser lever (Fig. 25/Item 2) must be in the uppermost position (open).

**Coupling:**

Pull the coupling handle (Fig. 26/Item 1) up in the direction of arrow. The coupling mechanism has an open position i.e. as long as the AKS2004 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.

**Warning:** The coupling is correctly engaged when the green edge of the safety indicator button is visible (Fig. 27/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. 27/Item 2).

**Uncoupling:**

Pull the stabiliser lever handle up as far as it will go, open the coupling handle and lift the AKS2004 from the towball. With larger nose loads, coupling and uncoupling can be made easier by using the jockey wheel to assist lifting.

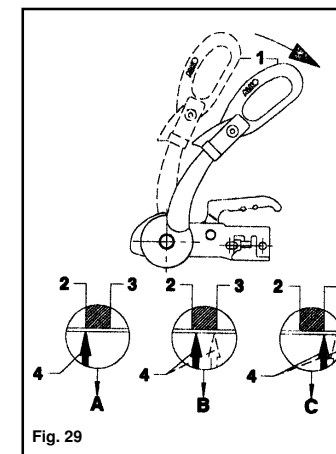
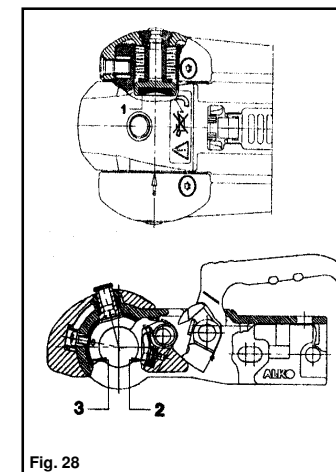
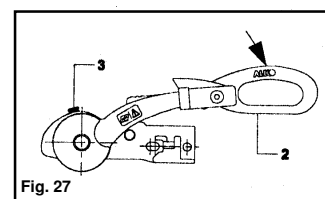
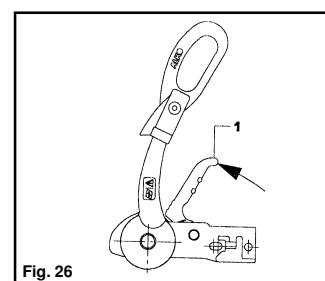
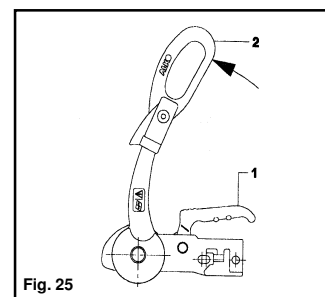
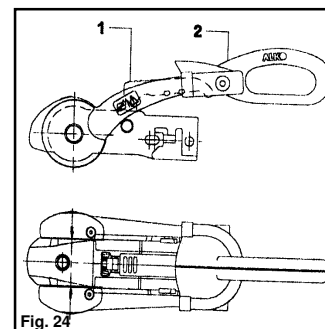
**Please Note:** The friction pads (Fig. 28/Items 1,2&3) are pressed against the towball and hence generate a stabilising/damping force. These pads are therefore subject to wear over time, however they will have a long service life (circa.30,000 Miles), provided they are well maintained and kept free of grease/dirt.

**Checking the efficiency of the left/right friction pads:**

- 1) Couple up AKS 2004.
  - 2) Open Stabiliser lever (Fig. 29/Item 1).
  - 3) Close Stabiliser lever until resistance is felt (ie friction pads are in contact with the ball but not yet under pressure).
  - 4) If the arrow on the arm (Fig. 29/Item 4) is before or on the marked area (Fig. 29/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 a 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. 30).
- 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. 30).