SXR - TRANSPORTER TRAILER

USER MANUAL

WM1-SXR100

INDEX

VIN NO: ----------

Date of purchase: ----------

IMPORTANT INFORMATION: Fill in immediately. Use when ordering replacement spare parts or additional optional extras

1 INTRODUCTION

With the purchase of your SXR— TRANSPORT TRAILER you have made an excellent choice.

This trailer should give first class service for a long time, if used correctly, and maintained as described in this manual.

The trailer is purpose built and designed to ensure maximum strength and minimum unladen weight. The trailer is manufactured and then hot dip galvanised to ensure a long rust free life, fitted with robust floors, a 50mm swivel hitch, high quality axles and beadlock wheel rims for increased safety.

This manual also has important H.S.E information and guidelines for towing off road.

If after reading this manual you have any queries, please get in touch we will be pleased to help.

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2 SAFETY FIRST

Please read this manual carefully, adhere to all instructions paying particular attention to the safety information. For further information or clarification of any of the points made, please contact Logic Manufacturing Ltd.

2.1 SUITABLE TOWING VEHICLE ON ROAD

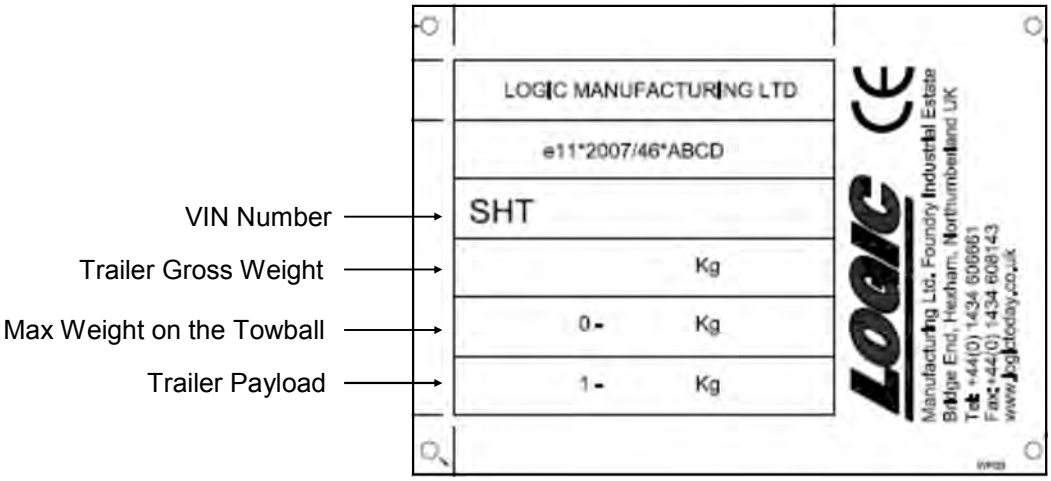
It is important that the vehicle you use to pull your trailer is adequate for the job

- Check that the engine is large enough to tow the trailer and load.
- Check that the brakes are powerful enough to stop the vehicle and trailer safely.
- Check that the Trailer Gross Weight does not exceed the Towing Capacity of the Towing vehicle.

The addition of a loaded trailer to a vehicle will inevitably have a very serious effect on the vehicle's performance. Starting, particularly on hills, can be much more laboured; stopping can take longer distances; cornering and negotiating sharp bends requires extra care.
Consider all these things very carefully when choosing and loading (and towing) your trailer.

CHECKS

The most important check is the vehicle manufacturer's recommended towing limit, which should be in the vehicle manufacturer's handbook and on the VIN plate on the chassis.
A good rule of thumb, for safety and stability, when towing a trailer, is the 85% figure recommended for trailers. This suggests that you should not tow a trailer that weighs more than 85% of the towing vehicle's kerb weight. (as long as 85% does not exceed the vehicle manufacturer's recommended towing limit. (The kerb weight is defined as the weight of the vehicle plus a full tank of petrol and 75kg (for the driver and equipment).)
Police Forces use the manufacturer's recommended towing limit as their guide. Under no circumstances should the vehicle's gross train weight be exceeded. An example of the trailers VIN plate is shown below.



⚠ Do not exceed the vehicles payload recommendations

2.2 TRAILER LOADING

Loads must be securely tied down or restrained.
There must be no load projections outside the trailer that might cause danger to other road users.
Wherever possible, loads should be evenly distributed across the trailer and positioned in such a way as to keep the nose weight within the recommended limits.
Refer to the trailer VIN plate or the trailer specification on page 25 for maximum weight on the towball.
Refer to the manufacturer's recommendation and/or the nose weight limit of your towing vehicle.
Never create a negative ball/ drawbar load, this can be equally as dangerous as over loading.
If uneven loads have to be carried, ensure that individual wheels/axles are not overloaded.
It may be necessary to reduce the overall load to achieve this.

NOTE: Good Towing practice should always take into account the inevitable effects on vehicle handling, braking and general stability of towing a trailer behind the vehicle.

- Dangerous loss of stability when loads are loose and move around. Danger of loads parting from the trailer.
- Load shooting forward when the outfit brakes. This is particularly acute if the load consists of planks, bars, etc, laid in line front to back.
- There is a very significant danger of light items being lifted out of a trailer by the slipstream. All items should be secure.

Loading practice should, therefore, take into account:

- Secure restraint
- Recommended nose weight.
- Balance
- Weight Distribution

2.3 ATTACHING TO THE TOWING VEHICLE

- Apply the trailer handbrake, remove any towball and electrical socket dust covers and security devices then wined the jockey wheel to the required height. Check the towball is lightly oiled. (Not greased) (If not being used with a head stabiliser.)
- Get a helper to stand with their hands showing you where the hitch is (place a broom against it if you are alone) and reverse slowly back. Your helper indicates if you are off line.
- Raise the front of the trailer by means of the jockey wheel assembly to the required height, roll trailer up to the rear of the towing vehicle.
- Do not attempt to lift the front of the trailer. Lower the trailer by means of the jockey wheel assembly onto the towball of the vehicle.
- Once the coupling head appears locked on, lower the jockey wheel a few turns to lift the back of the vehicle to prove the coupling head is on properly, then fully raise the wheel before unclamping it and, finally, securely locking it fully raised. Check that the wheel in the position you have locked it is not interfering with the operation of the coupling overrun mechanism.
- Attach safety breakaway cable(s) to the rear of vehicle. This cable will apply the hand brake if for any reason the trailer becomes detached whilst towing. (Clip the breakaway cable onto the special rings some towbars have or loop it around the bar, making sure it cannot foul the coupling head. Do not loop it round the towball neck unless you can find no alternative.) Check that the breakaway and lighting cables have enough slack for cornering but will not touch the ground.
- Plug in the lighting plug, and check all lights and indicators. It is your responsibility as the driver to ensure all lights work.

2.4 AL-KO COUPLING DETAIL

Correctly coupled

SAFETY INDICATOR *
If the green indicator is visible when coupling up, then you know that the coupling is correctly connected to your tow vehicle.

Blocked ball socket

DOUBLE SAFETY *
When coupled and during travel, the coupling is held on the ball with double security by the safety mechanism.

Clear open position

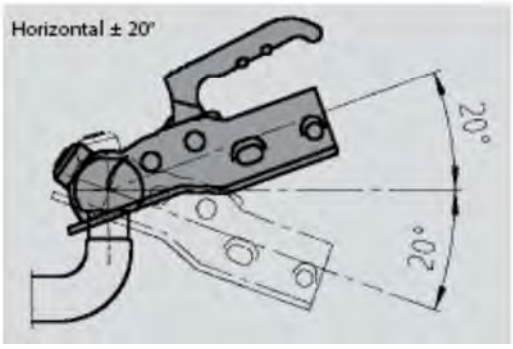
OPEN SETTING FOR THE HANDLE **
Should the coupling not be correctly positioned on the towball, the coupling handle will remain in an open position.

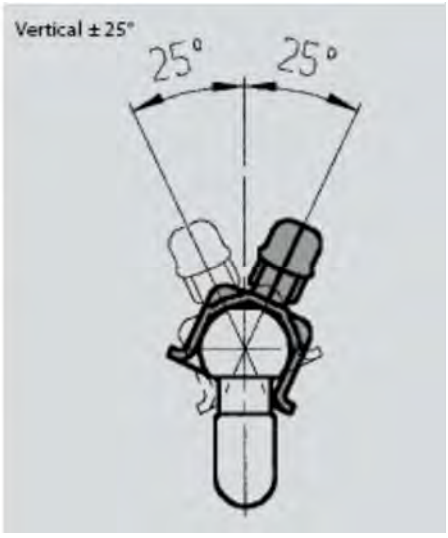
Wear in order

WEAR INDICATOR **
An additional indicator on the coupling handle shows you whether the wear limit of:
- your towball or
- the couping mechanism has been reached.

Permitted angle ranges

Note: components are overloaded when the degree of angular movements are exceeded; thus safe function cannot be guaranteed.





2.5 CHECKS BEFORE TOWING

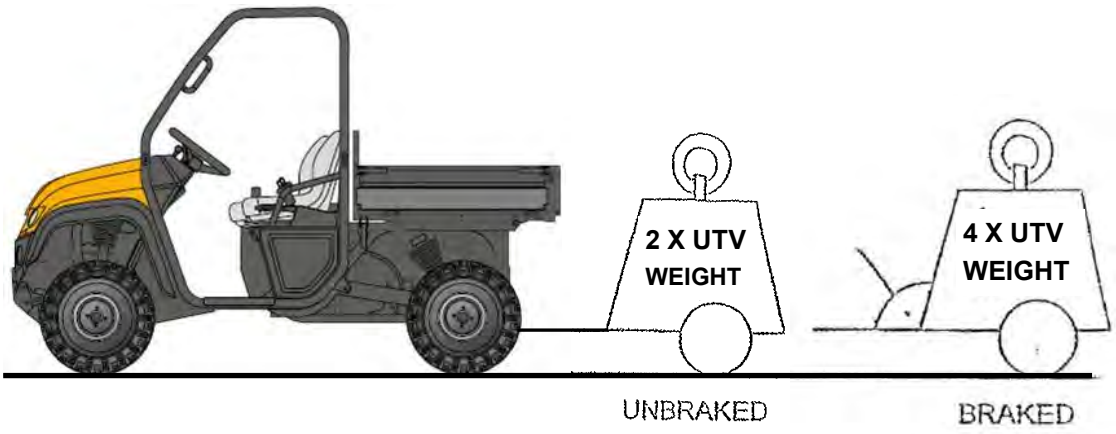
The trailer operator or the driver of the towing vehicle, if different, has the responsibility for the safe operation of the trailer and needs to carry out the following checks:

- If the trailer is laden is the load correctly distributed i.e. Not too much or too little nose weight?
- Is the load within the trailer's official payload? - i.e. Not overloaded.
- Is the actual gross weight being towed within the towing vehicle manufacturer's recommended maximum towing limit (whether braked or unbraked.)?
- Is the load correctly secured?
- Are all the lights undamaged and working correctly?
- Are the cable and plug undamaged?
- Is the breakaway cable or secondary coupling undamaged and correctly connected, to a suitable point on the tow bar or towing vehicle?
- Are the tyre pressures correct and all tyres free from cuts, bulges and with adequate tread, (including the spare)? Tyres must have a continuous tread depth of at least 1.60 mm on cars, light vans and trailers, across the centre three-quarters of the width (1mm for other vehicles)
- Are you satisfied that the wheel nuts/bolts are tightened to the correct torque?
- If required are the mudguards and flaps in satisfactory condition and secure?
- Is the trailer correctly coupled to the towball or pin?

2.6 TRAILER USE WITH AN OFFROAD VEHICLE

The trailer can be towed by any large UTV for use off road.
To comply with the weight restrictions detailed on the HSE information sheet 33. The following guidance must be fully understood and used.

- A UTV can tow up to twice its own weight on an unbraked trailer on level ground. Or four time its weight if the trailer is braked.



⚠ Reduce the weight by 25% if working on uneven or hilly ground.

⚠ Ensure the weight does not exceed the towing vehicles recommendations. HSE recommend a tow ball weight around 10% of the gross weight of the trailed equipment. This should never be exceeded.

- The trailer should never be driven at speed off road. No more than 20mph is recommended, This should be reduced accordingly if the weather is or has been wet or poor.

ROUTE PLANNING & ACCESS

- Plan the route and access in advance of the operation. We recommend you identify hazards and obstacles including: gates, tracks, public road crossings, field crossings, hill descents/ ascents, sharp corners, unsuitable ground, wet boggy areas, hidden obstacles (tree stumps, rocks etc). (for more info see HSE Ag info sheet 33 and AFAG701 sheet 39).

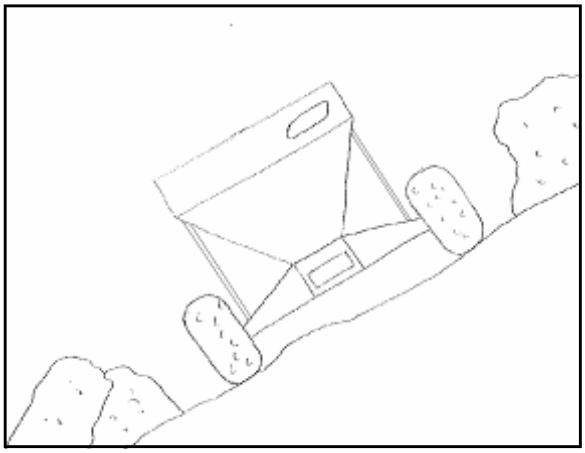
- It is the duty of the operators employer, in conjunction with the operators, to identify and plan the route as part of the health and safety routine planning. A full risk assessment should be carried out. Logic Manufacturing Ltd accept no responsibility for poor route planning.

⚠ If the weather is or has been wet or poor the route should be reassessed before travelling. Poor weather can affect the terrain being travelled and the handling of the towing vehicle, especially UTVs

- Using an UTV with a trailed attachment introduces additional risks to operating an UTV alone, these should be thoroughly assessed and managed.

- When navigating slopes, never cross a slope when towing the trailer but ride up (ascend) and ride down (descend) vertically. A track may need to be cut into the bank or slope if it is not possible to navigate the slope safely. When riding down (descending) always use low gear and delicate use of controls. Consult your vehicle manufacturer's manual advice on towing loads up and down slopes forward speed of the vehicle MUST always be dictated by local ground conditions, which vary from season to season.

DO NOT



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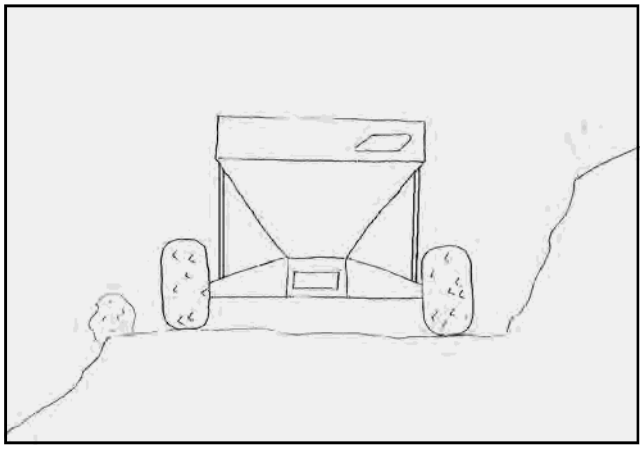


MAINTENANCE — A WELL MAINTAINED MACHINE IS A SAFER MACHINE

- Maintenance of the towing vehicle and towed equipment should be part of the daily routine.
- The UTV should have its brakes, throttle and tyre pressures checked daily. Tyre pressures are low on an UTV so a 1psi difference can cause vehicle control problems.
- Check that the brakes give a safe straight stop and the throttle operates smoothly in all steering positions.
- Brakes can have a relatively short life in the environment the machine will be used, so frequent cleaning, regular adjustment and proper maintenance will be required.
- Ensure that the wheel bearings are regularly lubricated with grease. Every 3 months re-pack with new grease and adjust to take up any wear.

TRAINING

- There is a legal requirement for employers to provide adequate training for all operators of UTV equipment and attachments. Contact your local HSE office for approved training courses such as LANTRA for UTVs. The same requirements apply to the self-employed.

CHECKS

- The same checks, loading and attachment procedures from the on road vehicle should be carried out to ensure safe operation of the trailer off road.

Safe use of all-terrain vehicles (ATVs) in agriculture and forestry

HSE information sheet

Agriculture Information Sheet No 33 (Revision 1)

Introduction

This information sheet gives advice on the safe use of ATVs. It covers the two main types used in off-road working in agriculture, forestry and the land-based industries, namely:

- **Sit-astride ATVs**: Any motorised vehicle designed to travel on four low-pressure tyres on unpaved surfaces, with a seat designed to be straddled by the operator and with handlebars for steering control (see Figure 1). These vehicles are intended to be used by a single operator without a passenger. They may also be referred to as quad bikes.
- **Side-by-side ATVs**: Small utility vehicles in which the driver and passenger sit alongside each other in conventional (ie sit-in) seats (see Figure 2). Most side-by-side vehicles are capable of carrying two occupants in this way; however, some vehicles are equipped with a second row of seating (and can therefore carry four occupants), while others have bench-style seats allowing up to three people to be seated in a row. The majority of side-by-side vehicles have four wheels, although six-wheel and full and partially tracked versions are also available. There is usually a cargo bed behind the seating area. Side-by-side ATVs are sometimes referred to as utility vehicles (UTVs) or rough terrain utility vehicles (RTVs).

ATVs are usually fitted with a tow hitch and are capable of towing a load such as a trailer, a trailed appliance or other equipment.

Hazards

Both types of ATV are designed to cope with a wide variety of terrain types, including steep slopes, but if used outside their safe operating parameters they can very rapidly become unstable. The main causes of serious or fatal injury associated with ATVs are from:

- being thrown off during vehicle overturns or after loss of control;
- collisions with structures, trees, other vehicles etc;
- being trapped/asphyxiated under an overturned machine;
- pedestrians being struck or run over by ATVs.

Contributory factors/underlying causes of accidents and injury with ATVs can include:

- lack of formal operator training and/or experience;
- incorrect/lack of appropriate head protection;
- excessive speed;
- age of the operator;
- carrying a passenger on a sit-astride ATV;
- unbalanced loads or overloading;
- tipping on a bank, ditch, rut or bump;
- loss of control on a steep slope combined with other factors, eg ground or load conditions;
- towing excessive loads with unbraked equipment;
- poor maintenance, eg faulty brakes, incorrect tyre pressures etc.

Control measures for sit-astride ATVs

Training

It is a legal requirement for employers to provide adequate training for employees who use work equipment such as ATVs, and to make sure that only employees who have received appropriate training in their safe use, including the use of any towed equipment or attachments, are permitted to ride them. The same requirements apply to the self-employed.

You can get details of suitable training courses from franchised ATV dealers, manufacturers' websites, Lantra, the Forestry Commission, EASI (European ATV Safety Institute), the British Off Road Driving Association (BORDA) and through colleges and training providers.

When purchasing a new or used machine from a franchised dealer an industry-led scheme offers customers free training – see 'Useful contacts'.

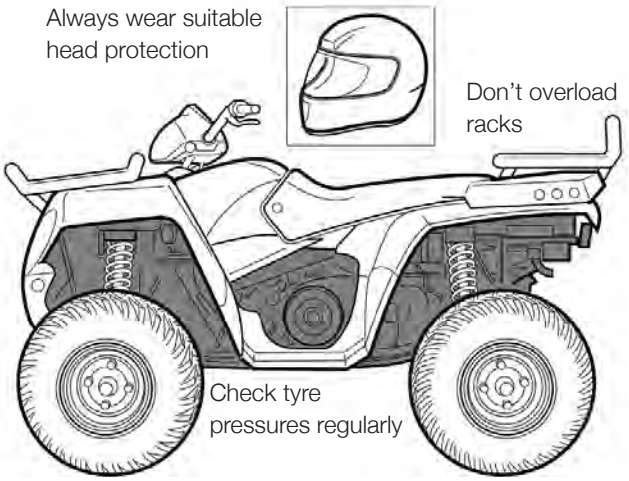


Figure 1 Example of a sit-astride ATV

Personal protective equipment – the importance of head protection

Sit-astride ATVs are not fitted with either a cab or roll bar, so your only protection is what you wear. Head protection is vital. Many ATV fatalities in the UK have been caused by head injuries. Helmets would certainly have prevented most of, if not all, these deaths. You should always wear a helmet when riding an ATV.

Helmet types suitable for ATV operations, depending on the circumstances, are motorcycle helmets, equestrian helmets, specialist ATV helmets, cycle helmets and mountaineering helmets. All helmets should be manufactured and tested in accordance with the current relevant EN/BS standard, have a chinstrap and be capable of being used with suitable eye protection. The type of helmet chosen should be based on an assessment of the circumstances in which the ATV will be used, eg the types of surface travelled over and anticipated speeds. The harder the surface and higher the speed the greater the degree of protection needed. NB: Forestry helmets and industrial hard hats are not acceptable for any ATV operations.

Wear clothing that is strong and covers your arms and legs. Gloves are useful for protection and handlebar muffs can help to keep hands warm in cold weather for good control of the ATV. Wear sturdy, ankle-covering footwear, eg boots or wellingtons that are strong, supportive and have good wet grip.

Protect your eyes from insects and branches with either a visor or goggles.

Passengers

The long seat on a conventional sit-astride ATV is to allow operators to shift their body weight backwards and forwards for different slope conditions, a technique known as 'active' riding. It is **not** for carrying passengers. Manufacturers often display a sign on machines prohibiting passengers and this message is also repeated in operator manuals.

Do not carry a passenger in a trailer behind an ATV as any movement can make the machine unstable, particularly with independent rear suspension and trailers with axles wider than the ATV.

Some machines have received European Community Whole Vehicle Type Approval, allowing them to be ridden on the public highway. Some of these machines are designed to carry passengers. Such machines may not be suitable for carrying a passenger when used in off-road situations, eg on sloping ground, as the operator may not be able to use active riding techniques to maintain machine stability. Such machines may not have a locking differential and may not provide an acceptable level of traction to ensure safety in certain off-road conditions.

Before using an ATV you should assess the suitability of the machine for the intended tasks and working environment.

Route planning and stability

Accidents can occur where ATVs are driven on new routes over steep ground for the first time, or are carrying or dragging destabilising loads. When travelling over rough terrain, get to know your own ground and stick to planned routes where possible. Walk new routes if necessary to check for hidden obstructions, hollows or other hazards. Allow for changes in ground conditions and for the destabilising effect of loads or attachments.

Safety checks and maintenance

Off-road use is especially harsh on equipment so it is essential to carry out safety checks and maintenance in accordance with the manufacturer's recommendations. In particular, pre-ride safety checks should always include:

- tyre pressures. These are low, eg typically around 2–7 psi, so even a 1 psi (0.07 kg/cm^2) difference in pressure can cause vehicle control problems. Use a gauge that is designed for measuring and displaying low pressures – usually supplied with the ATV;
- brakes and throttle. Check that the brakes give a safe straight stop and that the throttle operates smoothly in all steering positions. Brakes can have a relatively short life in farming or forestry environments and need frequent cleaning, regular adjustment and proper maintenance.

Safe riding methods

On sit-astride ATVs rider positioning is vital to operate them correctly. The position of the rider on the machine needs to be changed depending on the terrain and motion. Riders must have the ability to move and balance the momentum of the ATV with their own body weight. Plan routes (and review the plan if a route is used regularly) to assess risks.

The following advice is no substitute for formal training.

- Most ATVs have no differential and so do not handle in the same way as other machines. This means that when you turn, the ATV tries to keep going in a straight line.
- When cornering on an ATV with no differential, or with the differential lock engaged, where your body weight needs to be positioned depends on how sharp the corner is and on how fast you are going. Correct body position allows you to transfer weight to the outside of the turn through the footrests while maintaining balance with the torso. This lets the inside wheels skid slightly allowing the ATV to make the turn properly.
- You must understand how the transmission system of your machine will affect engine braking for both riding on slopes and recovery of stalled ATVs.
- When riding across a slope, keep your weight on the uphill side of the ATV.
- When going downhill, slide your weight backwards, select a low gear and use engine braking, reducing the need to use the brakes.
- When going uphill, it is important to review the route before starting the climb. Move your weight forwards and maintain a steady speed. It is important to shift your body weight forwards as much as possible. If necessary, stand up and lean forward, keeping both feet on the footrests at all times and always maintain momentum.
- Avoid sudden increases in speed. This is a common cause of rearward overturning accidents, even from a standing start on flat ground where there is good grip.
- Never put your foot onto the ground to stabilise an ATV when riding, but shift your weight across the ATV away from the imbalance.
- Always read the owner's manual.

Trailed equipment and loads

Ensure all riders know the manufacturer's recommended towing capacity and drawbar loading limit. Always operate within these requirements. Remember that your ability to control the ATV by your body movements will be considerably reduced when carrying a load or towing a trailer.

- When selecting trailed equipment look for:
  – over-run brakes;
  – a swivel hitch drawbar;
  – bead lock rims on wheels;
  – a low centre of gravity and a wide wheel track;
  – a long drawbar;
  – attachment points for securing a load.
- Check the weight ratio between your ATV and its trailed load. This needs to be assessed for each operation. As a general guide, on level ground braked trailed equipment can be a maximum of four times the unladen weight of the ATV. For unbraked trailed equipment the maximum should be twice the unladen weight. These loads should be reduced when working on slopes, uneven ground or poor surface conditions. Follow the manufacturer's advice for your particular machine.
- Weight transfer is also important. Stability and resistance to jackknifing is improved if some load is transferred onto the ATV's drawbar. Approximately 10% of the gross weight of the loaded trailer is recommended, but this should not exceed the manufacturer's drawbar loading limit. Remember that weight transfer can change dramatically when you start going up or down hill.
- When selecting mounted equipment, make sure it is within the manufacturer's approved weight limit, with a low centre of gravity and controls which are easy to operate but do not create a hazard. Where equipment is added to one end of the machine, add ballast at the other end to maintain stability.
- Loads carried on racks must be well secured, eg with ratchet straps, and be evenly balanced between the front and rear, except where they are deliberately altered to aid stability when going up or down a slope. Maximum weights that can be carried should be specified in the operator's manual and may be marked on the machine. These should not be exceeded.
- Only tow a load from the hitch point. Loads towed from other points, such as the rear rack, have caused sudden rear overturning even on slight slopes or with slight acceleration. Do not use ropes or chains to drag a load; they can become caught on a wheel. This may lead to entanglement with the brake cable, causing unexpected braking.

Using sprayers

- Sprayers should be fitted with an induction hopper unless the filling point is less than 1.5 m from the ground and within 0.3 m from the edge of the sprayer. A separate clean water tank for washing must be provided containing at least 15 litres of clean water and a tap that allows the water to run without being continuously pressed.
- When buying a sprayer look for a low centre of gravity and internal baffles to reduce liquid surge and improve stability when turning on slopes.

- ATVs should only be used with rear-mounted spray booms or other equipment that reduces the risk of pesticide exposure to the operator.

- Do not hold a spraying lance while riding your ATV as you need two hands for safe control.

Accessories

Beware of the potential dangers of accessories which are not approved by manufacturers, eg home-made gun racks and boxes. Either use accessories supplied/approved by manufacturers or seek their advice as to the suitability of those sourced elsewhere.

Any weight added above the centre of gravity will decrease the ATV's stability, eg feed hoppers/dispensers fixed above the rear rack.

Children

- Never carry a child as a passenger. It is illegal and will reduce your ability to control the ATV.
- Children under 13 years old are prohibited from using an ATV for work. Over-13s should only ride ATVs of an appropriate size and power after formal training on a low-power ATV.
- Children under 16 years old are prohibited from using most adult-sized machines. Check and adhere to the manufacturer's minimum age recommendations for your ATV; this information may be displayed on the machine and in operator manuals. Similar restrictions apply to side-by-side machines.
- The ratio of a child's weight to that of the ATV is significant, as weight transfer is the key to safe handling.
- In the event of an overturn, a child may be crushed by the weight of an adult-sized ATV. They may be unable to lift it off unaided.

Roll-over protective structures (ROPS)

- HSE's current advice is that roll-over protective structures (ROPS or crush protection devices) are not recommended for sit-astride ATVs. Research has shown that they may lead to an increased risk of injury in the event of an overturn by either preventing the operator from separating from the machine or striking the operator as the machine overturns.
- Lap straps/seat restraints should not be fitted. They prevent active riding and would be potentially lethal without a full cab or roll cage.
- Weather cabs on sit-astride ATVs restrict a rider's ability to jump clear in an overturn. The rider is likely to be crushed within the cab unless it is strong enough to withstand the forces involved. Carefully assess the risks for your particular conditions of use before fitting any such structure and consult the manufacturer for information.

Side-by-side ATVs

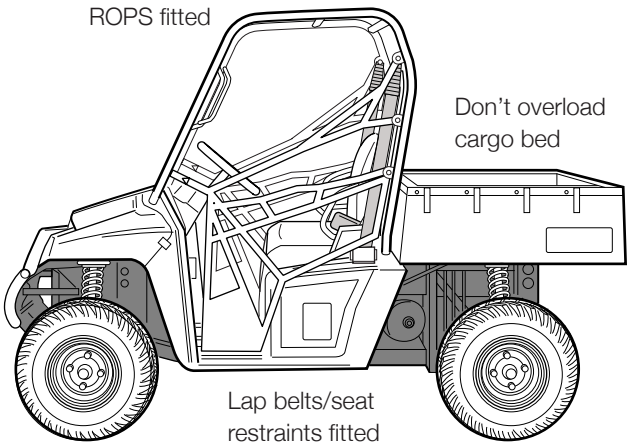


Figure 2 Example of a side-by-side ATV

Utility side-by-side ATVs are used for many of the same purposes as tractors and designed for similar work activities, ie off-road use on difficult terrain. They have conventional sit-in seats, and the main controls comprise a steering wheel and pedals. The driver does not need to use weight transfer to steer or to control stability. Nevertheless, the correct distribution of weight on-board the vehicle is important, particularly when carrying a load or on uneven surfaces. Loads carried on the cargo bed should not exceed the recommended weight and should be secured against movement.

Training

The legal requirements for training are the same as for the sit-astride ATVs.

ROPS and seat belts

The requirements for these machines are quite different to those of sit-astride ATVs:

- To reduce the risk of injury in the event of a roll-over or other incident, side-by-side vehicles require lap belts/seat restraints as well as ROPS that essentially form a protective structure around the seating area. The compartment is usually open, although some vehicles are fitted with a windscreen and/or side doors. The driver and all passengers should be protected by ROPS and wear lap belts.
- Where a machine is amphibious and used on deep water as opposed to marshland, then the seat restraints (and possibly ROPS) could increase the

overall risk rather than reduce it. In this case, do not use seat restraints while on the water. Assess the risk from the roll frame according to its design and the likelihood of trapping the occupants if the machine should sink.

Parking

If you have to park on a slope, always park across it unless it is too steep. Accidents have occurred when machines have run down slopes because of poor brake maintenance or application, particularly while they are being loaded and movement or the increase in weight has set the machine in motion.

Useful contacts

EASI®, the European All-Terrain Vehicle Safety Institute, is a not-for-profit organisation which provides safety training courses for ATV riders.

EASI's UK operation is sponsored by a number of ATV manufacturers and delivers a programme of specialist ATV training courses which are designed to improve rider skills, safety levels and awareness of the capabilities of ATV machines.

Buyers who purchase a new or used ATV from one of these manufacturers via an authorised UK dealer are eligible for **free** or highly subsidised training, subject to qualifying terms, conditions and availability. See www.quadsafety.org/ for details.

Training is also available from other organisations, such as Lantra (lantra-awards.co.uk) and the British Off Road Driving Association (BORDA) (www.borda.org.uk).

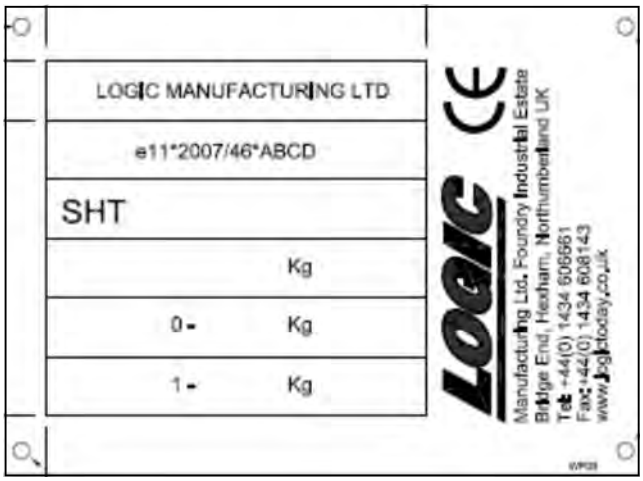
Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit www.hse.gov.uk/. You can view HSE guidance online and order priced publications from the website. HSE priced publications are also available from bookshops.

This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

This leaflet is available at: www.hse.gov.uk/pubns/ais33.htm.

3 INSTRUCTIONS / WARNING DECALS



The above decals should be located on your trailer. If any of the above decals are not located on your spreader or are damaged in any way contact your local Logic dealer for some replacements decals before use.

4 LIFTING POINTS

The SXR trailer should be lifted from the 4 tie down points as shown in the image below.

- Use lifting slings, never lifting chains.
- To ensure safe lifting always lift the trailer using lifting slings that comply with BS EN1492-1.
- Never lift the SXR trailer when it is loaded.
- Always check lifting load limits before lifting.
- Lifting equipment manufacturer's guidelines must be followed at all times.
- Ensure pedestrians are clear from danger.

NB: Refer to the VIN plate or the trailer specification on page 25 for unladen lifting weight.

5 MAINTENANCE / SERVICE

Never carry out maintenance work when the trailer is loaded.

Maintenance Schedule

Maintenance Operation:	*Daily or Before Each Journey*	*After First 600 Miles Then Every 3000 Miles*
Check tyre pressures	●	●
Visual check to ensure nothings loose	●	●
Check lights are working	●	●
Check condition of tyres	●	●
Check wheel nuts	●	●
Check condition of trailer floor		●
Hand Brake, Overrun Brakes	*See the AL-KO Care and Maintenance Instructions*	

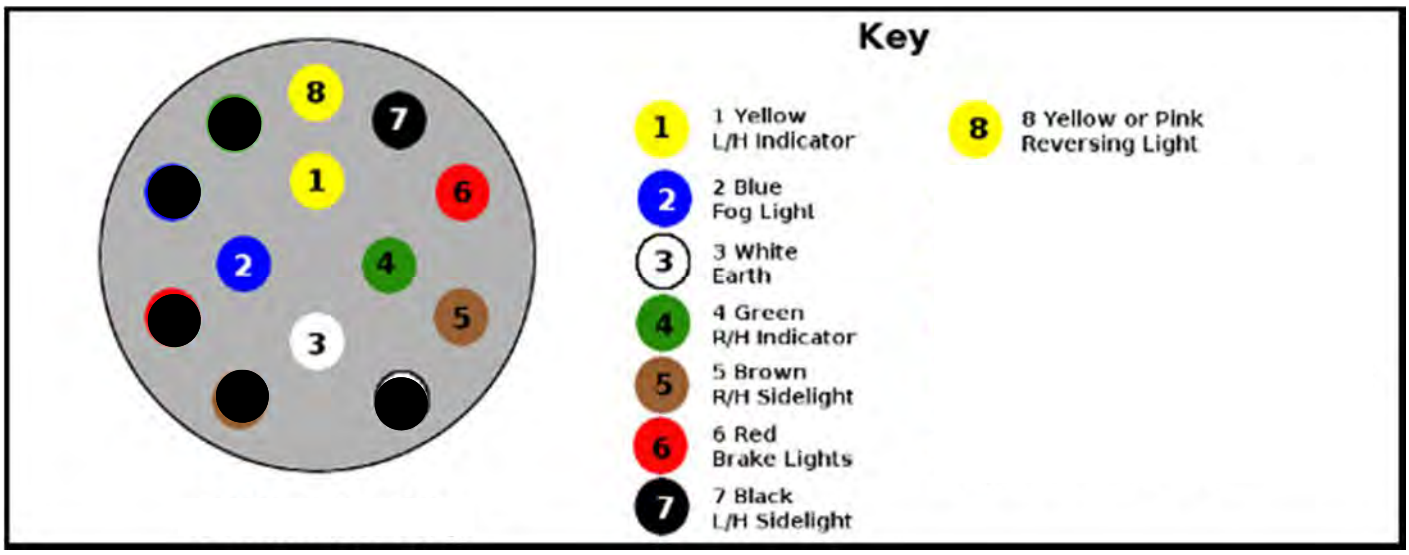
AXLE AND HITCH MAINTENANCE

- Please follow the instruction outlined by AL-KO on pages 17 to 24 for the care and maintenance of the axle and hitch.

Do not exceed the recommended tyre pressures.

- Tyre pressure for **195/70-R14** max **42Psi**

WIRING DIAGRAM 13 Pin Euro Plug



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:

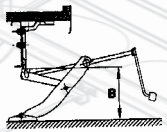
The legal requirements for tread depth on motor vehicles, also applies to caravan and trailers.

Jacks:

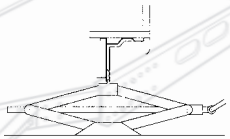
The **Corner Steadies Should never be used to jack up the caravan.** When jacking becomes necessary use the **AL-KO Side Lift Jack or 2-Tonne Jack system**. **NOTE: It is essential that the car & caravan are hitched together before commencing jacking**. All AL-KO chassis from 1992 onwards have 2 holes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



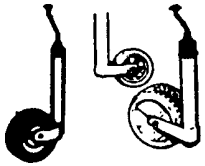
2-Tonne Jack



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:

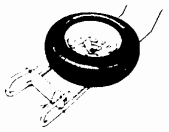
Lubricate screw thread and wheel spindle periodically.



Spare Wheel Carriers:

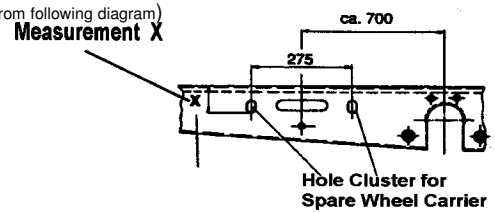
Each caravan has a set of punched holes in the chassis member to facilitate the fitting of a spare wheel carrier. The assembly is of a strong, lightweight construction and zinc plated for all-weather protection.

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)



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Part No. 1386853 Iss. 1 06/03

CARE & MAINTENANCE INSTRUCTIONS FOR YOUR AL-KO CHASSIS AND COMPONENTS

AL-KO Vehicle Technology

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:

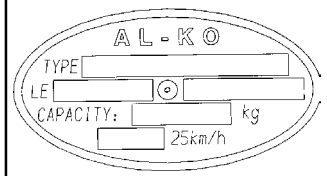

Fig.1

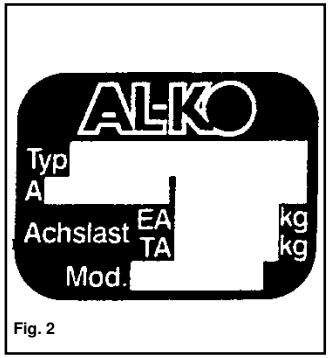

Fig. 2

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.

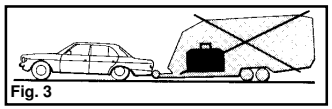
Fig. 3

Load Too Far Forward Fig 3.
Steering and braking ability reduced. Increased loading on the rear axle and chassis of the tow vehicle.

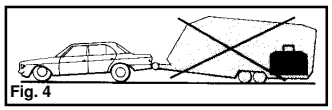
Fig. 4

Load Too Far Back Fig. 4.
High skid risk together with poor braking effect.

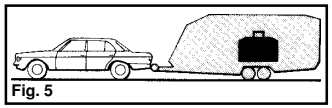
Fig. 5

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 mean that the PCD, wheelbolts and inset must all be compatible with both the hub/brake drum and the wheel rim. Particular attention must be paid to the recommended torque figures for the wheelbolts (see pg 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).

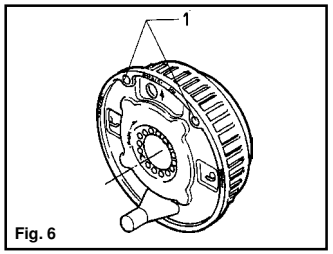

Fig. 6

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 shaf.t 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 invalid 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
Poor Braking	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.
Difficulty in Reversing	Braking system set too tightly. Auto-Reverse lever too stiff.	Reset Brakes as page (4). Lubricate and free off Reverse Lever.
Brakes Overheating	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.
Handbrake Force Low	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.
Uncomfortable ride or Uneven Braking	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
Coupling does not engage onto ball	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.
Difficulty in Uncoupling	Ball damaged or deformed. Coupling damaged or deformed. Coupling head under pressure from damper.	Fit new ball. Replace if necessary. Pull foward a few inches to to relieve pressure
Too much play in the coupling	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 ± 10 Nm (214 ± 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 fittting 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.

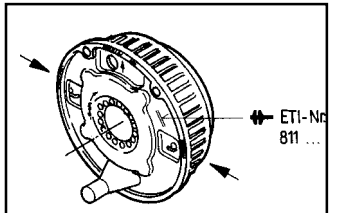

Fig. 7

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.

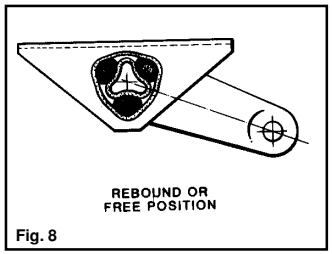

Fig. 8

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.

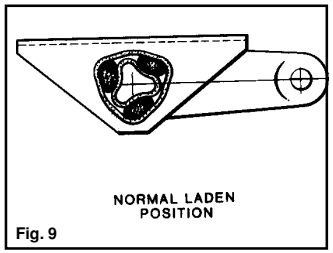

Fig. 9

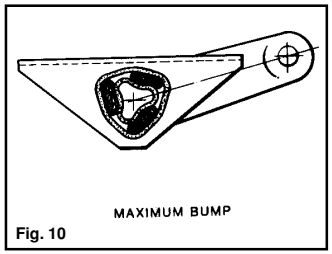

Fig. 10

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 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.

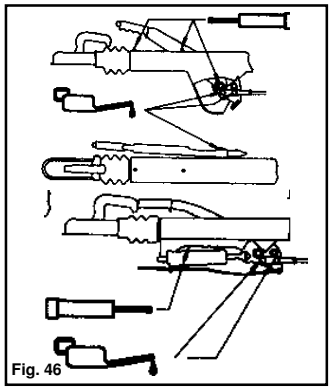
Fig. 46

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 fittting 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.

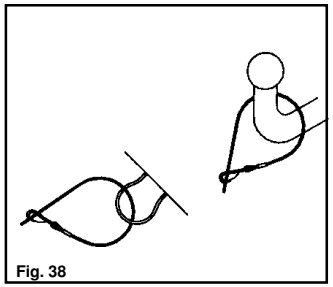
Fig. 38

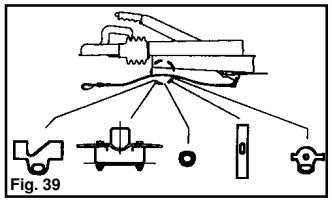
Fig. 39

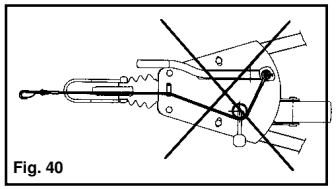
Fig. 40

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 cornerning and will not become taut or snag during use, as this could result in the handbrake operating whislt towing.
Please refer to 'Braked Trailers Use of Breakaway Cables' Information sheet, supplied with your caravan/trailer.

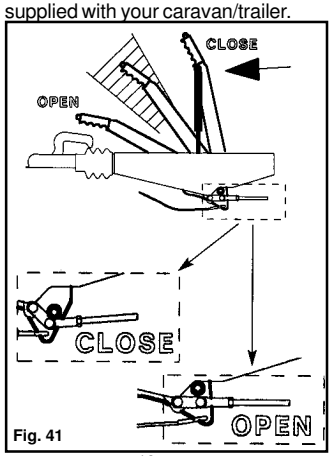

Fig. 41

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.

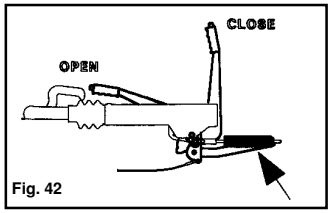

Fig. 42

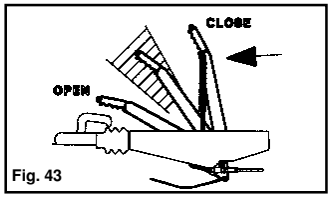

Fig. 43

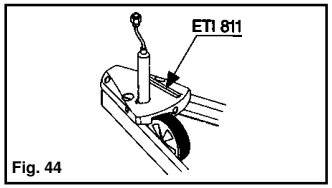

Fig. 44

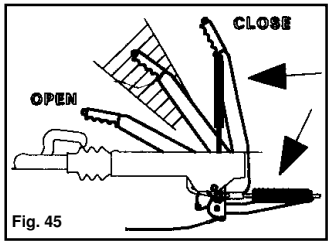

Fig. 45

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

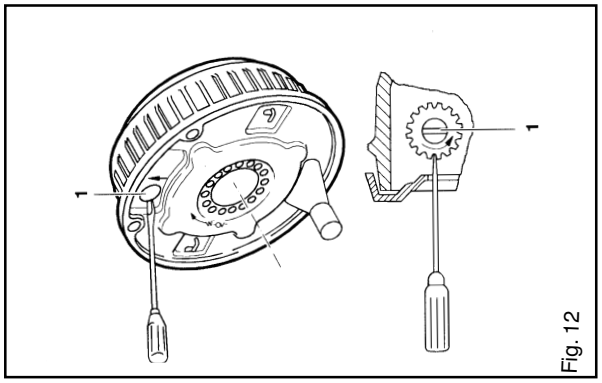

Fig. 12

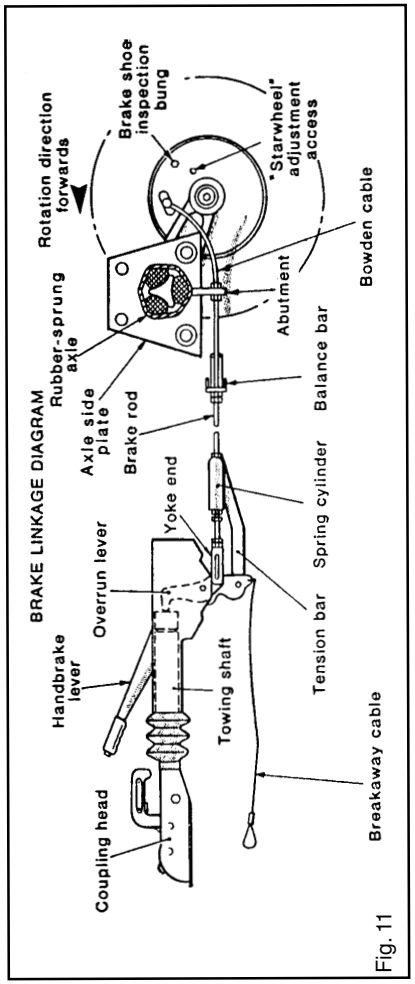

Fig. 11

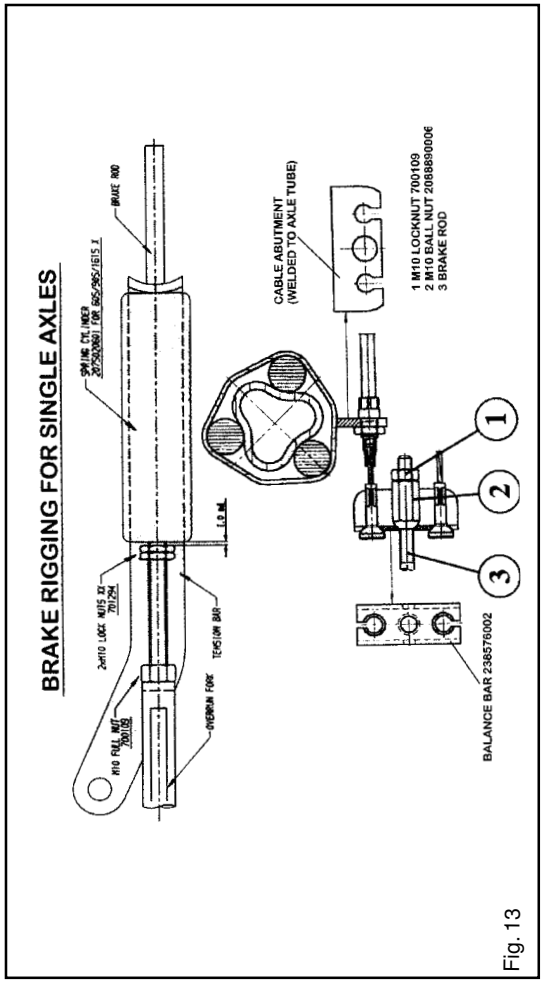

Fig. 13

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 ±25° vertically and ±20° horizontally - see Fig 14.

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

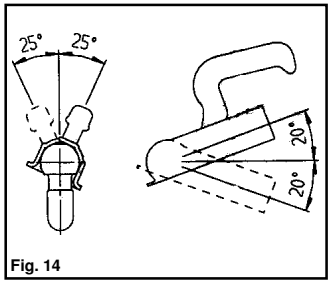

Fig. 14

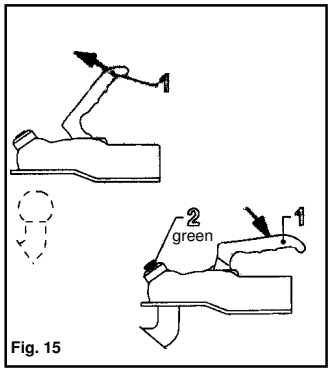

Fig. 15

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 presssed 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.

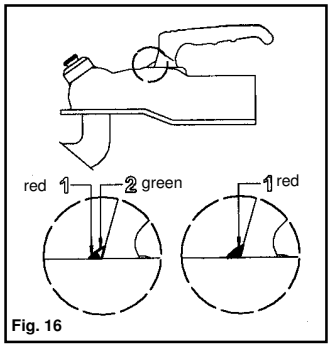

Fig. 16

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

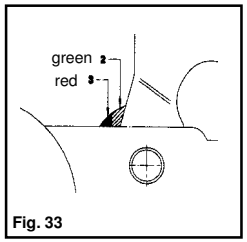

Fig. 33

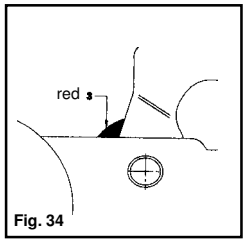

Fig. 34

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.

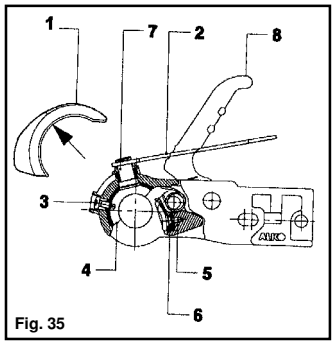

Fig. 35


Fig. 35a

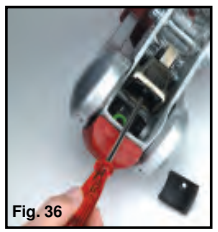
Fig. 36

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.

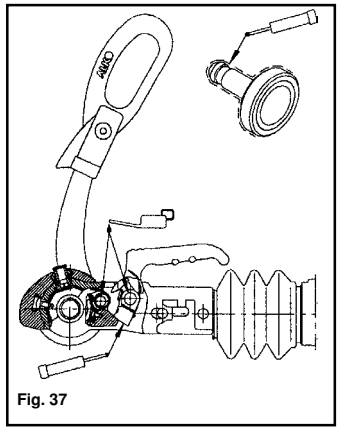
Fig. 37

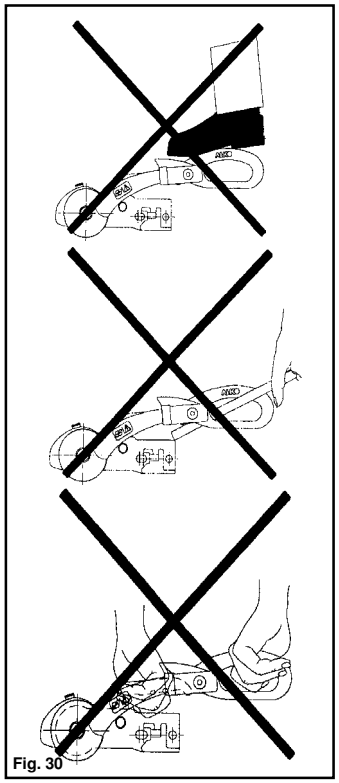
Fig. 30

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.

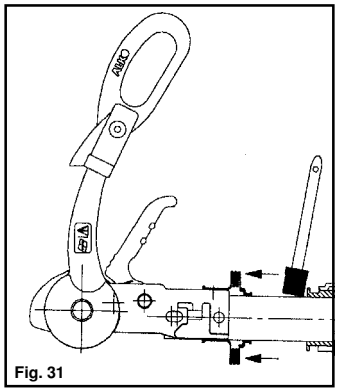
Fig. 31

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)

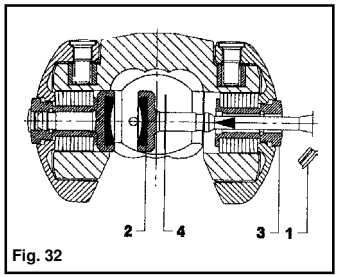

Fig. 32

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).

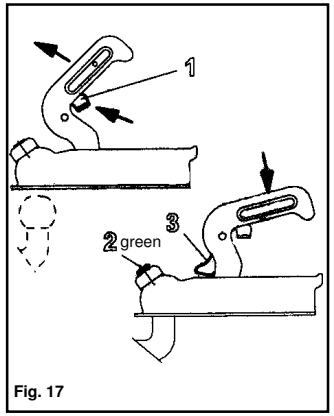

Fig. 17

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.

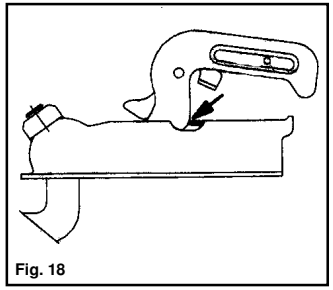
Fig. 18

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.

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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.

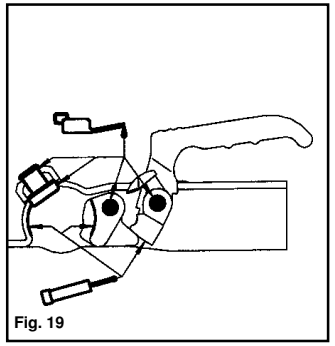


Fig. 19

For Toubleshooting 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):

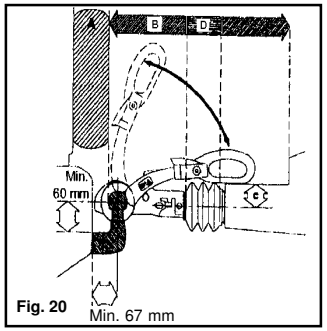


Fig. 20

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).

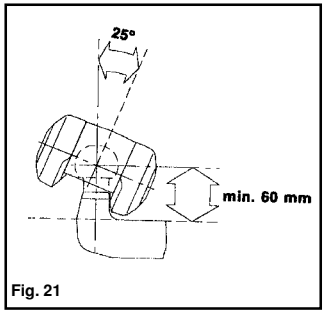


Fig. 21

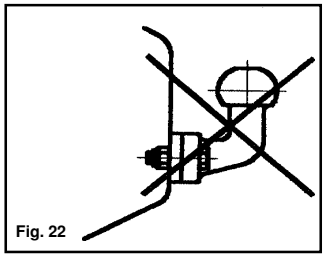


Fig. 22

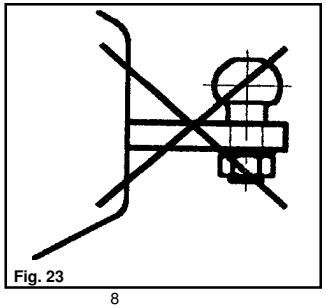


Fig. 23

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 ie. 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/ Item1).
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.

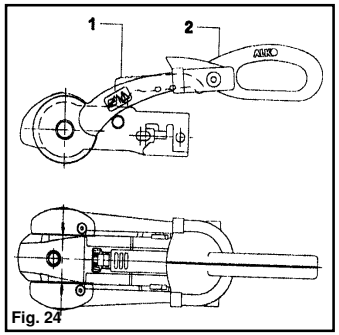


Fig. 24

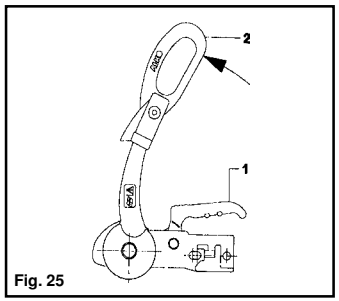


Fig. 25

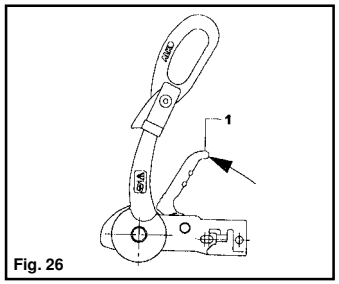


Fig. 26

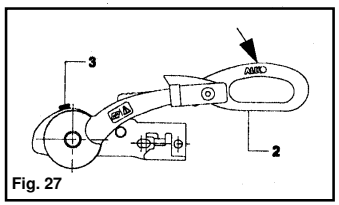


Fig. 27

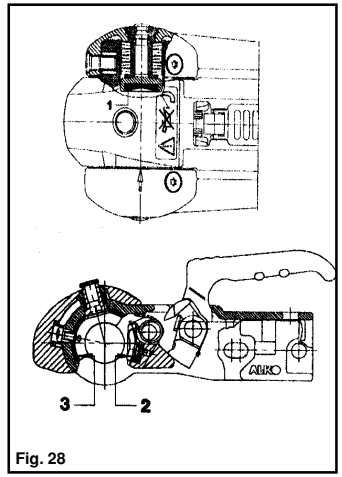


Fig. 28

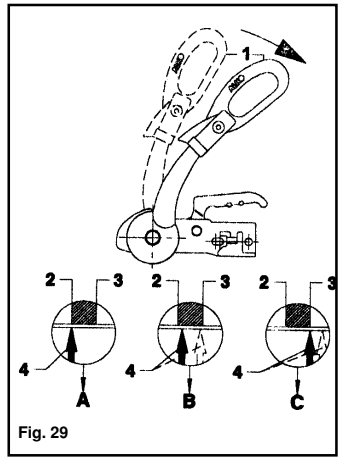


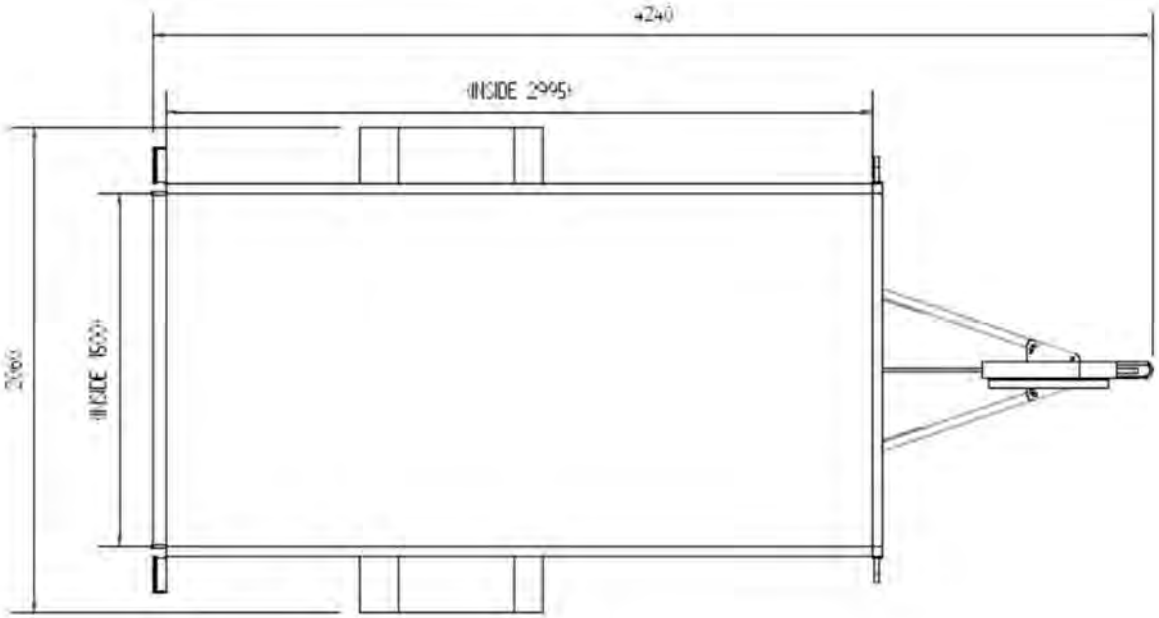
Fig. 29

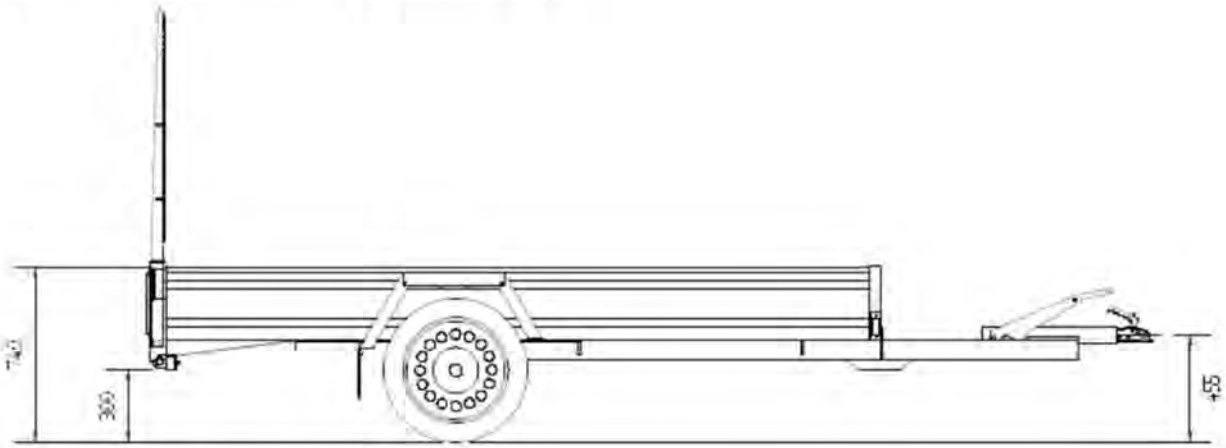
Please do not use the stabiliser lever as an manoeuvring handle. Please use the handles on the Caravan or fit the AL-KO manoeuvring handle to your jockey wheel (available separately).

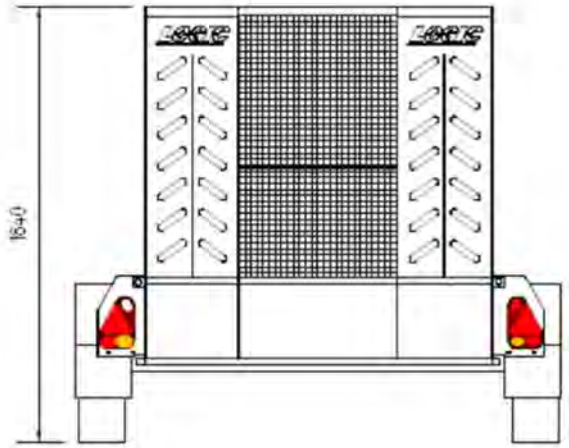
1) During opening or closing, the AKS must only be operated by one person.
2) Press stabiliser lever down by hand force only DO NOT use your foot or an extension bar, this will damage the components (Fig. 30).
3) When opening or closing the stabiliser lever, please ensure your hand does not touch the coupling handle - you may accidentally trap your fingers! (Fig. 30).

	SXR726	SXR726BT
Max length	4240mm	
Max width	2060mm	
Bed length (inside)	2995mm	
Bed width (inside)	1500mm	
Side height from ground	740mm	
Bed height form ground	450mm	
Tailgate height from ground (closed)	1700mm	1840mm
Hitch height (trailer level)	455mm	
Axle ground clearance	300mm	
Payload capacity	955kg	949kg
Unladen weight	345kg	351kg
Gross weight	1300kg	
Tyre size	195/70-R14	
Hitch	50mm ball swivel coupling	

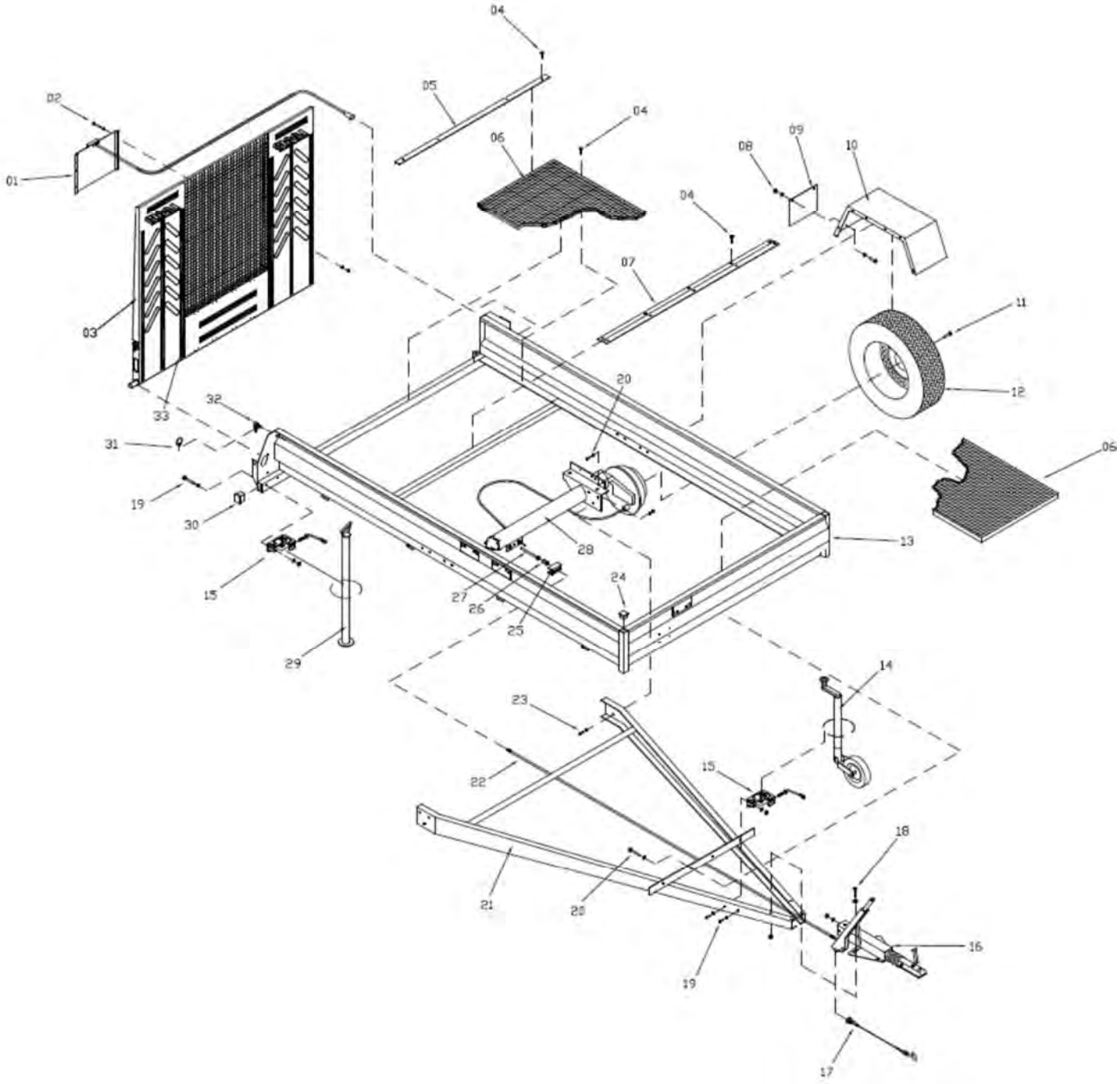
* BT Beaver tailed by 70mm



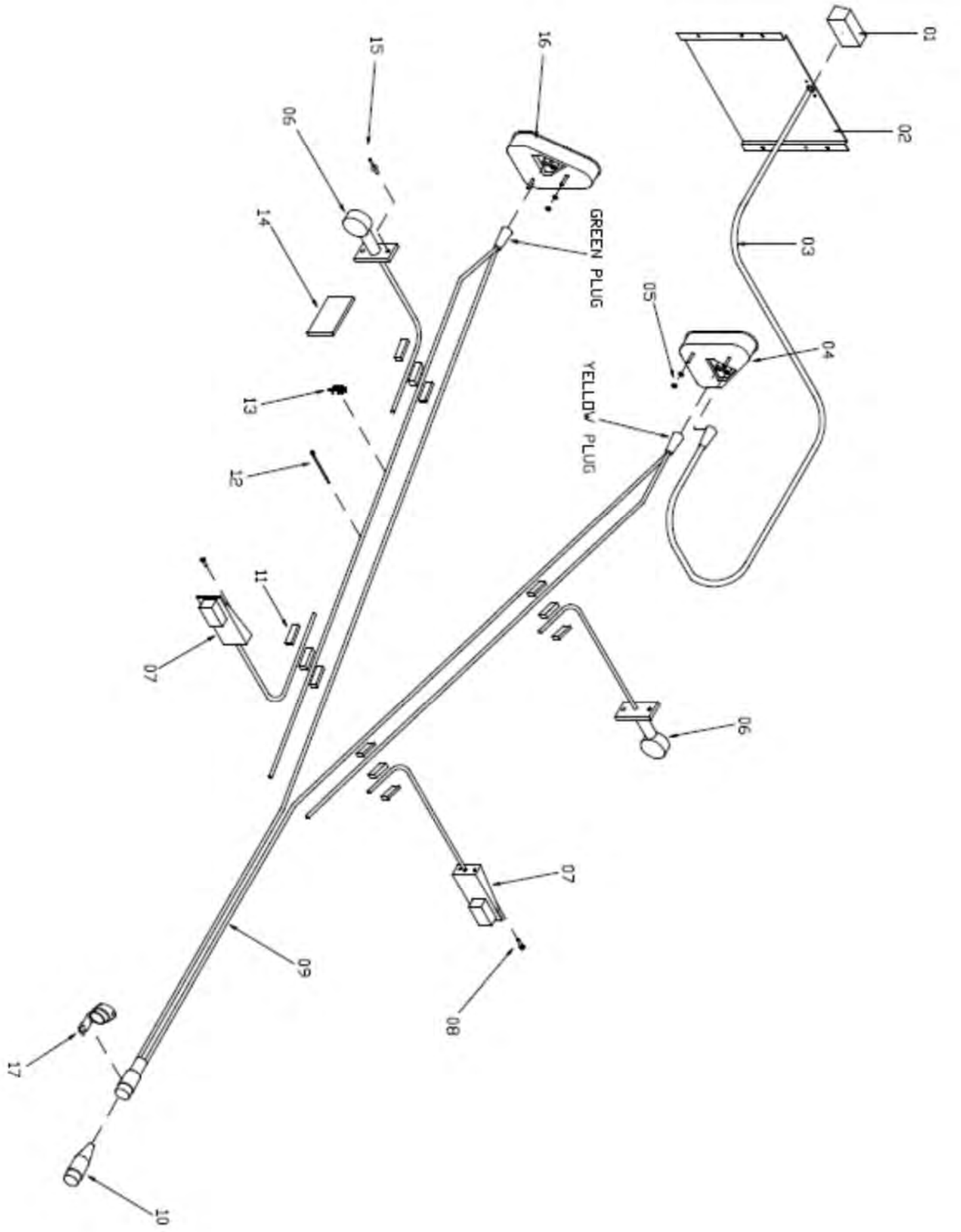




7 PARTS DIAGRAM AND PARTS LIST



Item	*Part Number*	*Description*
001	MSU-A040	Number Plate Mounting Plate
002	FSD05016,FWF05,FNN05	S/Screw M5 X 16, Flat Washer, Nyloc Nut
003	SXR106	Tailgate Ramp 1500 MM
004	FSC14125	Screw C/Sunk S/Tap 14G X 1 ¼" Type B
005	SXR100-20	Floor Cap Rear VBT
006	SXR100-23	Floor Complete VBT
007	SXR100-19	Beaver Floor Capping
008	FSH08020,FWF08,FNN08	S/Screw M8 X 20, Flat Washer, Nyloc Nut
009	SF242-01	Spray Suppression Flap 4 MM
010	MG242LH	Mudguard L/H XRT/VT
011	SAX1301B-1015	Wheel Bolt Conical M12 X 1.5
012	WT760	WL/TY 195/70 R14 – W740
013	SXR100BTX	Trailer Basic 2995 X 1500 B/TA
014	RT710-01	Jockey Wheel
015	RT710-1001	Jockey Wheel/Prop Stand Clamp 48 MM
016	C625	Coupling AL-KO 950kg – 1600kg
017	C625-1019	Cable Breakaway
018	FBH12100,FWF12,FNN12	Bolt M12 X 100, Flat Washers, Nyloc Nut
019	FBH10070,FWF10,FNN10	Bolt M10 X 70, Flat Washers, Nyloc Nut
020	FSH08025,FWF08,FNN08	S/Screw M8 X 25, Flat Washers, Nyloc Nut
021	SXR100-05A	Drawbar Assembly
022	SXR100-13	Brake Rod
023	FSH12030,FWF12,FNN12	S/Screw M12 X 30, Flat Washer, Nyloc Nut
024	FIP050050	Insert Plastic 50 X 50 X 32-5 MM
025	SAX999B-1018	Brake Balance Bar
026	SAX999B-1019	M10 Ball Nut
027	SAX1301B-1002	Brake Rod Support Tube
028	SAX1303	Axle Alko Braked 1300kg 1585 MM
029	RT710-02	Propstand C/W Bracket 30" X 48MM
030	FIP040040	Insert Plastic 40 X 40 X 26-4 MM
031	FPL06	Pin Linch 6 MM
032	FPD35	Pin Drop link Assembly M12 X 35 MM
033	MSU-T016	Tape Grip Safety Walk Black


01
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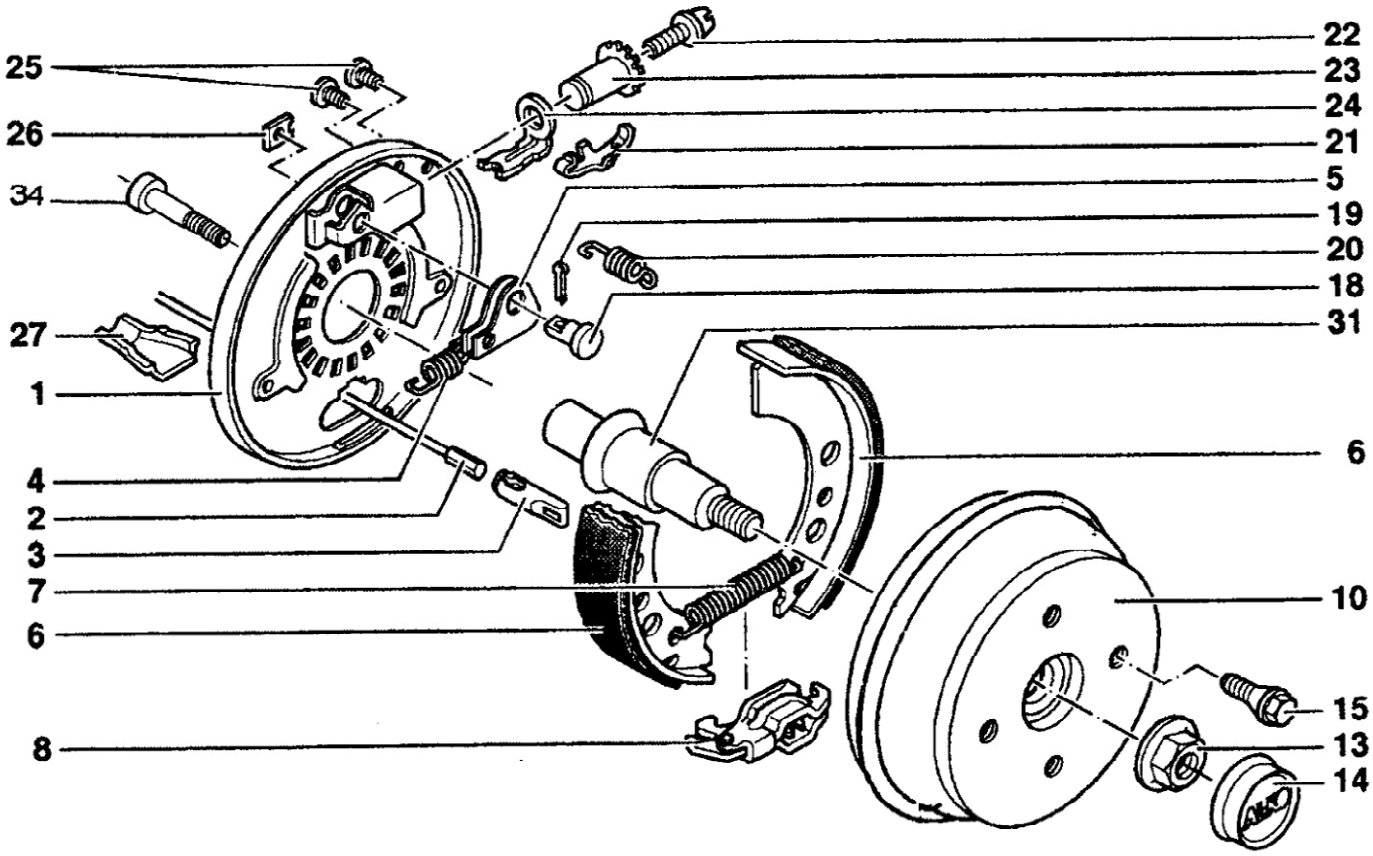
GREEN PLUG
YELLOW PLUG

Item	Part Number	Description
01	ME-L010	Lamp Number Plate
02	MSU-A040	Number Plate Mounting Plate
03	ME-L203-01A	Number Plate Light Wire
04	ME-L200-1001	L/H Combination Lamp + Reverse
05	FWF06, FNN06	Flat Washer, Nyloc Nut
06	ME-L200-1002	End Outline Marker Lamp C/W Connector
07	ME-L200-1003	Front Position Lamp C/W Connector
08	FST06016	S/Screw Taptite Hex M6 X 16
09	ME-L200-1004	Main Cable Harness
10	ME-C057	Connector 7 Pin Male 13 Pin Female
11	ME-L200-1007	DC Connector +2 Covers
12	FCT100	Cable Tie 100 MM
13	FCC09	Clip Cable Round 8 MM
14	ME-L200-1008	Side Retro Reflector
15	FRA06020	Rivet Advel 6.35 MM X 20.3 MM
16	ME-L200-1005	R/H Combination Lamp + Fog
17	ME-L200-1009	Plug Holder

Item	Part Number	Description
01	SAX1301B-1002	Back plate Welded L/H
	SAX1301B-1003	Back plate Welded R/H
02	SAX1301B-1004	Detachable Bowden Outer Cable: 1020 MM
03	SAX1301B-1005	Cable Eye
04	SAX1301B-1006	Reverse Lever Spring
05	SAX1301B-1007	Reverse Lever L/H
	SAX1301B-1008	Reverse Lever R/H
06	SAX1301B-1009	Brake Shoe
07	SAX1301B-1010	Pull-Off Spring
08	SAX1301B-1011	Expanding Clutch
10	SAX1301B-1012	Brake Drum Complete 100 x 4/M12 x 1.5
13	SAX1301B-1013	Flange Nut
14	SAX1301B-1014	Dust Cap
15	SAX1301B-1015	Wheel bolt Conical M12 X 1.5
18	SAX1301B-1016	Bearing Bolt
19	SAX1301B-1017	Split Pin 4 X 20 – DIN 94
20	SAX1301B-1018	Shoe Retaining Spring
22	SAX1301B-1019	Adjuster Assembly Complete
25	SAX1301B-1020	Plastic Plug
26	SAX1301B-1021	Cover Plate
27	SAX1301B-1022	Bowden Cable Shell
31	SAX1301B-1023	Stub Axle
34	SAX1301B-1024	Bolt (Single Use Only) M20 X 60 DIN



8 LOGIC MANUFACTURING PRODUCTS OWNER GUARANTEE

This Logic Manufacturing product is guaranteed against faulty workmanship and materials for a period of 12 months from the date of purchase.

On Engine-Powered equipment, the engine manufactures guarantee will apply, any claims being subject to their terms and conditions.

All claims must be made in writing within 28 days of the alleged failure.

All claims must be made through the dealer who originally supplied the machine.

Any defective parts must be kept for inspection and if requested, sent to the factory or dealer.

The customer must bring equipment for repair to the dealer.

This guarantee becomes void if unauthorised modifications have been made, or if parts not manufactured, supplied or approved by Logic Manufacturing have been fitted to the machine.

We accept no liability for normal wear and tear, misuse or abuse, or where recommended maintenance has not been carried out.

All guarantee work must be authorised by Logic manufacturing prior to any work being done. Work carried out without our consent may not be reimbursed.

DECLARATION OF CONFORMITY
2006/42EC

LOGIC MANUFACTURING LTD
Foundry Industrial Estate
Bridge End
HEXHAM
Northumberland

Product Type: **SXR726/ SXR726BT**

Covered By Technical File Number: **CE – SXR100**

Serial Number:

Standards and Regulations Used:

Whole Vehicle Type approval. E11*2007/46*0860*00. Granted 20/12/12

BS EN ISO 2454-1:2009 Agricultural Machinery. Safety — General requirements.

BS5401:1990 Information, content and presentation of operator manuals provided for tractors and machinery for agriculture and horticulture.

The Supply of Machinery (Safety) Regulations 2008

HSE Guidelines on ATV Equipment (Agric Sheet No. 33)

Place of Issue: **United Kingdom**

Name of Authorised Representative: **S A WEIR**

Position of Authorised Representative: **PRODUCT DEVELOPMENT MANAGER**

Declaration,

I declare that as the authorised representative, the above information in relation to the supply / manufacture of this product, is in conformity with the stated standards and other related documents following the provisions of 2006/42EC directive

Signature of Authorised Representative 

Date: **06/05/2014**