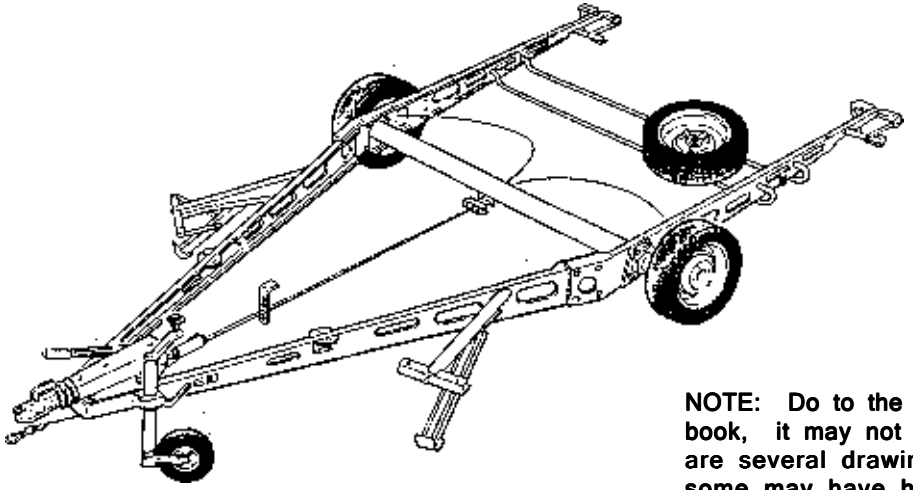
AL-KOmatic

Handbook including
Service Instructions and Spare Parts list



AL-KO chassis fitted with the automatic reversing system

NOTE: Do to the age of this handbook, it may not be complete; there are several drawings missing and some may have hand-written marks. Please use as a reference guide only.

Part No.

AL-KO WARRANTY

WARRANTY

The Company's products are supplied with a 12-month warranty against faulty materials or workmanship which is operative from the date the product was delivered to the user. Any request for service under this warranty must be addressed to the supplier from whom the product was purchased.

CONDITIONS

(a) The warranty applies to the original purchaser of the product and is not transferable.

(b) The liability of AL-KO Kober Ltd is limited to the cost of repair or replacement at the Company's discretion of the faulty item within the warranty period. Repairs or replacement under the warranty do not extend the period of validity.

(c) If any product is returned under warranty and found to comply with the relevant specification or standard, then the cost of any testing and carriage to and from the Company will be borne by the Customer.

(d) This warranty does not cover fair wear and tear, accident, misuse, overloading, incorrect installation or storage, unauthorised repair or adjustment. Where recommended routine servicing, as set out in the Company's handbook, applies to the product within the warranty period, failure to undertake such servicing will invalidate the warranty.

(e) All warranties will be invalidated if unauthorised repairs are made to the product.

(f) Reasonable evidence of date of purchase must be produced whenever service under this warranty is requested. In the case of caravans and trailer chassis, serial numbers and axle details are required.

(g) No supplier, dealer or service centre has any authority to vary the terms of this guarantee.

(h) This warranty does not affect the purchaser's statutory rights.

LIST OF CONTENTS

WARNINGS AND CAUTIONS

All Warnings, Cautions and Notes used in this handbook are set in **BOLD** type and may be upper or lower case.

Warranty

AL-KO recommends that all servicing and repairs be carried out by a recognised dealer throughout the period covered by the warranty.

Damage to the chassis caused by an incorrectly mounted body or by the body itself will negate the terms of the warranty. Unauthorised or poorly executed work carried out on the chassis will also render the terms of the warranty null and void.

Unauthorised holes must not be drilled into the chassis as this will invalidate the warranty.
No unauthorised parts to be welded or bolted to the chassis.

If damaged, chassis members must be replaced not repaired or welded.

Caravan/trailer handling

Maximum gross weight, as advised by the caravan/trailer manufacturer or stamped on the axle data plate, must not be exceeded.

The permitted trailer nose weights of the coupling ball, towing ball coupling and overrun assembly must never exceed that value stated on the coupling head. A low, negative or excessive caravan/trailer nose weight will adversely affect the handling of the unit.

Incorrect loading is a major cause of instability.

Coupling head

Coupling heads should never be drilled.

Serious damage will occur unless the locking catch is lifted first and the handle lifted forward before the caravan/trailer is lifted manually. This prevents the nose weight being transmitted through the locking catch.

Towing ball

A worn ball should be renewed without delay.
Do not grease the tow ball when using the AKS 2000 stabiliser.

Wheels and tyres

It is very dangerous to neglect tyre damage. A tyre should be renewed if a blister, rupture or cut exposing the casing is detected. If the tyre has suffered impact (eg. against a kerb), it should be examined by a specialist as soon as possible.

Damaged or distorted wheels must be renewed immediately.

Always use the correct bolts to secure the wheels.

The wheel bolt torque settings should be rechecked after the first 20 miles of use, and every 3000 miles thereafter.
Torque settings:
M12 Wheel bolts, 88Nm (65lb/ft)
M10 Wheel bolts, 49Nm (36lb/ft)

Brakes

Always chock the wheels when parking the caravan/trailer on sloping, loose or slippery surfaces.

When parking the caravan/trailer the handbrake must be fully applied to the last tooth (i.e. vertical). If it is not and the caravan/trailer is parked on a reverse slope the brakes will not hold and the caravan/trailer will run away.

It is absolutely vital that a slight backwards push of the caravan/trailer is applied before it is uncoupled from the towing unit.

It is also important to check that the brake has in fact operated correctly as soon as the caravan/trailer has been uncoupled.

Always ensure that the handbrake lever is in the fully vertical position. When the handbrake has been applied, it is possible for the caravan/trailer to roll back as much as 25cm before the full force of the brake takes effect.

Brake adjustment

The brake hub must be adjusted first and then if necessary the brake linkage.

During wheel brake adjustment, the drum must only be turned in the direction of forward rotation.

Do not use excessive force during adjustment.

Reversing will be difficult if either the brake shoes or the brake linkage is over-adjusted.

Jacking up the trailer

The corner steadies should never be used to jack up the trailer. They can be lowered to touch the ground only as a safety measure.

Never use the AL-KO chassis members as jacking points.

Lubrication

The friction pads of the AKS 2000 stabiliser must not be contaminated with grease during lubrication.

Spares

All components of both the overrun assembly and the wheel brakes must be those manufactured by AL-KO as the braking and reversing systems must be matched to ensure optimum braking performance.

Combining parts manufactured by AL-KO with those produced by other suppliers may invalidate any guarantee entered into by AL-KO.

INTRODUCTION

This handbook is designed to help caravan/trailer users of the chassis to tow the unit safely. The handbook also supplies information to enable the user to give all the care and attention necessary to maintain the reliability of the chassis.

The first section of the book details the correct procedure for connecting the chassis to the towing unit, loading the towed unit, handling the combined vehicle and applying the handbrake.

The second section outlines the servicing philosophy and presents detailed instructions for servicing routines together with their recommended interval.

Servicing should be carried out by an authorised dealer throughout the period covered by the chassis warranty.

The second section also contains sufficient information to carry out minor repairs.

These can be carried out by the enthusiastic owner, providing he has the correct tools, or your dealer will undertake the work for you.

All repairs should be carried out by an authorised dealer throughout the period covered by the chassis warranty.

The third and forth sections facilitate the identification and ordering of spare parts.

The fifth section of the handbook comprises a fault finding table which details the fault, the possible cause and remedial action.

The owner should carefully read this handbook before attempting to operate or maintain the vehicle and should keep it handy for reference as required.

Chassis specifications may vary according to market requirements AL-KO's policy of continuously improving their product may involve major or minor changes to the chassis or its accessories. The manufacturer reserves the right to alter specifications, with or without prior notice, at any time.

Whilst every effort has been made to ensure the accuracy of the information contained within this handbook, no liability can be accepted by the manufacturer for incorrect use or interpretation of this information.

Damage to the AL-KO chassis caused by an incorrectly mounted body or by the body itself will negate the terms of the warranty. Unauthorised or poorly executed work carried out on the chassis will also render the terms of the warranty null and void.

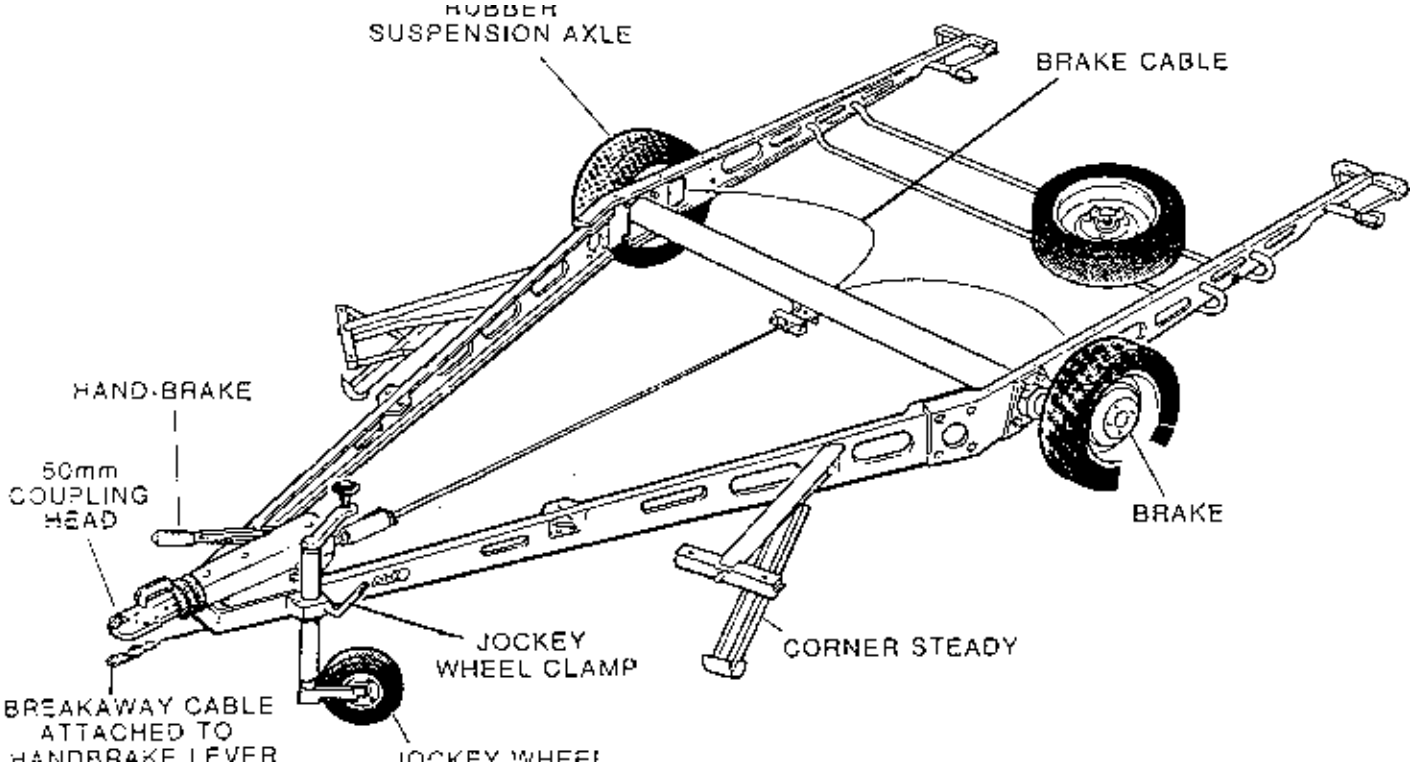


FIG. 1 CHASSIS

SECTION 1

DESCRIPTION AND OPERATION

1.1 The Chassis (Fig. 1)

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. Chassis members are hot dip galvanised for added protection.

Large elongated holes are located in both main longitudinal and 'A' frame members to reduce weight to a minimum. Each hole incorporates a return flange to maintain the required strength and to provide rigidity.

Unauthorised holes must not be drilled into the chassis as this will invalidate the warranty.

Each AL-KO caravan/trailer chassis has a set of punched holes rear of the axle to enable fitting of an AL-KO telescopic spare wheel carrier.

From 1992 each AL-KO caravan/trailer chassis has a set of holes punched behind the axle to enable the caravan/trailer manufacturer to fit the AL-KO side mounted caravan/trailer jack outriggers.

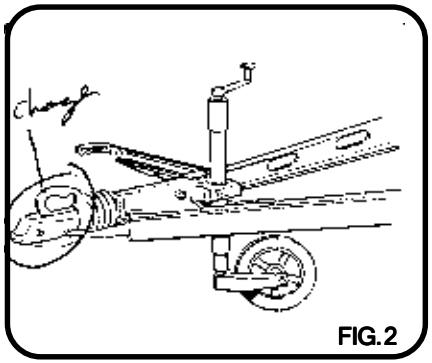


FIG. 2

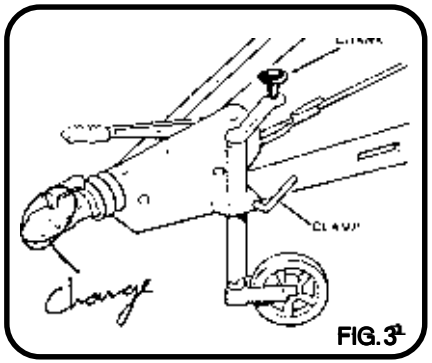


FIG. 3

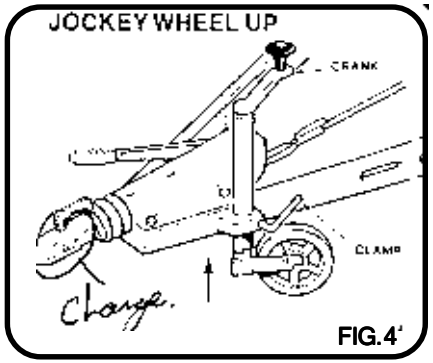


FIG. 4

1.2 Handling

Strict attention must be paid to the operating limitations when handling the caravan/trailer. These concern the caravan/trailer jockey wheel, the nose weight and loading.

Caravan/Trailer Jockey Wheel (Fig. 2,3,4)

Each chassis is provided with an adjustable jockey wheel.

This can be clamped outboard or inboard to one member of the 'A' frame close to its apex or directly to the overrun assembly respectively. The jockey wheel provides stabilisation and can be fitted with a pneumatic or solid tyre.

Before commencing a journey, the caravan/trailer jockey wheel must be cranked fully home to its stowage stop, then lifted clear of the ground and secured with the clamp provided.

Caravan/Trailer Nose Weight

The caravan/trailer nose weight must be checked prior to the start of any journey.

The permitted nose weights of the towbar coupling ball, towing ball coupling and overrun assembly must never exceed the lesser of these nose weights. A low, negative or excessive caravan/trailer nose weight will adversely affect the handling of the unit.

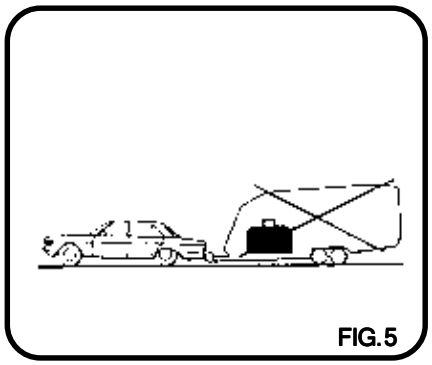


FIG. 5

Load Too Far Forward (Fig. 5)

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

Loading

Maximum gross weight, as advised by the caravan/trailer manufacturer or stamped on the axle plate, must not be exceeded (see page 41).

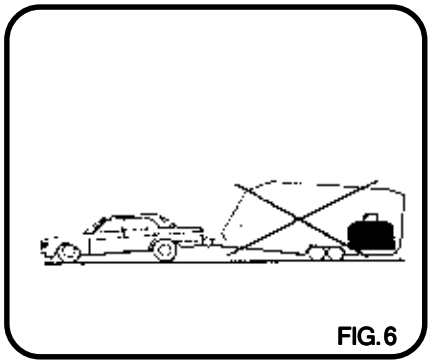


FIG. 6

.Load Too Far Back (Fig. 6)

High skid risk together with poor braking effect and poor handling.

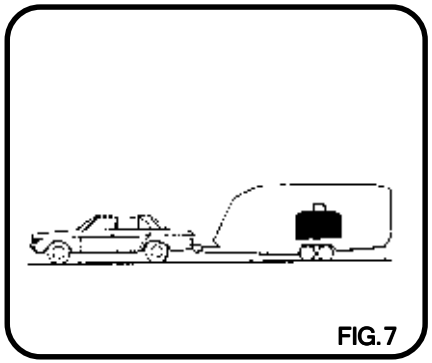


FIG. 7

Load Over Axle (Fig. 7)

Optimum roadholding 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.

Incorrect loading is a major cause of instability.

1.3 Coupling Head

Description

The coupling head is designed to engage automatically with the international 50mm towing ball recommended by the following:

British Standards Institution
National Caravan Council
Society of Motor Manufacturers and Traders.
ISO

AL-KO coupling heads incorporate a correct attachment indicator.

Coupling heads should never be drilled.

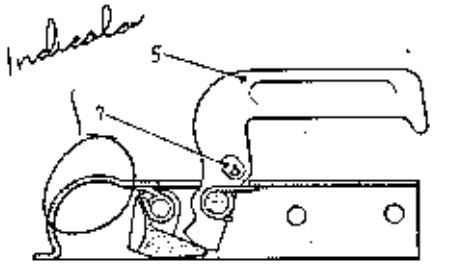
AL-KO produce several types of coupling head each having provision for an anti-theft device as an optional extra which consists of a key operated brass insert. The anti-theft device comes complete with two keys. Securing the coupling head inhibits movement of the locking catch Fig.8(7), making it possible to lock the coupling whether or not the towing ball is connected.

Operation

All coupling head types are designed for one hand operation.

Coupling up-all types

Reverse the car to the caravan/trailer or move the caravan/trailer forward to the coupling point.



AK10/2

FIG. 8

AK 10/2 (Fig. 8)

Lift the locking catch (7) on the lever mechanism and lift the handle (5) upwards and forward.

Place the unlocked coupling head onto the towing ball and apply slight downward pressure. The head will automatically lock onto the ball.

Ensure that the locking catch (7) has returned to its free position before attempting to tow.

The correct attachment indicator should show green.

Connect the breakaway cable and lighting plug to the towing vehicle. Raise the jockey wheel to its stowed position.

Uncoupling - all types

Ensure the handbrake is fully applied. Lower the jockey wheel to the ground. Disconnect the breakaway cable and lighting plug.

Operate the handle and locking catch, then manually lift the coupling head clear of the towing ball or raise the telescopic jockey wheel to achieve the same effect.

Serious damage will occur unless the locking catch is operated first and the handle raised forward before the caravan/trailer is lifted manually. This prevents the nose weight being transmitted through the locking catch.

The head coupling on the chassis has been type tested; the maximum support load at the coupling point must not be exceeded.

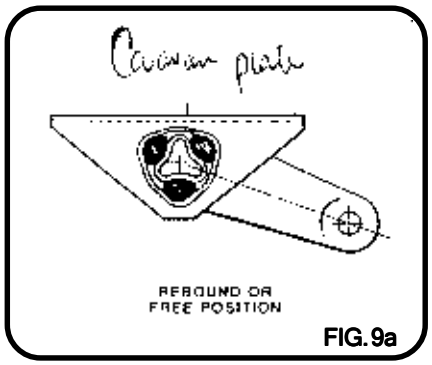


FIG. 9a

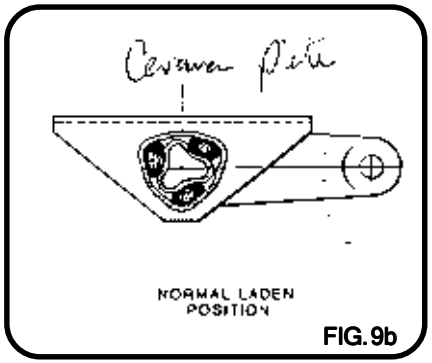


FIG. 9b

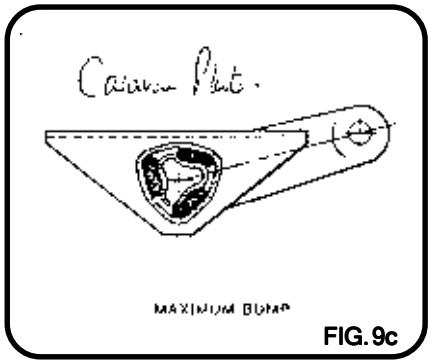


FIG. 9c

1.4 The Axle (Fig. 9)

The AL-KO rubber suspension axle has been designed for new standards of spring comfort and is maintenance free.

Three rubber elements are contained within an hexagonal axle tube. These provide suspension and have inherent damping characteristics. Octagon shock absorbers are available as a retro-fit kit for the AL-KO Euro-Axle.

Figures 9(a), (b) and (c) 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.

On Delta axles dampers are fitted, to damp out excessive oscillations due to a greater wheel travel arc.

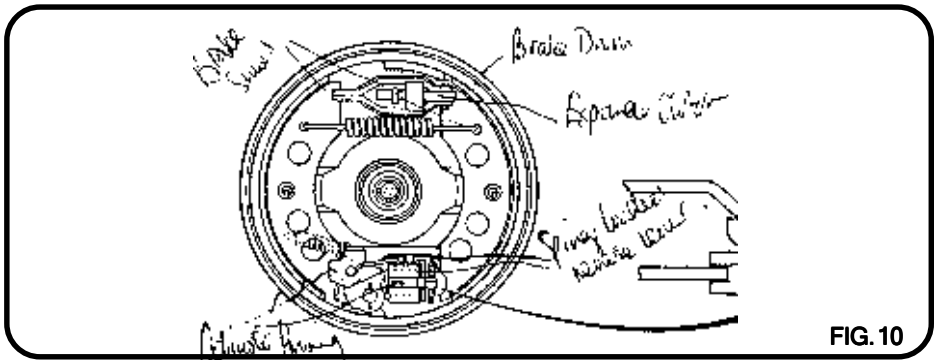


FIG. 10

1.5 Braking System (Fig. 10)

The AL-KO automatic reversing wheel brake system comprises twin brake shoes acting against a drum. The shoes are actuated by a fully floating expanding clutch. which when operated forces the shoes into contact with the drum. The system also contains an adjuster housing to arrest directional motion of the expanding clutch and shoes when the brake is engaged, and
a spring-loaded reverse lever which collapses when reverse braking is applied.

Description (Fig. 11)

The wheel brake unit comprises a brake backplate (1), handed left or right, assembled to a stub axle (31). The backplate accepts various items of the brake unit. A handed reverse lever (5) is attached to the star wheel adjuster housing (21) by a bearing bolt (18) secured by a split pin (19). The function of the reverse lever (bearing bolt) is set to work against a tensioned spring (4) attached to the backplate.

An adjusting nut, commonly called the starwheel, slots into the other end of the adjuster housing (21) and is held in place by an adjusting screw.

This sub-assembly forms the spring-loaded auto-reverse mechanism. Its various functions are entirely dependent upon the position of the fulcrum in relation to the expanding clutch and brake shoes.

The brake shoes (6) and (16), (handed on 1637 brake units, not handed on 2051 and 2361 brake units), joined together by a tensioned pull off spring (7), are secured to the backplate using tension springs (20) held in place by cover plates (26).

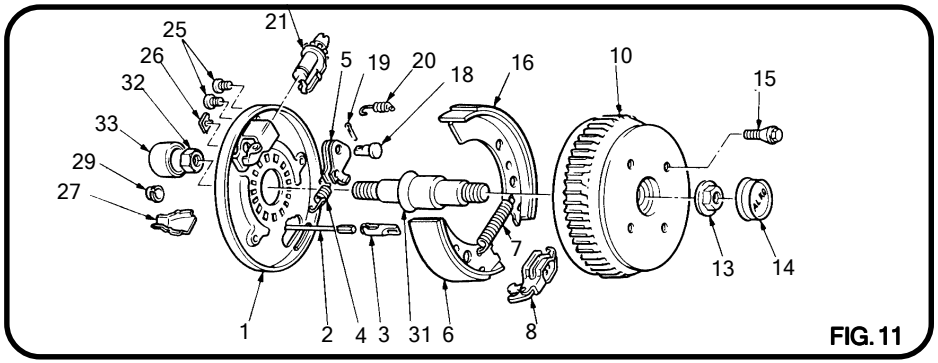


FIG. 11

The expanding clutch (8) is inserted between the trailing edges of the shoes and is floating.The attachment on the end of the Bowden cable fits into the expanded clutch mechanism.

A flanged hub nut (13) located under the dust cap (14) used to keep the brake drum, complete with bearing and circlip (10) insitu is a one-shot nut (ie must only be used once). If removed it must be replaced with a new flanged hub nut.

No attempt should be made to remove the bearing as the brake drum is a sealed for life, maintenance free unit, available only as a complete unit.

The rear stub nut (32) is located under the rear stub nut cap (33).

The rear stub nut must not be disturbed under any circumstances as this will invalidate all warranties.

Operation (Fig. 12 and 13)

Forward Braking

In the free position, with the handbrake fully forward in the OFF position, the drawshaft of the overrun assembly is fully extended and the shoes are clear of the drum.

As the towing vehicle brakes, the weight of the caravan/trailer unit compresses the overrun assembly against the fixed drawshaft.

This movement is tranmitted via the overrun lever, brake rod and Bowden cable to the expanding clutch. This mechanism forces the leading brake shoe and, by reaction, the trailing shoe outwards into contact with the drum.

Friction between the brake shoes and the drum creates a tendency for both shoes and the expanding clutch to move in the direction of forward rotation until they abut against the adjuster housing. This ensures that both shoes remain in the braking position.

Reversing

When the towing vehicle reverses, the overrun assembly is again compressed by the drawshaft. This movement is transmitted in the normal manner to the expanding clutch in the brake unit.

The clutch forces both brake shoes into contact with the brake drum. Initial friction between these creates a tendency for the shoes and expanding clutch to move in the direction of wheel rotation i.e. reverse.

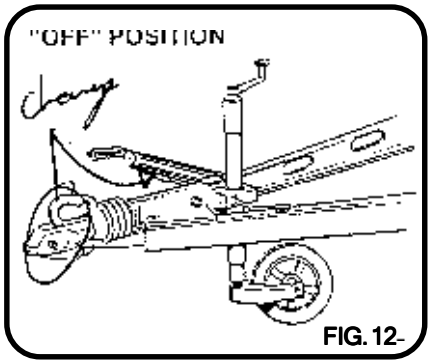


FIG. 12

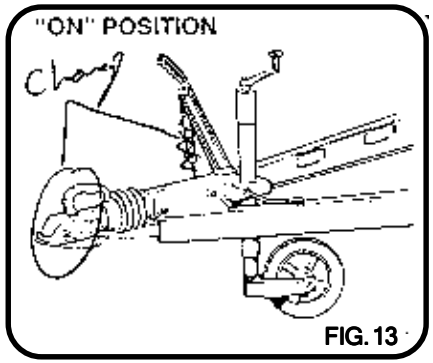


FIG. 13

This movement puts pressure on the spring-loaded auto-reverse lever, causing it to collapse. This releases the shoes from the drum allowing the caravan/trailer to reverse.

Slight forward movement of the chassis will allow the spring to reassert itself, enabling the reverse lever to recover to its normal position. Normal braking is then immediately available.

Parking

The AL-KO parking brake system incorporates a patented device for added safety when parking on a reverse-sloping site or steep hill.

The AL-KO parking brake system comprises a handbrake lever mechanism actuating firstly a brake rod then 2 or 4 Bowden cables which operate the brake unit assembly contained within the wheel hub.

AL-KO's unique parking brake system requires a source of stored energy to apply the wheel brakes should the caravan/trailer start move after it has been uncoupled from the towing unit.

AL-KO provide two alternative parking brake systems to provide the source of stored energy. Both types have the same Bowden cable and wheel hub brake unit.

The difference between the systems is the handbrake mechanism used to actuate the Bowden cable.

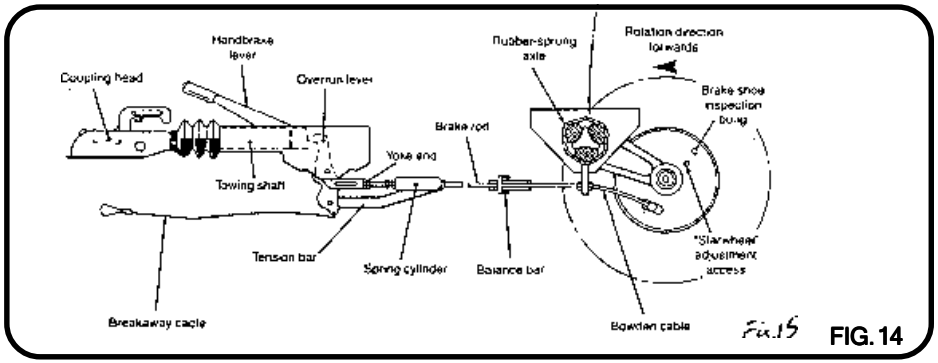


FIG. 14

This energy source is provided by either a spring cylinder charged by hand or a gas strut on the handbrake acting as an accumulator.

Each system requires a slightly different method of operation when parking the caravan/trailer, though they both operate in the same manner when forward or reverse braking is applied.

Spring Cylinder Type (Fig. 14)

Description

The spring cylinder is located on the brake rod between the handbrake tension lever and the yoke end. Full application of the handbrake lever (such that the lever is vertical) to the last tooth of the ratchet compresses a spring inside the cylinder and energy is stored.

The action of the brake lever operates the expanding clutch in the brake unit via the brake rod and Bowden cable, this forces both shoes into contact with the drum.

At this stage, the brake unit is latent, the mechanism waiting to see in which direction the caravan/trailer will start to move.

If the caravan/trailer starts to move backwards, the stored energy in the spring cylinder will be released. The brake shoes and the expanding clutch will tend to move in the direction of rotation (reverse) and abut against the stop. Thus the caravan/trailer is braked.

However, if the handbrake is NOT fully applied to the last tooth (i.e. vertical) and is set to some lesser position than the full vertical. The spring cylinder is not fully compressed and problems will almost certainly arise after the caravan/trailer has been uncoupled from the towing unit.

If the caravan/trailer is parked on a reverse slope or if it is pushed backwards, the shoes and expanding clutch will tend to move with the direction of rotation (reverse).

This movement puts pressure on the spring-loaded auto-reverse lever, causing it to collapse. **This releases the shoes from the drum and the caravan/trailer will run away.**

Operating the Handbrake

Always chock the wheels when parking the caravan/trailer on sloping sites.

For successful parking on a slope or steep hill, the operator need only apply the handbrake with one hand while gently pushing the caravan/trailer a centimetre or two backwards.

The user must supply this small but essential backward movement to ensure that the fulcrum of the transmission lever moves past the point of reverse, thus preventing the lever from collapsing as it would normally do when reversing.

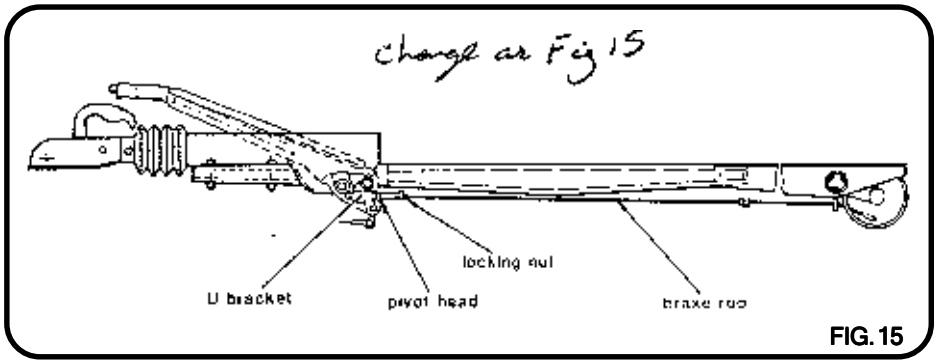


FIG. 15

Gas Strut Type (Fig. 15)

The gas strut is fitted to the handbrake lever and acts as an accumulator of stored energy.

This system is more user friendly, as the handbrake lever need only be applied until it passes a clearly detectable over centre point for it to render parking on slopes or steep hills absolutely safe. It takes minimal effort from the operator to move the handbrake lever past this point.

If the caravan/trailer starts to move when uncoupled from the towing unit, then the energy stored in the gas strut is released and the brakes applied in the normal manner.

Important Points to Remember

It is also important to check that the brake has in fact operated correctly as soon as the caravan/trailer has been uncoupled

If the caravan/trailer is to be parked on a steep slope or on loose or slippery surfaces, the wheels must be chocked.

Always ensure that the handbrake lever is in the fully vertical position. When the handbrake has been applied, it is possible for the caravan/trailer to roll back as much as 25cm before the full force of the brake takes effect.

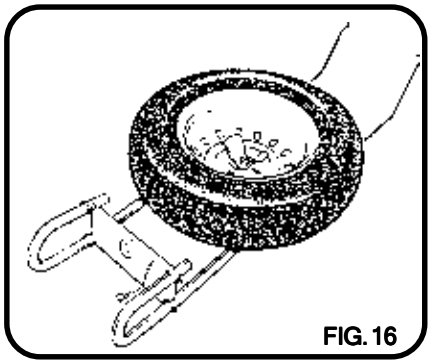


FIG. 16

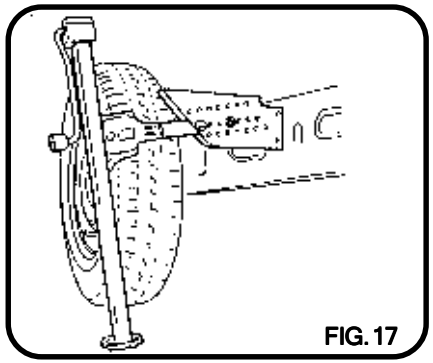


FIG. 17

1.6 Wheels and Tyres

Wheels

The AL-KO chassis is supported on road wheels fitted with pneumatic tyres. The size of wheel fitted to the chassis is dependent upon the load to be towed.The wheel should be positioned as close to the chassis member as possible to ease loading/ unloading.

Spare Wheel Carrier (Fig. 16)

Each AL-KO caravan/trailer chassis has a set of punched holes behind the axle to enable fitting of an AL-KO telescopic spare wheel carrier (Fig. 16)

The carrier is of strong, lightweight construction and zinc plated for all-weather protection. It is easy to fit and accepts all conventional wheel sizes.

The pre-punched holes are on both sides, therefore enabling the spare wheel carrier to be fitted to allow operation from either left or right side of the caravan/trailer. This is important when towing abroad.

Jacking System (Fig. 17)

From 1992 all AL-KO chassis have holes punched behind the axle to enable a Jacking System to be fitted.

The fixed jacking system cannot be fitted to chassis prior to 1992.

The system can only be fitted from 1992 if the caravan/trailer has reinforced floors and walls to take advantage of this system.
Check with the caravan/trailer manufacturer before fitting.

Tyre	Load/axle (Kg)		Pressure Bar (P.S.I.)(ETRTO Recommended)	
	Up to 100 Km/hr	Up to 130 Km/hr	Up to 100 Km/hr	Up to 130 Km/hr
145SR13	825	750	2.4 (35 P.S.I.)	2.2 (33 P.S.I.)
155SR13	935	850	2.4 (35 P.S.I.)	2.2 (33 P.S.I.)
165SR13	1045	950	2.5 (37 P.S.I.)	2.3 (34 P.S.I.)
175SR13	1166	1060	2.5 (37 P.S.I.)	2.3 (34 P.S.I.)
175SR13 Re.n*	1276	1160	3.1 (46 P.S.I.)	2.9 (43 P.S.I.)
175SR13C6 Ply	1407	1340	3.75 (55 P.S.I.)	3.75 (55 P.S.I.)

Tyres

Pressures

It is dangerous to drive with under inflated tyres. The pressures (cold) recommended by the manufacturers are included above as Table 1.

Pressure checks, including those on the spare tyre, should be made with the tyres cold and using an accurate pressure gauge.

The checks should be carried out before each journey and at regular intervals during storage. If a jockey wheel is fitted with a pneumatic tyre, the pressure should be 25 to 30psi (1.7 to 2 bar).

Tyre Wear and Damage

The legal requirements for tread depth on motor vehicle tyres also applies to caravan/trailers. Similarly, it is illegal to mix cross-ply and radial tyres on the same axle.

Wheels should be balanced and changed around occasionally to equalise wear and prolong the life of the tyres.

It is very dangerous to neglect tyre damage. A tyre should be renewed if a blister, rupture or cut exposing the casing is detected. If the tyre has suffered impact (eg. against a kerb), it should be examined by a specialist as soon as possible.

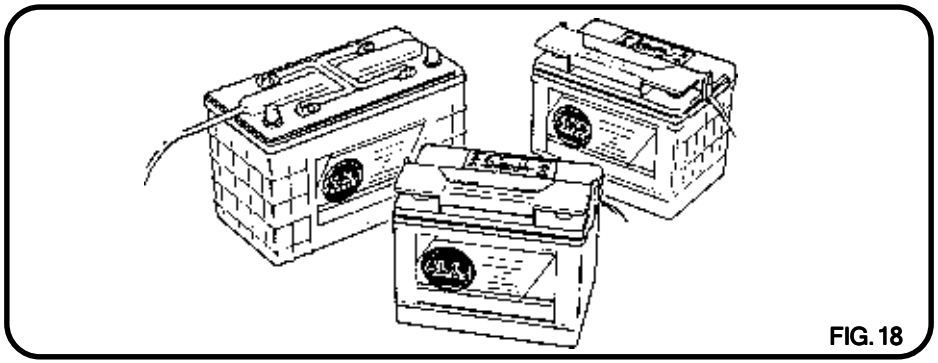


FIG. 18

1.7 Accessories

AL-KO offer a comprehensive range of accessories for use with all their caravan/trailers. The list includes batteries, the AKS 2000 stabiliser coupling, scissor jacks, a combi brace and chocks to aid servicing and maintenance tasks. In addition octagon shock absorbers are available for Euro-Axle as an aid to damping.

Batteries (Fig. 18)

AL-KO can supply a range of high energy batteries to power the caravan/ trailer electrical equipment.
Capacities available are 60, 75 and 90 ampere hour.

AL-KO batteries are manufactured under a BSI approved quality assurance system to provide a safe and reliable source of energy.

They are specifically designed to provide deep cycling characteristics.

This means that the battery will discharge the power you need when you need it and then recharge without affecting its capacity or lifespan.
The batteries have strong, moulded cases complete with carrying handles for safe portability. They are reliable, easy to maintain and can be grouped to provide the total power requirement for all your leisure activities.
60 AHC battery Part No 376877
75 AHC battery Part No 376878
90 AHC battery Part No 376879
(AHC - Ampere Hour Capacity)

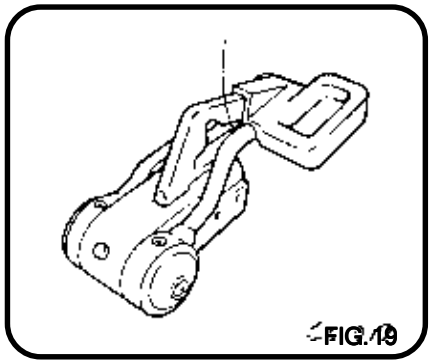


FIG.19

AKS 2000 Stabiliser (Fig. 19)
Part No. 241 822. Spare ball kit Part No. 285 058. Replacement friction pad kit Part No. 286 581

An easy to operate stabilising coupling with unique visual indicator to show the coupling is fully engaged.

Lowering the stabiliser handle presses spring loaded friction pads against the tow ball. Their high damping force reduces even small snaking movements - immediately and automatically.

New AKS 2000 stabiliser (Fig. 19a)
Part No. 287 684, Spare ball kit Part No. 286 058. Replacement friction pad kit Part No. 286581

The fitting of any type of stabiliser will act as an aid to towing, but will not cure an inherently unstable combination, car-caravan/trailer.

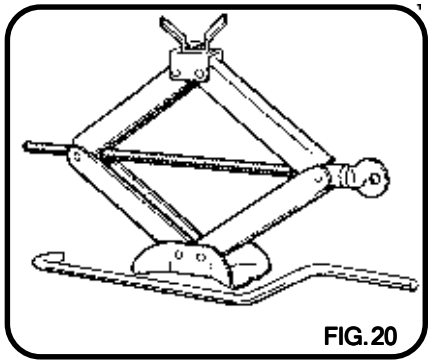


FIG.20

Scissor Jacks (Fig. 20)
Part No. 356 858 (boxed)

The jack, fitted with a contoured head, will lift caravan/trailer weighing up to 1500kg to a height of 382mm. Manufactured with a rugged pressed steel frame, the jack is supplied with a heavy duty steel brace and stows away flat.

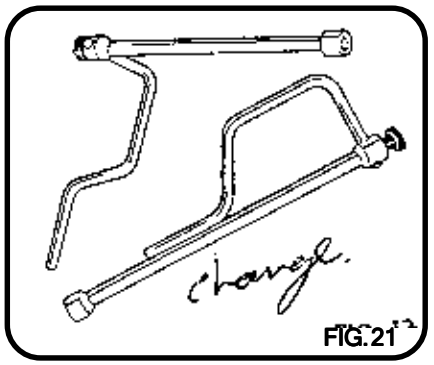


FIG. 21

Combi Brace (Fig. 21)
Part No. 293 398

A combined corner steady and wheel brace. The unit folds to provide extra leverage and for stowage purposes. It is of long-lasting construction and has a zinc plated finish.

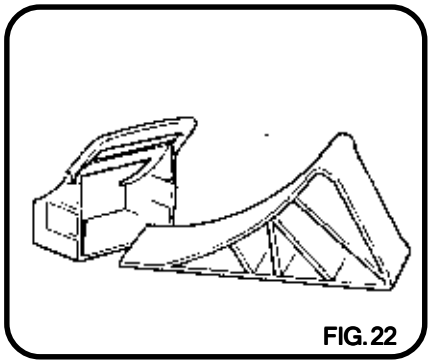


FIG. 22

Wheel Chocks (Fig. 22)
Part No. 285 759 (boxed pair)

Heavy duty plastic chocks for small caravan/trailers supplied complete with carrier. The chocks have a radii to suit most wheels and are easy to handle.

To protect your caravan/trailer against theft, an optional security lock can be fitted to the coupling head.

AK 10/2 Part No. 203216
AKS 2000 Part No. 203141

SECTION 2

SERVICING

2.1 Servicing Philosophy

The AL-KO lightweight chassis has been designed to be maintained at its optimum performance level with minimal servicing. Servicing philosophy embraces lubrication, inspections and adjustments carried out in accordance with a schedule based on mileage. However, if the mileage is not attained, servicing should be carried out on a periodic basis.

2.2 Servicing Schedule

After first 20 miles (32 kms)

- Check wheel bolt torques.

After first 500 miles (800 kms)

- Check and adjust the brake shoes and the brake linkage

Every 500 miles (800 kms) or 2-monthly

- Inspect all wheels
- Examine and lubricate the ball coupling
- Inspect and lubricate the overrun assembly
- Lubricate the jockey wheel
- Lubricate the brake linkage
- Lubricate the corner steadies
- Service the battery

Every 1500 miles (2400 kms) or 6-monthly
(as 500 miles/800 kms) plus:

- Visually check the axle for damage

Every 3000 miles (4800 kms) or Annually
(as 1500 miles/2400 kms) plus:

- Measure the towing ball
- Grease the overrun assembly
- Check and adjust the brake shoes and brake linkage
- Check wheel bolt torques.

Every 6000 miles (9600 kms) or Bi-annually
(as 3000 miles/4800 kms) plus:

- Check the brake linings and brake shoe pull-off springs for wear or fatigue
- Grease the running nuts on the brake linkage

After Use Servicing

After journeys during winter, hose down with fresh water to wash off any road salt.

Wheel hubs and bearings should not be immersed in water.

For long term storage place the caravan/trailer on axle stands, ensure the wheels are clear of the ground.

Recommended Lubricants

Mobilgrease MP is recommended for all greasing routines. A good all-purpose oil is recommended for general use.

2.3 Jacking up the Caravan/Trailer (Fig. 23)

The corner steadies should never be used to jack up the caravan/trailer. They can be lowered to touch the ground only as a safety measure.

When jacking becomes necessary, use a bottle, screw or scissor type jack. (AL-KO Part No. 356 858 with axle shaped head is recommended).

Apply the handbrake fully as for parking.

Do not forget to give the caravan/trailer a slight rearwards push to stop the reversing lever collapsing.

Place the scissor jack under the axle tube as near as possible to the main longitudinal member.

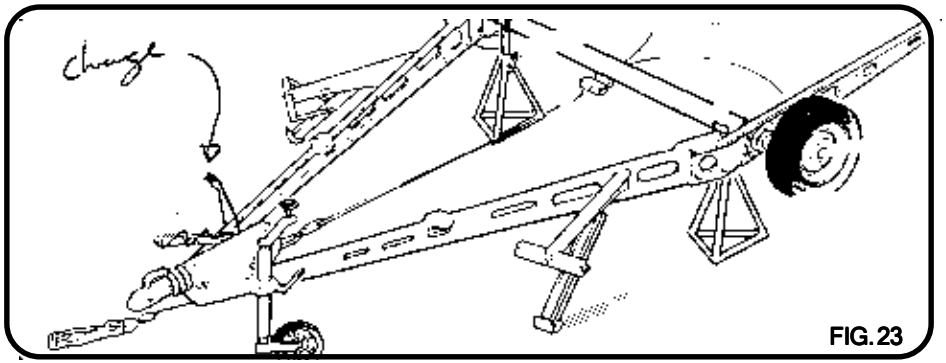


FIG. 23

If the side mounted jacking system is fitted, push the jack arm into the socket as far as it will go. Ensure the jack is perpendicular and turn the jack handle in a clockwise direction to raise the caravan/trailer.

NEVER USE THE CHASSIS MEMBERS AS JACKING POINTS.

Place a chock under the grounded wheel and an axle stand under the raised wheel.

Lowering the Caravan/Trailer

Raise the corner steadies. Take the weight of the caravan/trailer onto the jack and remove the axle stands or ramping boards.

Lower the caravan/trailer to the ground and remove the jack.

2.4 Check and Adjust the Brake Shoes and Brake linkage

The AL-KO automatic reversing brake system and its linkage should be periodically adjusted to compensate for wear of the brake shoe lining and subsequent stretching of the Bowden cables.

The caravan/trailer brake will be subject to greater wear when used on continuous mountain pass descents.

Recommended Adjustment Procedure

(a) Ensure the drawshaft is fully extended (in the towing position). The handbrake is OFF (fully forward position). Confirm that there is some end float in the rod and spring cylinder.

(b) Jack up the axle (see page 27)

The brakes must be adjusted first and then if necessary the brake linkage.

During wheel brake adjustment, the drum must only be turned in the direction of forward rotation.

Do not use excessive force during adjustment.

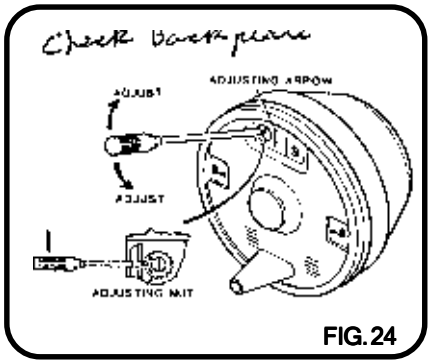


FIG. 24

Wheel Brake Adjustment (Fig.24)

(c) Remove the plastic bung from the brake backplate to expose the 'starwheel' adjuster.

(d) Adjust the starwheel in the direction of the arrow until there is resistance to wheel movement.

(e) Slacken until the brake drum turns freely in the forward direction.

(f) Check for correct adjustment at the end of the Bowden cable where it is secured at the abutment on the centre of the axle. When pulled, the inner cable should extend between 5 and 8mm.

(g) Repeat for the other wheel or wheels.

(h) Apply the handbrake two or three times to ensure the brake shoes are centralised on the drum. Recheck shoe clearance at the wheel brake.

(i) Check for uniform response of both wheel brakes and the balance bar is pulled evenly when the handbrake is operated.

(j) Replace the plastic bung in the brake backplate.

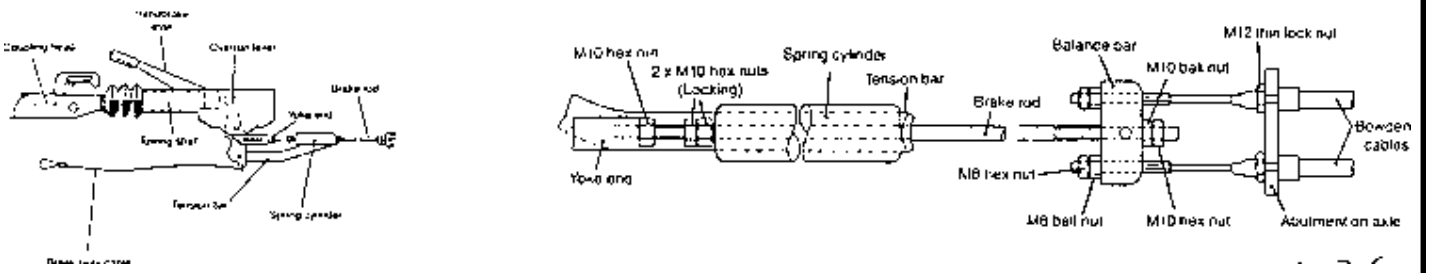


FIG.25

Brake Linkage Adjustment (Fig. 25)

(k) Check the brake rod support bar, fixed to the caravan/trailer floor, is supporting the brake rod evenly and not just at one end.

(l) On tandem axles ensure there is a brake rod support tube, screwed on to the end of the brake rod and passing through the centre hole on the abutment fixed to the front axle only.

(m) Adjust the brake rod so the overrun lever butts up against the end of the towing shaft, leaving no clearance. Secure all brake rod locking nuts.

Where the spring cylinder overrun assembly is fitted adjust the locking nuts to allow 1mm of clearance only.

On some caravan/trailers a single nyloc is used instead of two locking locks.

Reversing will be difficult if either the brake shoes or the brake linkage is over-adjusted.

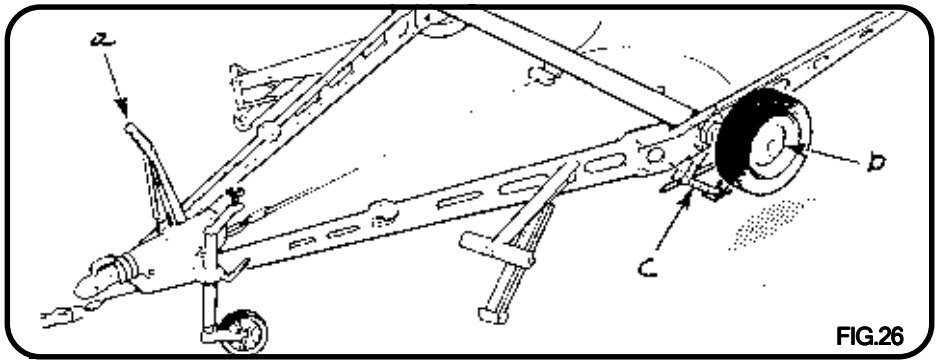


FIG.26

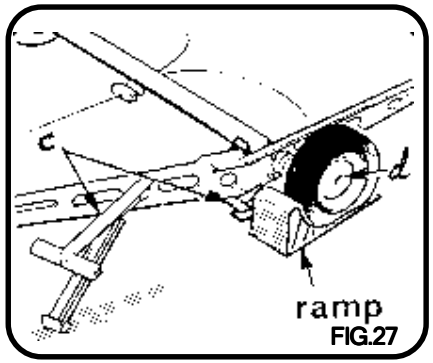


FIG.27

2.5 Inspecting/Changing the Wheels

Inspect all wheels (including the spare) for damage and distortion, paying particular attention to the flanges and wheel dish. Ensure that the wheel bolt seatings are not cracked.

Damaged or distorted wheels must be renewed immediately.

Changing a Wheel (Fig. 26, 27, 28)

Before fitting a new wheel, examine it for distortion or other damage. Ensure that all mating surfaces are clean and dry, including wheel bolt seats.

ALWAYS USE THE CORRECT BOLTS TO SECURE THE WHEEL.

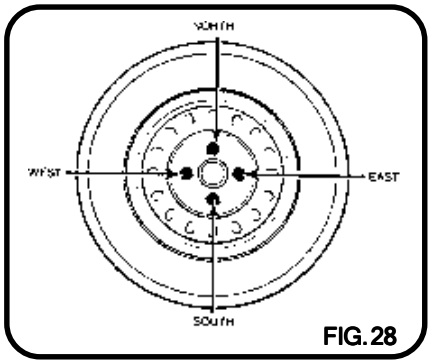


FIG. 28

A corner steady brace is not to be used for the next step.

(?) Fit the new wheel and refit the wheel bolts.

Using an AL-KO Combi brace or suitable socket wrench, tighten the wheel bolts to the correct torque, in the sequence North, South, East and West as shown in Fig. 28.

(?) Lower the caravan/trailer to the ground (see page 27).

The torque settings should be rechecked after the first 20 miles or 30 kilometres of use, and every 3000 miles or 4800 kilometres thereafter.

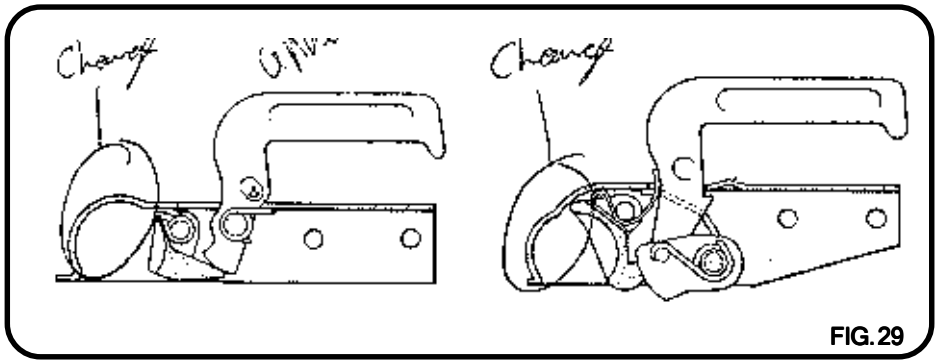


FIG. 29

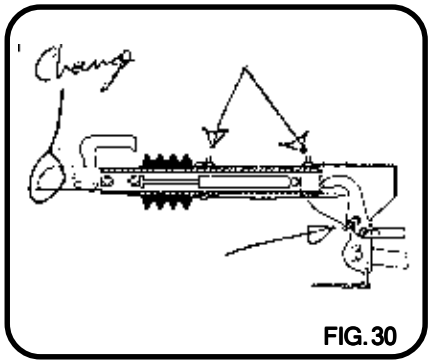


FIG. 30

2.6 Examine and Lubricate the Coupling Head. (Fig. 29)

(a) Examine all moving parts and the locking feature for wear and correct operation.

(b) Clean off and grease the spherical seat, bearing points and pivot pins.

If the AKS 2000 coupling head is fitted do not grease.

Torque settings for coupling head securing bolts:

60S - AK7.....60Nm (44lb/ft)
90S - AK10.....80Nm (59lb/ft)
161S - AK10.....90Nm (66lb/ft)
251S - AK26.....90Nm (66lb/ft)

AKS 2000 Stabiliser
Bolt marked 8.8.....86Nm (63lb/ft)
Bolt marked 10.9...120Nm (89lb/ft)

2.7 Examine and Lubricate the Overrun Assembly. (Fig.30)

(a) Examine all pivot pins and levers for correct operation and lubricate with oil.

(b) Check the handbrake ratchet for correct operation and lubricate with oil.

(c) Grease the 2 nipples on the top of the overrun assembly. On the 161S and 251S overrun assemblies there is a third nipple underneath the overrun lever.

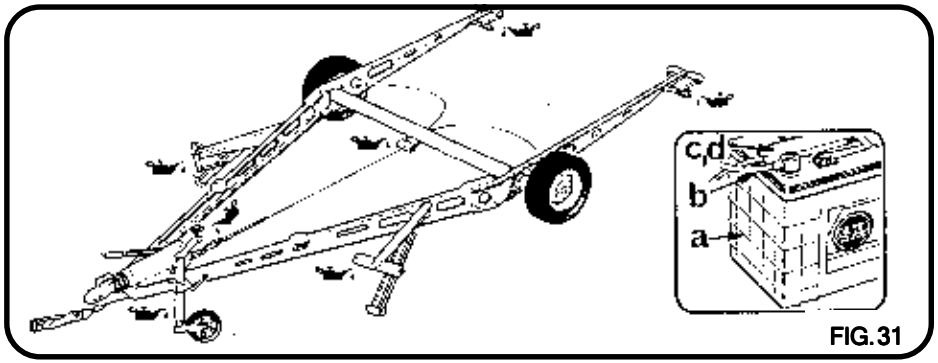


FIG. 31

Lubrication (Fig. 31)

2.8 Lubricate the Jockey Wheel

Lightly oil the wheel axle and screw thread.

2.9 Lubricate the Brake Linkage

Lightly oil all moving parts

2.10 Lubricate the Corner Steadies

Lightly oil the screw and pivot pins.

2.11 Service the Battery (Fig. 31)

Do not smoke when servicing the battery.

(a) Examine the battery casing for cracks or damage.

(b) Check that the battery leads are securely attached to the terminal posts. Lightly grease the posts and connectors with petroleum jelly.

(c) Inspect the electrolyte level in each cell. Top up as necessary with distilled or demineralised water.

(d) Clean off excess grease and water from the battery top, using a clean dry rag.

AL-KO recommend clamp on lead connections, not crocodile clips.

2.12 Measure the Towing Ball

Using a suitable gauge, confirm that the diameter of the towing ball measures 50mm maximum, 49.61mm minimum.

A WORN BALL SHOULD BE RENEWED WITHOUT DELAY.

2.13 Servicing After Use

Journeys During Winter

(a) After each journey on salty, wet roads always wash down the chassis using clean fresh water to prevent wet storage stain formation.

(b) Clean the dirt from the crank supports and regrease.

(c) Check all bolted joints for damage and tightness.

Axle Immersed in Water

Wheel hubs and bearing should not be immersed in water.

2.14 Check the Brake Linings and Pull Off Springs for Wear or Fatigue.

The left and right hand shoes of wheel brakes type 1637 have embossed marking arrows which must be taken note of when fitting.

The brakes will not work if the shoes are fitted to the wrong side.

For wheel brake type 2051 the left and right shoes are identical.

(a) Check the brake linings for wear at the wear check opening. Renew as required.

(b) Check the brake pull-off springs for fatigue. Renew as required.

(c) Adjust the brake unit by following the procedure detailed in instruction 2.4.

2.15 Visual Axle Check

Inspect the axle for wear or damage. Renew with an AL-KO axle if required.

2.16 This sub-section details procedures for tasks not considered part of normal servicing.

2.17 Change an overrun damper on types 161S/251S (Fig. 32)

Ensure that only an AL-KO gas filled overrun damper is fitted.

Removal

(a) Remove the nut (12), washer (11) and withdraw bolt (10).

(b) Withdraw the towing tube (5).

(c) Remove nuts (23) and withdraw bolts (22); retain the bush (8).

(d) Remove the coupling head (21).

(e) Withdraw the old overrun damper (6) from the towing tube (2).

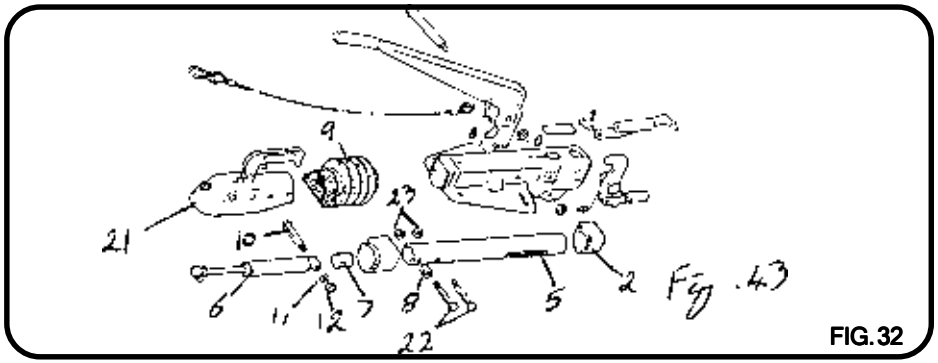


FIG. 32

Assembly

(f) Insert the stop buffer (7) back into the towing tube (5).

(g) Slide the new overrun damper (6) into the towing tube.

The eye of the overrun damper must be parallel to the bolt holes in the towing tube.

(h) Introduce the retaining bolt (10) into the slot in the towing tube and push it through the eye at the rear of the overrun damper (6). Secure using washer (11) and nut (12), ensuring that the towing tube still moves freely.

(i) Refit the concertina shroud (9).

(j) Refit the coupling head (21) and secure using the bushed bolt (22), bush (8) and nut (23). Confirm that the coupling head still moves freely.

(k) Push the towing tube into its housing to compress the overrun damper.

(l) Pull the towing tube out until it abuts against the stop.

(m) The overrun damper will slowly extend. As it does so, insert the remaining bolt (22) so that it passes through the coupling head, towing tube and the outermost eye of the overrun damper. Secure using the remaining nut (23).

(n) Pull the concertina shroud over the exposed portion of the towing tube.

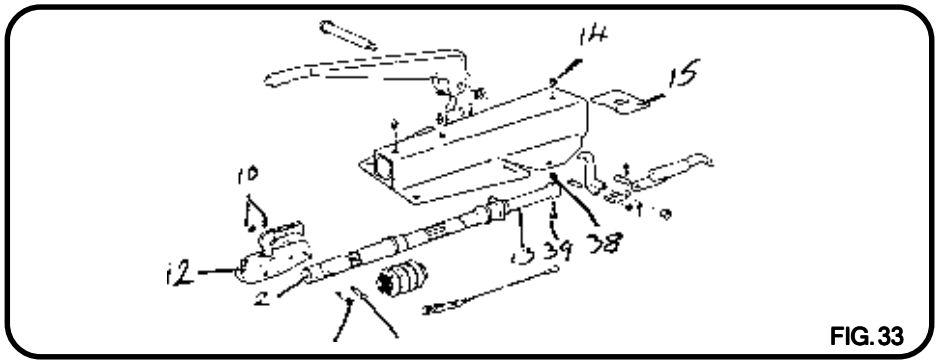


FIG. 33

2.18 Change an overrun damper on types 60S-2/90S-3 (Fig. 33)

Ensure that only an AL-KO gas filled overrun damper is fitted.

Removal

(a) Remove nuts (14 and 38) and withdraw bolt (39) from the eye at the innermost end of the overrun damper. Retain stop plate (15).

(b) Remove nuts (10) and withdraw bolts (9 and 9a).

(c) Remove the coupling head (12).

(d) Withdraw the old overrun damper (13) from the towing tube (2).

Assembly

(e) Insert the new overrun damper (13) into the towing tube (2).

The eye of the overrun damper must be parallel to the bolt holes in the towing tube.

(f) Locate the coupling head (12) in place so that its holes are aligned with those of the towing tube (2).

(g) Align the holes in the overrun damper (13), coupling head (12) and towing tube (2). Secure using bolts (9 and 9a) and nuts (10). Confirm that the coupling moves freely.

(h) Depress the overrun damper and align the stop plate (15) to the eye on the innermost end of the overrun damper. Secure using bolt (39) and nuts (14 and 38).

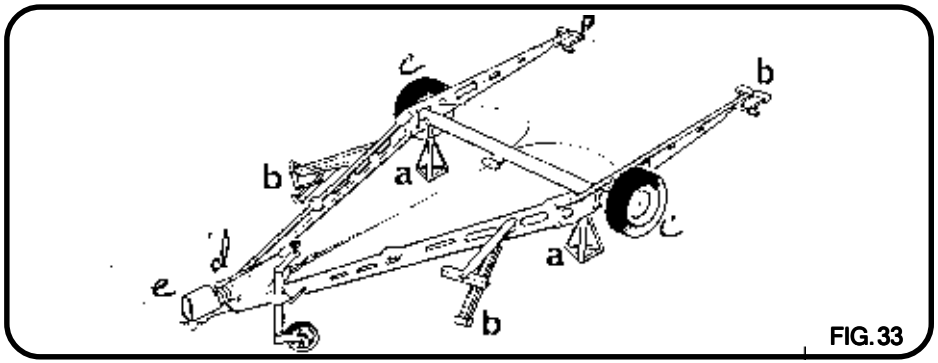


FIG. 33

2.19 Storing Your Caravan/Trailer (Fig.33)

If your caravan/trailer is to be stored for any length of time, e.g. over winter, the following procedure is recommended:

(a) Jack up the caravan/trailer and support it on axle stands, fitted under the axle, so the wheels are clear of the ground.

(b) Lower the corner steadies.

(c) Cover or remove the wheels and tyres, storing away from sunlight to prevent unnecessary deterioration due to natural ultra violet light.

(d) Release the handbrake and rotate the hubs periodically to keep the bearings lubricated.

(e) Protect the overrun assembly from the elements by fitting a hitch cover.

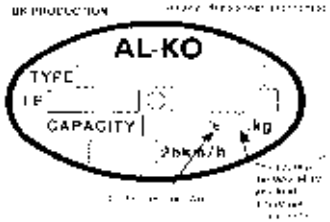


FIG. 34

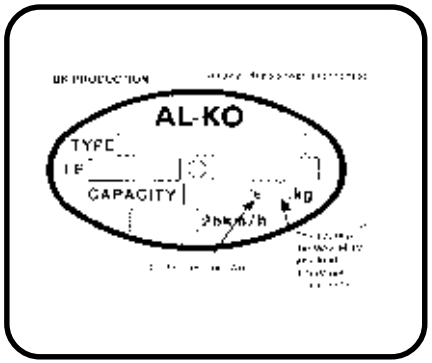
SECTION 3

ORDERING SPARES

Please always quote the data shown on the Data Plate (Fig. 34) when ordering spares, to ensure prompt attention to your orders. Your dealer should enter the information from the axle Data Plate into this manual onto Fig. 34, and other relevant details on pages 44, 45 and 46.

Always keep this manual in your caravan/trailer.

Remember: AL-KO has its own service network throughout Europe.



Data Plate (Fig. 35)

The AL-KO Data Plate is fixed to the centre rear of the axle.

Figure 35 shows an example of the information found on the plate.

The above plate indicates the following data:

The axle is a Type B1000-3

It was manufactured at AL-KO's UK plant in Leamington Spa.

The works order number (the most important information) is 12345

It is axle number 67 of works order 12345

The maximum loading (not to be exceeded) is 1000kgs

It is designed to operate at speeds in excess of 25km per hour (an EEC requirement).

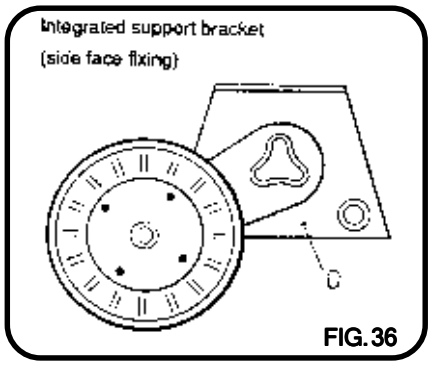


FIG. 36

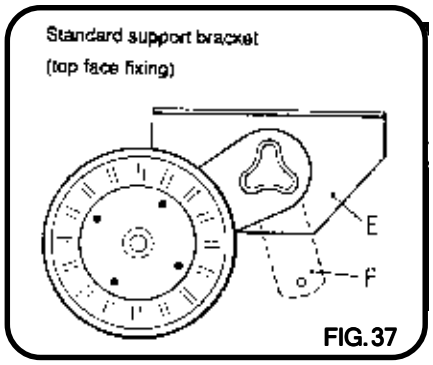


FIG. 37

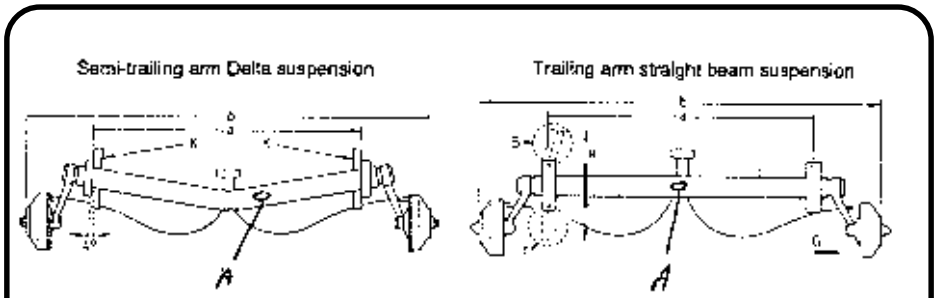


FIG. 38

Key for Figs. 36, 37 and 38

A Data plate, see page 41 and 42
B Support bracket extended to the front and bent
C Support bracket extended to the back
D Integrated support bracket
E Standard support bracket
F Shock absorber bracket, Delta axles only
G Technical data on the brake backplate
H Dim. from the centre of the axle to the front face of the support bracket
I Dim. from the centre of the axle to the rear face of the support bracket
K Integrated support bracket, straight...., staggered by 4*....
a Bracket centres
b OHF, Over Hub Face dimension

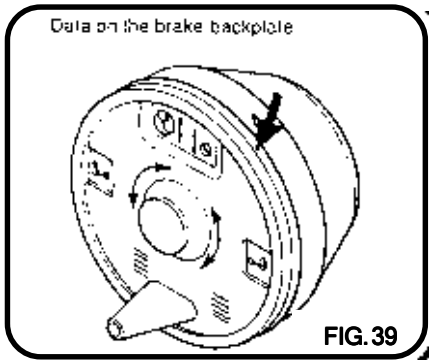


FIG. 39

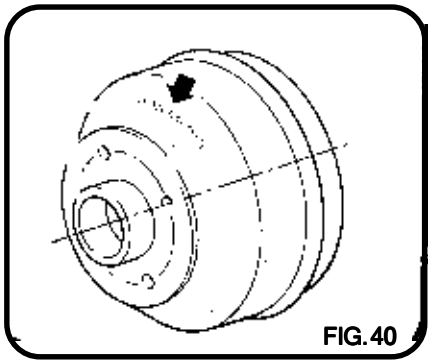


FIG. 40

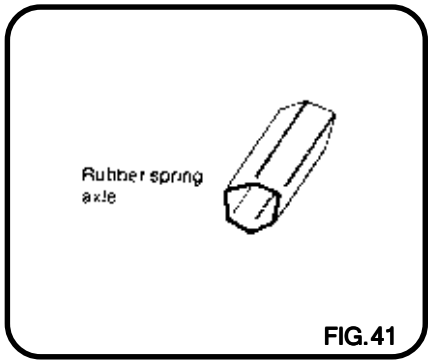


FIG. 41

Please ensure all data is entered.

1. Trailer:
   Type:.....
   Built in:.....
2. Technical data on the brake backplate (Fig.39).....
3. Wheel shock absorbers
   yes ☐ no ☐
4. Support brackets, see page 50:
   Standard ☐ Integrated ☐
   Extended to the back ☐
   Extended to the front and bent ☐
   Dim.H.....mm Dim.I.....mm
5. Axle type:
   Trailing arm straight beam (rubber) ☐
   Semi-trailing arm Delta compound angle (rubber) ☐
6. Dimensions:
   Dim.a.....mm
   Dim.b.....mm
7. Brake drum No (Fig.40):
   .....
8. Wheel bolts (Fig.42):
   Spherical ☐
   Conical ☐

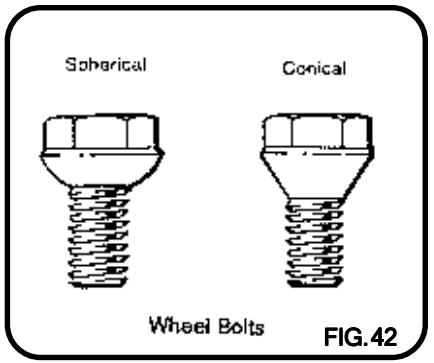


FIG. 42

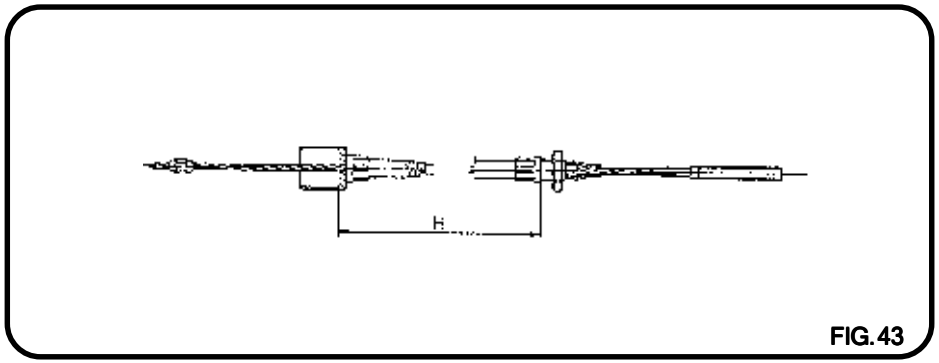


FIG. 43

Bowden Cables for wheel brakes 1637, 2051, 2361, (Fig. 43)

To obtain the correct length measure "H" (outer casing only) in millimetres.

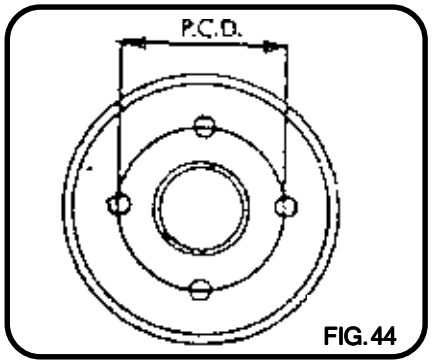


FIG. 44

To obtain the correct P.C.D. (Pitch Circle Diameter) (Fig. 44 and 45)

Four hole fixing (Fig.44).

Measure the distance between the centres of two opposite fixing holes.

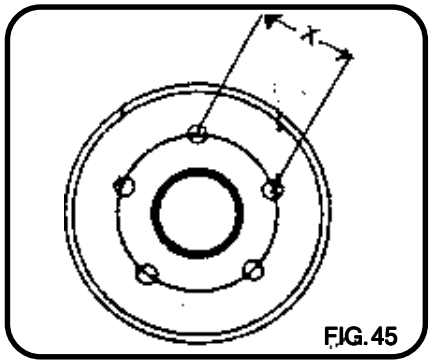
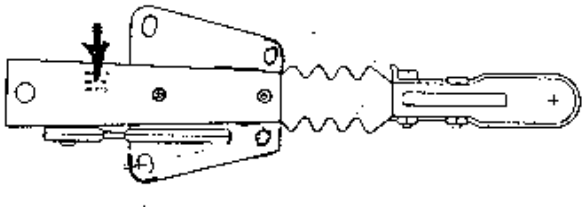


FIG. 45

Five hole fixing (Fig.45).

Measure "X" in millimetres. Divide by 0.557785. "X" is the distance between two adjacent holes.



Overrun	Assembly
60S	☐
90S/3	☐
161S	☐
251S	☐
2.8VB	☐
SV3.5	☐

FIG. 46

The data appears on top of the body - see arrow

Coupling Heads	
AK 7	☐
AK 10/2 35mm shaft	☐
AK 10/2 50mm shaft	☐

The data appears on the side - see arrow Fig. 46

Coupling Heads	
AK 251	☐
AK 252	☐
AK 30	☐
AK 35	☐

The data appears on the side - see arrow Fig. 46

Overrun damper

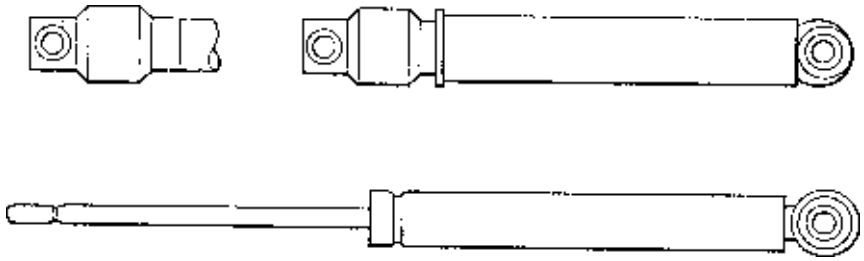


FIG. 47

Overrun damper type, data stamped on body (Fig. 47)

359987 - 90S/3
353936 - 161S
355338 - 251S

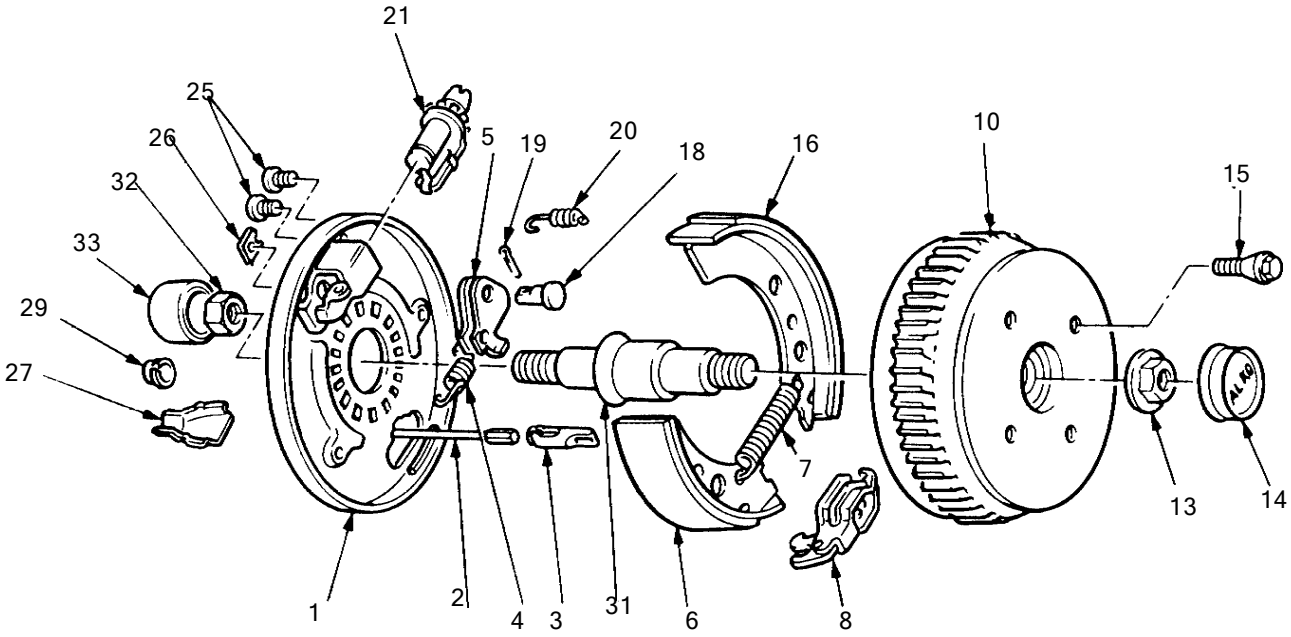
SECTION 4

ILLUSTRATED PARTS LIST

BRAKES 1637 (Handed brake shoes)

No.	PART No.	PART DESCRIPTION
1		Backplate and stub axle, not available as a spare, if damaged return complete axle to AL-KO for replacement of stub axle backplate.
and		
2		Bowden Cable
	299 707	350
	299 708	530
	299 709	770
	299 710	890
	299 711	1020
	299 712	1130
	299 713	1320
	299 714	1430
	299 715	1620
	299 716	1790
3	371 388	Cable link
4	218 887 00 01	Tension Spring (Left)
	372 805	Tension Spring (Right)
5	384 308	Reverse Lever Assembly (Left)
	384 309	Reverse Lever Assembly (Right)
6	258 314	Brake Shoes (Left)
7	218 215 00 03	Pull Off Spring
8	570 666	Expander Clutch
10		Brake Drum Complete (with Bearing and Circlip)
	573 189	PCD 100 x 4 / M12 x 1.5
	578 822	PCD 101.6 x 4 / M10 x 1.5
	573 190	PCD 112 x 5 / M12 x 1.5
13	581200	Flanged Hub Nut
14	581197	Dust Cap
15		Wheel Bolt
	208 167 00 18	M12x1.5 Conical
	208 892 00 1	M10x1.5 Spherical
	208 167 00 20	M12x1.5 Spherical
16	258 314	Brake Shoes (Right)
18	368 651	Bearing Bolt
19	700 192	Split pin 4 x 20
20	208 880 00 03	Tension Spring
21	387 706	Star Wheel Adjuster Assembly
25	373 245	Bung
26	238 261 00 02	Cover Plate
27	371 387	Bowden Cable Shell
29	N/A	Packing Piece
31	N/A	Stub Axle
32	N/A	Rear Stub Axle
33	581 196	Rear Stub Nut Cap

BRAKES 1637

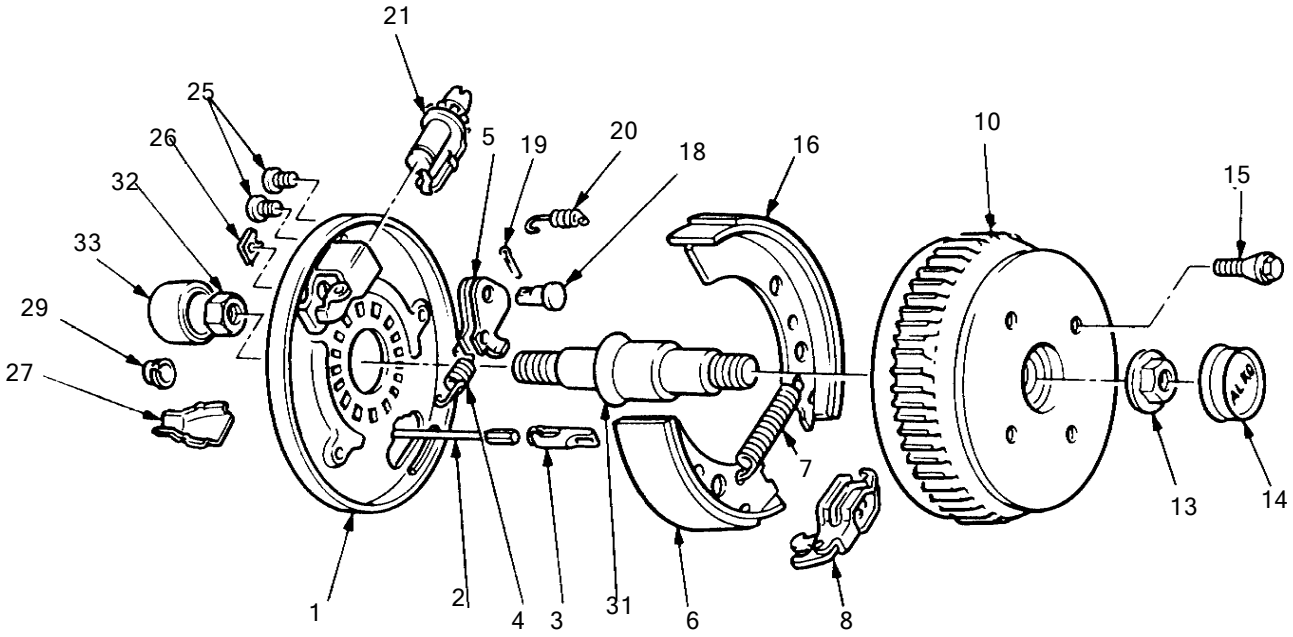


BRAKES 2051 (Non-handed brake shoes)

No.	PART No.	PART DESCRIPTION
1		Backplate and stub axle, not available as a spare, if damaged return complete axle to AL-KO for replacement of stub axle backplate.
and		
2		Bowden Cable
	299 707	350
	299 708	530
	299 709	770
	299 710	890
	299 711	1020
	299 712	1130
	299 713	1320
	299 714	1430
	299 715	1620
	299 716	1790
3	371 388	Cable link
4	218 370 00 03	Tension Spring (Left)
	218 737 00 03	Tension Spring (Right)
5	571 386	Reverse Lever Assembly (Left)
	571 387	Reverse Lever Assembly (Right)
6	258 318	Brake Shoes (Left)
7	208 200 00 07	Pull Off Spring
8	571 510	Expander Clutch

No.	PART No.	PART DESCRIPTION
10		Brake Drum Complete (with Bearing and Circlip)
	573 192	PCD 100 x 4 / M12 x 1.5
	578 824	PCD 101.6 x 4 / M10 x 1.5
	573 193	PCD 112 x 5 / M12 x 1.5
13	581200	Flanged Hub Nut
14	581197	Dust Cap
15		Wheel Bolt
	208 167 00 18	M12x1.5 Conical
	208 892 00 1	M10x1.5 Spherical
	208 167 00 20	M12x1.5 Spherical
16	258 318	Brake Shoes (Right)
18	368 651	Bearing Bolt
19	700 192	Split pin 4 x 20
20	208 880 00 03	Tension Spring
21	387 323	Star Wheel Adjuster Assembly
25	373 245	Bung
26	238 261 00 02	Cover Plate
27	371 387	Bowden Cable Shell
29	N/A	Packing Piece
31	N/A	Stub Axle
32	N/A	Rear Stub Axle
33	581 196	Rear Stub Nut Cap

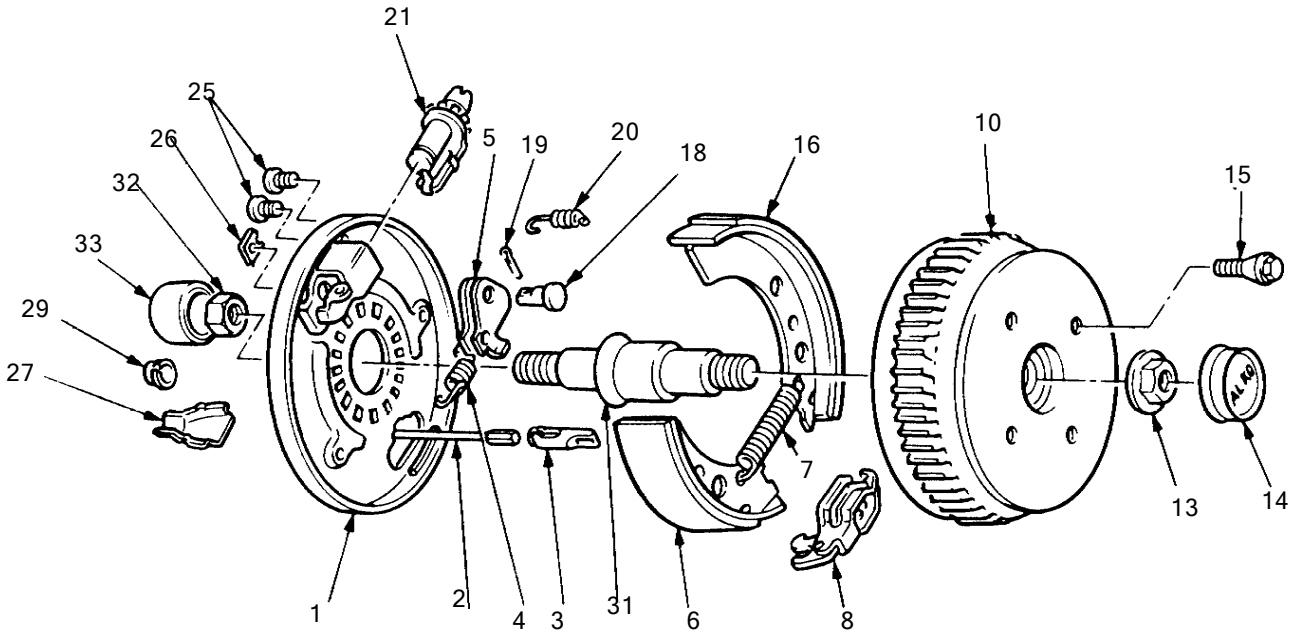
BRAKES 2051



BRAKES 2361

No.	PART No.	PART DESCRIPTION
1		Backplate and stub axle, not available as a spare, if damaged return complete axle to AL-KO for replacement of stub axle backplate.
and		
2		Bowden Cable
	299 707	350
	299 708	530
	299 709	770
	299 710	890
	299 711	1020
	299 712	1130
	299 713	1320
	299 714	1430
	299 715	1620
	299 716	1790
3	371 388	Cable link
4	N/A	Tension Spring (Left)
	N/A	Tension Spring (Right)
5	571 386	Reverse Lever Assembly (Left)
	571 387	Reverse Lever Assembly (Right)
6	384 509	Brake Shoes (Left)
7	208 200 00 07	Pull Off Spring
8	571 510	Expander Clutch
10		Brake Drum Complete (with Bearing and Circlip)
	N/A	PCD 100 x 4 / M12 x 1.5
	N/A	PCD 101.6 x 4 / M10 x 1.5
	573 194	PCD 112 x 5 / M12 x 1.5
13	582 506	Flanged Hub Nut
14	582 505	Dust cap
15		Wheel Bolt
	208 167 00 18	M12x1.5 Conical
	N/A	M10x1.5 Spherical
	208 167 00 20	M12x1.5 Spherical
16	384 509	Brake Shoes (Right)
18	368 651	Bearing Bolt
19	700 192	Split Pin 4 x 20
20	208 880 00 03	Tension Spring
21	387 323	Star Wheel Adjuster Assembly
25	373 245	Bung
26	238 261 00 02	Cover Plate
27	371 387	Bowden Cable Shell
29	N/A	Packing Piece
31	N/A	Stub Axle
32	N/A	Rear Stub Axle
33	582 542	Rear Stub Nut Cap

BRAKES 2361

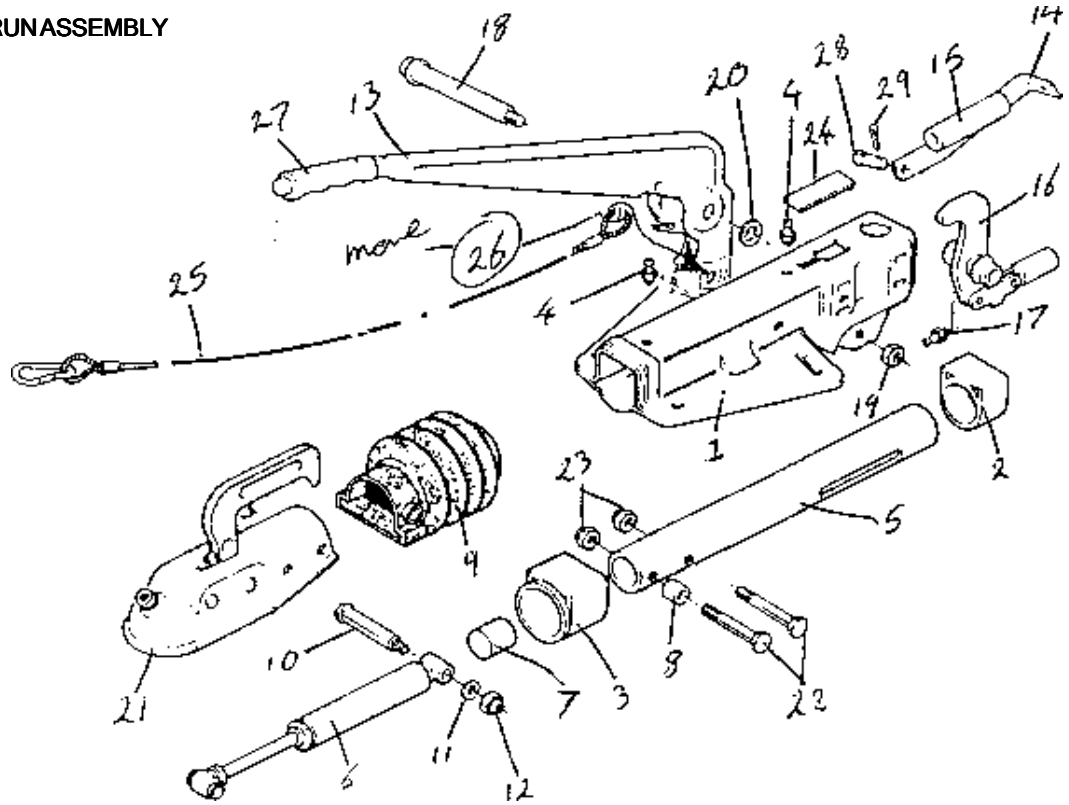


161S OVERRUN ASSEMBLY

No.	PART No. 290 755	PART DESCRIPTION
1	354 200	Body Assembly
2	353 942	Rear Bush
3	353 943	Front Bush
4	700 204	Grease Nipple AM8x1
5	354 207	Drawshaft Tube
6	353 936	Damper
7	353 952	Buffer
8	355 767	Spacing Bush
9	353 937	Gaiter
10	358 212	Damper Fixing Bolt
11	700 140	Washer DIN 3
12	700 645	Locknut M12
13	354 259	Handbrake Lever
14	207 683 06 08	Tension Bar
15	207 502 06 01	Spring Cylinder
16	354 405	Overrun Lever Assy.
17	700 203	Grease Nipple AM6
	354 410	Lever & Pivot Assy.
18	217 771 05 03	Pivot Pin
19	700 645	Locknut M12
20	700 625	Washer DIM 17
21	203 318	Coupling Head, AK 252
22	701 249	Hex. Bolt M12x75
23	700 123	Locknut Nut NM12
24	353 944	Cover Plate
25	209 157	Breakaway Cable
26	204 547 01 02	Burst Ring
27	204 285 00 07	Handbrake Grip
28	207 681 06 09	Pivot Bolt
29	700 192	Split Pin

NOTE: Illustration shows coupling head AK 252. Please check prior to ordering.

161S OVERRUN ASSEMBLY

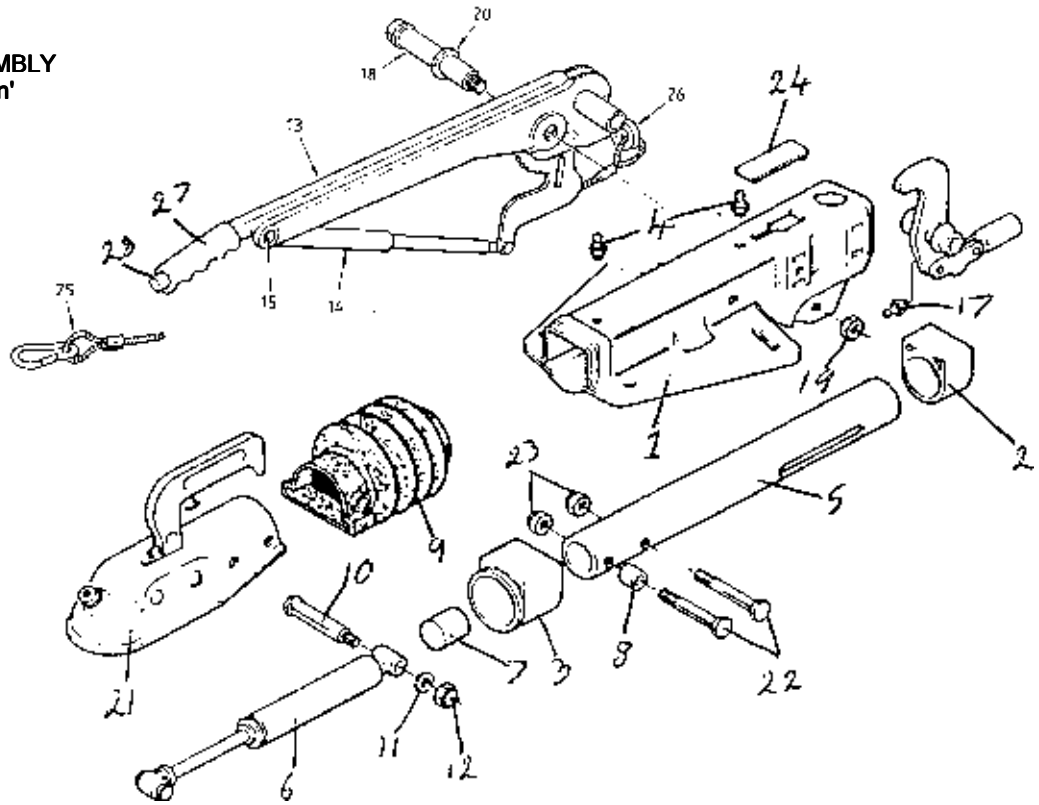


251S OVERRUN ASSEMBLY

No.	PART No.	PART DESCRIPTION
	299 264 (Gas strut)	
1	354 260	Body Assembly
2	353 942	Rear Bush
3	353 943	Front Bush
4	700 204	Grease Nipple AM8x1
5	354 225	Drawshaft Tube
6	355 338	Damper
7	355 140	Buffer
8	357 242	Spacing Bush
9	353 937	Gaiter
10	358 212	Damper Fixing Bolt
11	700 140	Washer DIN 3
12	700 645	Locknut M12
13	219 010	Handbrake Assembly
14	357 725	Gas Strut
15	357 633	Fixing Bolt
16	354 405	Overrun Lever Assy.
17	700 203	Grease Nipple AM6
18	217 771 05 03	Pivot Pin
19	700 645	Locknut M12
20	700 625	Washer DIM 17
21	243 184	Coupling Head, AK 252
22	701 249	Hex. Bolt M12x75
23	700 123	Locknut Nut NM12
24	353 944	Cover Plate
25	209 157	Breakaway Cable
26	204 547 01 02	Burst Ring
27	204 285 00 07	Handbrake Grip
28	204 285 00 01	Handbrake Button

NOTE: Illustration shows coupling head AK 252. Please check prior to ordering.

251S OVERRUN ASSEMBLY
Fitted with 'Easy Action' Handbrake



90 S/3 OVERRUN ASSEMBLY

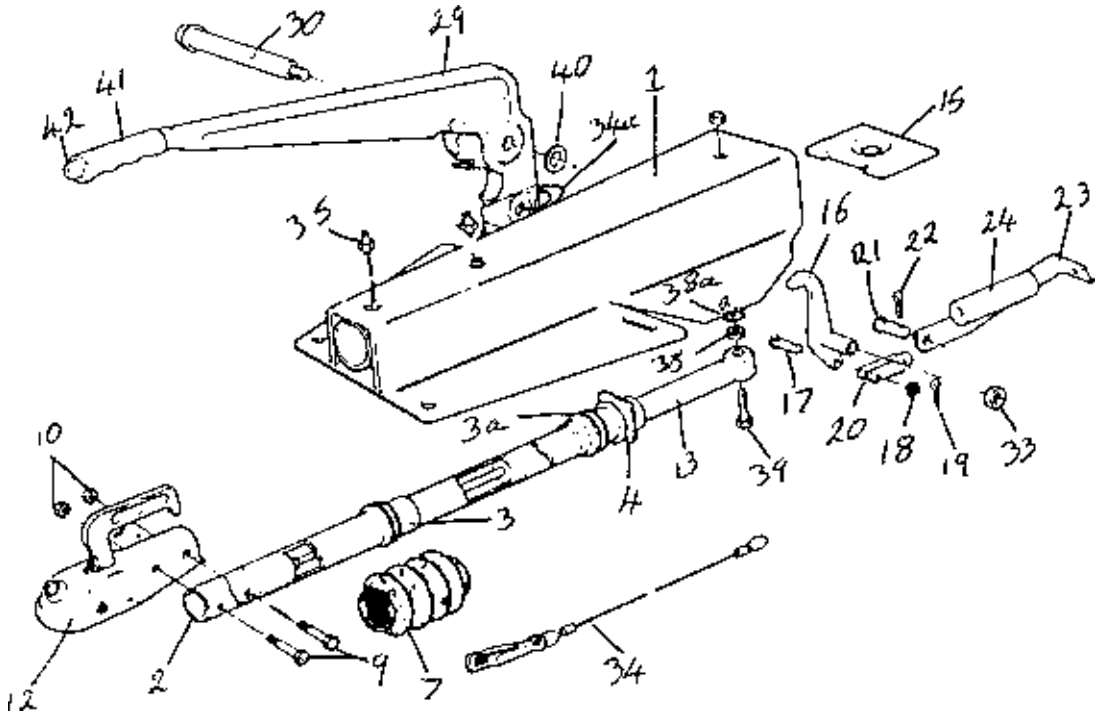
No.	PART No. 299 266	PART DESCRIPTION
1	354 000	Hitch Body
2	384 654	Draw Shaft
3*	207 241 02 06	Bearing Bush
3a*	207 241 02 06	Bearing Bush
4	207 241 02 07	Damping Rubber
7	207 389 02 10	Gaiter
9	700 645	Hex. Bolt M12x55 DIN931
10	700 645	Hex. Nut M12 DIN6925-8
12	203 201	Coupling Head, AK 10/2 (35mm)
13	359 987	Damper
15	368 820	Plate
16	354 013	Overrun Lever
17	702 121	Bolt
18	700 139	Washer DIN 125
19	700 191	Split Pin DIM 3x20
20	207 389 06 06	Yoke End

3,3a* Supplied as a set only.

No.	PART No.	PART DESCRIPTION
21	207 681 06 09	Pivot Bolt
22	700 192	Split Pin DIM 4x20
23	207 683 06 08	Tension Bar
24	207 502 06 01	Spring Cylinder
29	204 549	Handbrake Lever
30	207 771 05 03	Pivot Pin
33	700 645	Hex. Nut M12 DIN6925-8
34	209 157	Break Away Cable
34a	204 547 01 02	Burst Ring
35	217 171 00 01	Grease Nipple
38	700 109	Hex. Nut M10
38a	700 122	Hex. Nut M10 DIN934
39	700 275	Hex. Bolt M10x55 DIN931
40	700 273	Washer DIM 17 DIN433
41	204 285 00 07	Handbrake Grip
42	204 285 00 01	Handbrake Button

NOTE: Illustration shows coupling head AK 10/2. Please check prior to ordering.

90 S/3 OVERRUN ASSEMBLY



SECTION 5

FAULT FINDING

FAULT	CAUSE	REMEDY
Uneven braking	Incorrectly adjusted wheel brake	Adjust as detailed (3.5)
	Brake cable seized	Free or renew cable (2.4)
	Brake lining contaminated with grease	Renew the brake shoe assemblies (3.16)
Trailer brakes when the towing unit slows down	Overrun damper in overrun assembly weak or ineffective	Inspect the overrun damper and renew if required (3.19 or 3.20)
	Brakes overadjusted	Adjust as detailed (3.5)
Trailer brakes snatch when the towing unit brakes	Brakes overadjusted	Adjust as detailed (3.5)
	Brake cable sticking	Inspect and free or renew cable (2.4)
	Brakes overadjusted	Carry out a complete check of the brake transmission system (3.5,3.8)
	Overrun damper weak or ineffective	Renew the overrun damper (3.19 or 3.20)
	Drawshaft sticking	Examine the drawshaft over its full stroke; lubricate if necessary (3.8)
Brake judder	Linings contaminated with grease	Renew the brake shoe assemblies (3.16)
	Separation of lining from shoe	Renew a brake shoe assembly (3.16)
	Distorted or cracked brake drum	Renew the brake drum (1.5)
	Patches of rust on the braking face of the drum	Clean the face with sandpaper; wipe over with methylated spirit
Trailer brakes lock whilst reversing	Brakes overadjusted	Adjust as detailed (3.5)
	Reverse lever not functioning	Examine and rectify defect (3.8)

FAULT	CAUSE	REMEDY
Trailer brakes inoperative	Brakes underadjusted	Adjust as detailed (2.4)
	Lining contaminated	Renew the brake shoe assembly (2.14)
	Seized brake cables	Free or renew cables
Hot brakes	Linings worn out	Renew the brake shoe assemblies (2.14)
	Brakes overadjusted	Adjust as detailed (2.4)
	Pull-off spring broken	Renew the spring (2.14)
	Seized brake cables	Free or renew the cables
	Bowden cable kinked or stretched	Renew the Bowden cable
	Rusty brake drum	Clean using sandpaper then meths
	Handbrake lever not fully released	Release handbrake
	Transfer unit not fully released	Adjust as detailed (2.17 or 2.18)
Handbrake will not hold trailer on a slope	Spring cylinder incorrectly adjusted	Adjust as detailed (2.4)
Handbrake effect too weak	Brake or linkage underadjusted	Adjust as detailed (2.4)
	Linings not run in	Clears after short running-in period
	Friction losses too high	Lubricate brake transmission and Bowden cable
Erratic driving control and jerky braking effect	Faulty adjustment	Adjust as detailed (2.4)
	Overrun damper faulty	Renew the overrun damper (2.17 or 2.18)
	Too much play in the braking system	Adjust as detailed (2.4)

FAULT	CAUSE	REMEDY
Braking effect too weak	Towbar slides right in	Adjust as detailed (3.19 or 3.20)
	Linings not run in	Clears after short period of use
	Linings damaged	Renew the brake shoe assemblies (3.16)
	Friction losses too high	Examine and lubricate the transfer unit and brake cable
Brakes overheating when the unit is travelling forward	Faulty adjustment	Adjust as detailed (3.5)
	Brake unit not completely released when the unit moves forward	Release the handbrake
		Inspect the transfer unit and the pivot lever of the overrun assembly for freedom of movement
	Dirty wheel brake	Clean the wheel brake unit
	Bowden cable kinked	Renew the Bowden cable (2.4)
	Pull-off springs weak or broken	Renew the pull-off springs (3.16)
	Rusty brake drum	Clean the brake drum
Coupling will not engage on the ball	Ball diameter greater than 50mm	Renew the coupling ball (3.13)
	Coupling components dirty or jammed	Clean and grease coupling or renew **Do not grease the AKS 2000 coupling**
Trailer cannot be uncoupled	Ball out of round	Position trailer and towing unit into straight line, then uncouple
	Coupling catch faulty	
Excessive play between coupling and ball leading to danger of unhooking	Coupling worn	Renew coupling
	Coupling ball worn	Renew the coupling ball (3.13)

SECTION 6

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