

# XRT - TRAILER RANGE



# USER MANUAL

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SERIAL NO:       ----- Date of purchase: -----
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**IMPORTANT INFORMATION:** Fill in immediately. Use when ordering replacement spare parts or additional optional extras

With the purchase of your XRT-OXR 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 a robust floor, a 50mm swivel hitch, high quality axle 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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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.

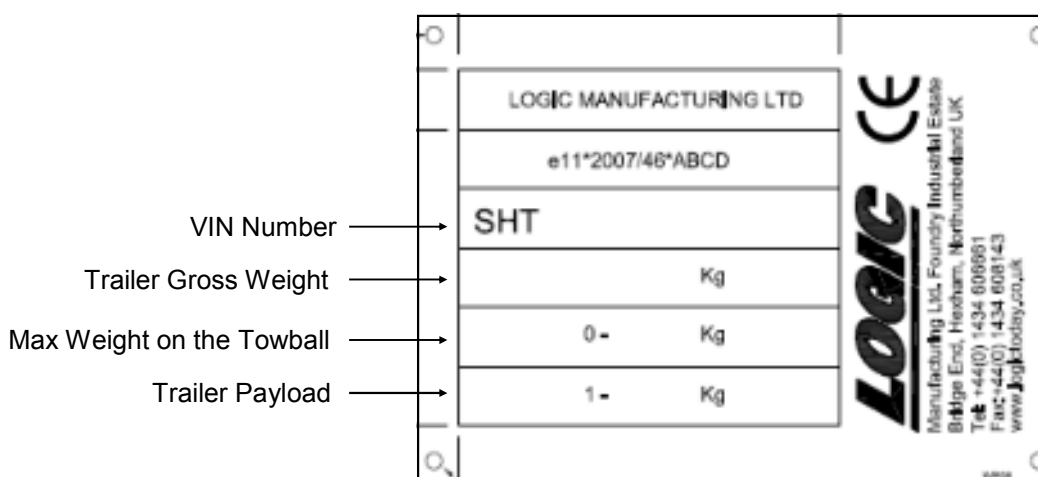
Consider all these things very carefully when choosing and loading (and towing) your trailer.

### CHECKS

The most important check is the vehicle manufacturer's recommended towing limit (trailer gross weight), which is shown on page 26 (trailer specification) 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 road trailers VIN plate is shown below.



Do not exceed the vehicles towing 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 26 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 if applicable, remove any towball and electrical socket dust covers and security devices then wind 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 lifting or the jockey wheel assembly to the required height, roll trailer up to the rear of the towing vehicle and lower the trailer onto the ball.
- 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. For trailers with no jockey wheel check that the control gage on the side of the coupling is pointing to ok.
- 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. For unbraked trailers attached the secondary coupling cable as above.
- 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 WINTERHOFF COUPLING DETAIL (UNBRAKED)

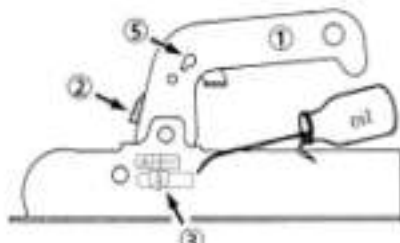


**WINTERHOFF**  
QUALITY TRAILER PARTS

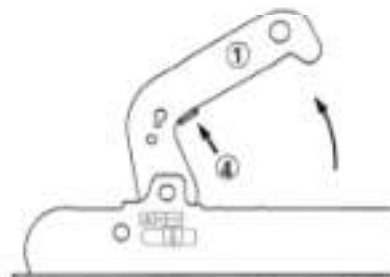
WW 8, WW 13-N, WW 150-RB, WW 220-RA/RB, WW 30-D2/D3/D6, WW 350-RB/RD/RC

Bedienungsanleitung - Operating instructions - Mode d'emploi - Gebruiksaanwijzing - Bruksanvisning - Käyttöohje  
Betjeningsvejledning - Betjeningsvejledning - Závěsný kloub - Instrukcja użytkowania - Руководство по эксплуатации

geschlossen  
closed  
famaa  
gaslossen  
lest  
suljettu  
stängt  
lukket  
uzavřen  
zamknięty  
sajputis



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opened  
ouvert  
geopend  
öppet  
avettu  
apan  
åben  
otwarty  
otkryty



**D**  
Ankuppeln: Geöffnete Zugkugelnkupplung auf die Kupplungskugel setzen und nach unten drücken.  
Überprüfen: Sicherung (2) ist am Griff sichtbar und die Nietmarkierung (3) liegt bei korrekter Verbindung Kupplungskugel im +/- Bereich der Kontrollanzeige.  
Abkuppeln: Sicherungshebel (4) betätigen, gleichzeitig den Griff (1) durch Kippbewegung nach vorne schwenken und die Kupplung von der Kugel heben.  
Diebstahl: Schutz durch ein Steckschloss (5) im Griff.  
Wartung: Regelmäßiges Fetten oder Ölen aller beweglichen Teile.

**GB**  
Coupling: Place the open coupling head on the towing ball and push downwards.  
Checking: safety catch (2) is visible on the handgrip and the pin in the control gauge (3) sits in the +/- position when correctly connected to the towing ball.  
Uncoupling: Depress the safety catch (4) and at the same time tilt the handgrip (1) in a forward direction whilst lifting the coupling head from the towing ball.  
Security: Protect by means of a barrel lock (5) in the handgrip.  
Maintenance: Regularly grease or oil all moving parts.

**F**  
Atteler: Placer l'attache sur la boule d'attelage et appuyer la poignée vers le bas.  
Contrôler: La sécurité (2) est visible à la poignée et la marquage (3) est placé du côté +/- si la fixation attache/rotule est bonne.  
Désatteler: Presser sur le bouton de sécurité (4) et tirer la poignée (1) vers le haut et en avant.  
Antivol: Assuré par serrure (5) dans la poignée.  
Entretien: Graisser ou huiler régulièrement toutes les pièces mobiles.

**NL**  
Aankoppelen: De geopende kogelkoppeling op de koppelingkogel plaatsen en naar beneden drukken.  
Controle: Borging (2) is op de handgreep zichtbaar en het merkteken op de stift (3) is bij correcte verbinding koppelingkogel in het +/- bereik van de controle-indicatie.  
Afkoppelen: Borgpal (4) indrukken, handgreep (1) gelijktijdig naar voren zwenken en de koppeling van de kogel tillen.  
Diefstal: Beveiliging door middel van een steekslot (5) in de handgreep.  
Onderhoud: Alle beweegbare onderdelen regelmatig oliën of vetten.

**S**  
Påkopping: Lågg den öppnade kulkopplingen på dragkulan och tryck nedåt.  
Kontroll: Säkringen (2) syns på handtaget och nitmarkeringen (3) befinner sig inom +/- området vid rätt påkoppling.  
Avkoppling: Tryck in säkringsknappen (4) samtidigt som handtaget (1) vrids framåt, tag av kopplingen från dragkulan.  
Stöldlås: Stöldlåset anbringas genom ett hål i handtaget (5).  
Skötsel: Rengör och smörj alla rörliga delar regelbundet.

**SF**  
Kytäkentä: Avattu kuulakytäkin asetetaan vetokulaan ja painetaan alas.  
Varmistus: Kun kuulakytäkin on asetettu oikein vetokulaan, niin varmistinnokkaa (2) näkyy kahvassa ja kohdassa +/- näkyy nititi (3).  
Irottaminen: Paina varmistinnokkaa (4). Vie samalla kahva (1) kippiliikkeellä ylöspäin, jolloin kuulakytäkin voidaan nostaa kuulasta.  
Varkaus: Kahvaan voidaan liittää varkausvarmistin (5). (Tilattava erikseen)  
Huolto: Kaikkien liikkuvien osien säännöllinen rasvaus tai voitelu.

**N**  
Tilkobling: Åpnet trekkulekobling settes på koblingskule og trykkes ned.  
Kontroll: Sikring (2) kan sees på håndtak. Ved korrekt forbindelse mellom kobling og kule vises naglemarket (3) i kontrollområdet +/-.  
Frakobling: Betjen sikkerhetsknapp (4) samtidig som handtaket (1) vippes fremover, og koblingen kan heves fra kule.  
Tyvert: Beskyttet gjennom en stikk-lås (5) i håndtaket.  
Vedlikehold: Alle beveglige deler må smøres regelmessig med fett eller olje.

**DK**  
Tilkobling: Sæt den åbne kulekobling på træk-krogen og tryk den fast.  
Kontrol: Sikringsknappen (2) er synlig ved håndtaget, og kontrol-markeringen (3) skal ved korrekt sammenskobling (kobling/kugle) ligge i +/- området af kontrol-feltet.  
Frakobling: Sikringsknappen (4) betjenes automatisk når håndtaget (1) vippes fremad, derefter hæves håndtaget op efter og koblingen er fri fra kuglen.  
Tyvert: Sikres gennem en stik-lås (5) i håndtaget.  
Vedligeholdelse: Alle bevægelige dele smøres regelmæssigt med olie og fedt.

**CZ**  
Zapojení: Otevřený závěsný kloub nasadíte na kouli závěsného zařízení automobilu a zatlačte dolů.  
Kontrola: Zkontrolujte pojistka (2) na rukojeti zda je vidět a rybový ukazatel (3) je v poloze správného zapojení závěsného kloubu - koule tažného zařízení musí být v +/- poloze kontrolního ukazatele.  
Odpojení: Pojistný čep (4) uchopit a zatlačit současně s rukojetí (1) ve vykloněném směru do předu a závěsný kloub z koule tažného zařízení vysadit.  
Ochrana proti krádeži: Proti krádeži může sloužit zasunovací zámek v rukojeti (5). POZOR, to neznamená, že přívěs je 100 % zabezpečen proti krádeži a že nemůže být odcizen.  
POZOR: Je nutné pravidelně a rovnoměrně olejovat, či mazat vazelínou všechny pohyblivé části závěsného kloubu. Dbát skazatele zapojení 3 - aby kloub byl zapojen v poloze dle obrázku. Pokud tomu tak nebude okamžitě provést kontrolu zapojení a výměnu závěsného kloubu v autorizovaném servisu.

**PL**  
Zapłąc: otwarty zaczep kulowy należy na spręż kulowy idoczną w dół.  
Sprawdzenie: zabezpieczenie (2) jest widoczne na udwycie i oznaczeniu nitu (3) znajduje się w położeniu prawidłowego połączenia spręż kula w +/- pozycji wskazania kontrolnego.  
Odłączenie: uruchomić dźwignię (4) zabezpieczającą, jednocześnie odwrócić udwyt (1) poprzez przedchylenie do przodu i zdjęć zaczep z kuli.  
Kradzież: ochrona poprzez blokadę (5) w udwycie.  
Konserwacja: regularne oliwienie lub natłuszczenie wszystkich ruchomych części.

**RU**  
Подсоединение: Открытое прицепное устройство для сферической головки надеть на сферическую головку и надавить вниз.  
Проконтролировать: Предохранитель (2) виден на ручке, а зацепочная маркировка (3) при правильном соединении сцепного устройства/сферы находится в +/- области контрольной индикации.  
Отсоединение: Нажать предохранительный рычаг (4), одновременно ручку (1) опрокидывающим движением повернуть вперед и поджать сцепное устройство со сферической головкой.  
Защита от хищения: защита осуществляется клапаным замком (5) в ручке сцепного устройства.  
Техническое обслуживание: Регулярная смазка консистентной смазкой или маслом всех подвижных частей.

09.12

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## 2.5 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



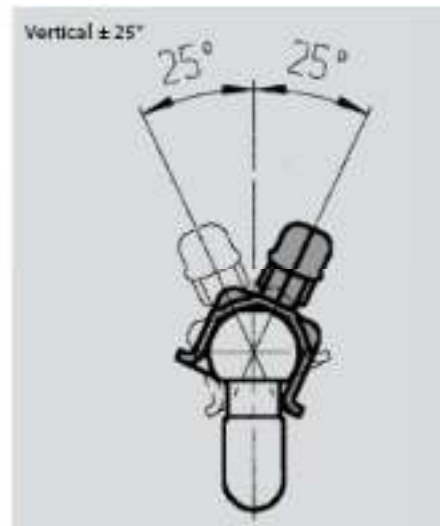
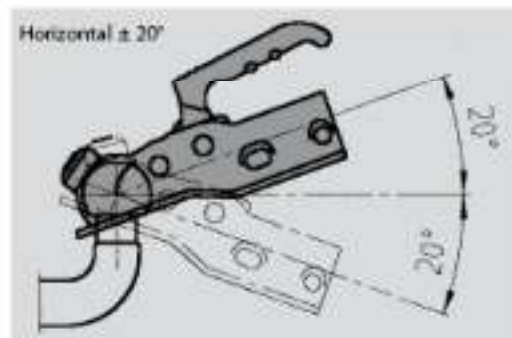
### WEAR INDICATOR \*\*

An additional indicator shows you whether the wear limit of:

- your towball or
- the coupling 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.



## 2.6 CHECKS BEFORE TOWING

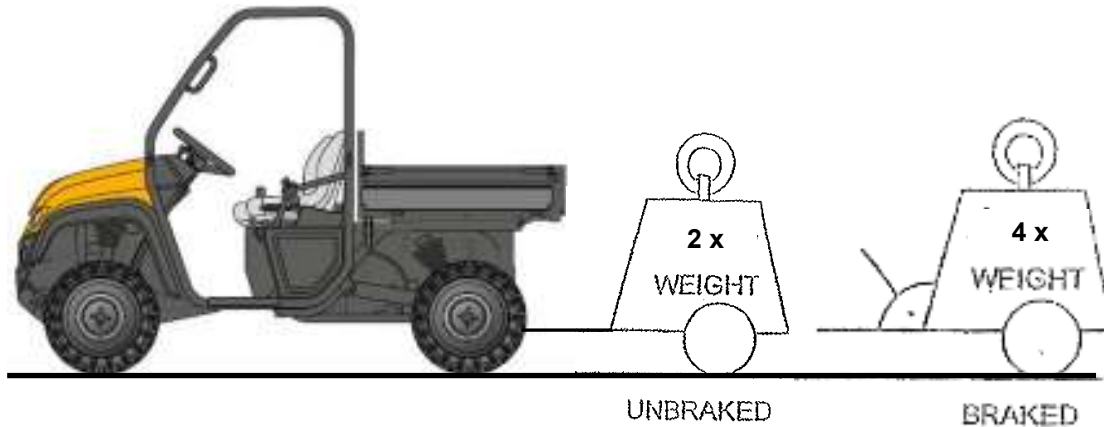
The trailer operator or the driver of the towing vehicle, if different, has the responsibility for the safe operation of the trailer and needs to carry out the following checks:

- 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?

## 2.7 TRAILER USE WITH AN OFFROAD VEHICLE

The trailer can be towed by any large ATV or 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.

- An ATV or 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.



An example of the off road trailer weight plate is shown below.

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MODEL / TYPE	<input type="text"/>	YEAR	<input type="text" value="201"/>		
MAXIMUM GROSS MASS	<input type="text"/> KG	UNLADEN MASS	<input type="text"/> KG		
MAXIMUM DRAWBAR MASS	<input type="text"/> KG		<input type="text"/>		

WP05



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.

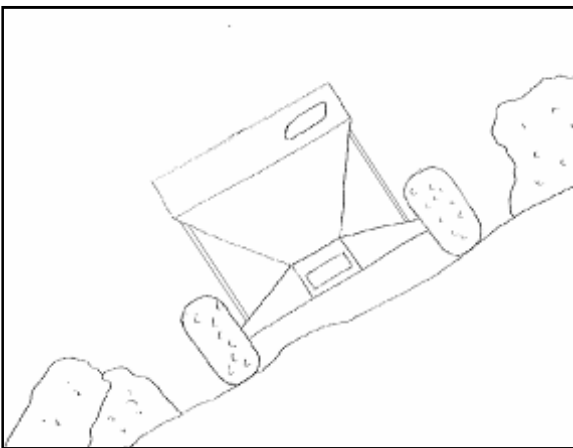




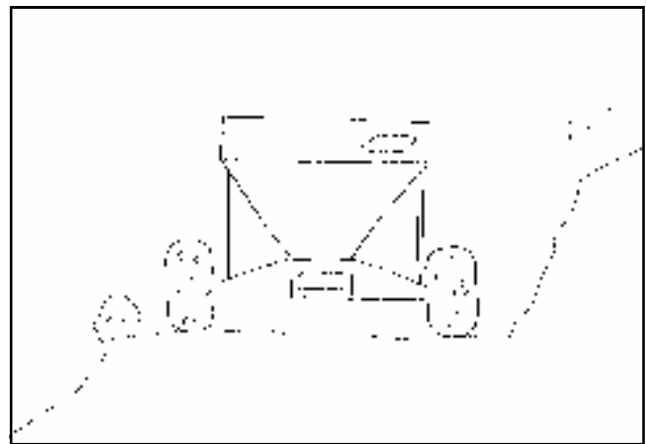
If the weather is or has been wet or poor the route should be reassessed before travelling. Poor weather can affect the terrain being travelled and the handling of the towing vehicle, especially ATVs and UTVs

- Using an ATV or UTV with a trailed attachment introduces additional risks to operating them 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**



**DO**



### **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 ATV or UTV should have its brakes, throttle and tyre pressures checked daily. Tyre pressures are low on such vehicle 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 ATV and UTV equipment and attachments. Contact your local HSE office for approved training courses such as LANTRA. The same requirements apply to the self-employed.

### **CHECKS**

- The same checks, loading and attachment procedures from the on road vehicle section 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, 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<sup>2</sup>) 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.

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## 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/](http://www.quadsafety.org/) for details.

Training is also available from other organisations, such as the British Off Road Driving Association (BORDA). See [www.borda.org.uk](http://www.borda.org.uk) for details.

## Further information

For information about health and safety, or to report inconsistencies or inaccuracies in this guidance, visit [www.hse.gov.uk/](http://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](http://www.hse.gov.uk/pubns/ais33.htm).

**3 INSTRUCTIONS / WARNING DECALS**



Road trailer VIN plate



LOGIC MANUFACTURING LTD		  Manufacturing Ltd, Foundry Industrial Estate Bridge End, Hexham, Northumberland UK Tel: +44(0) 1434 606661 Fax: +44(0) 1434 608143 www.logictoday.co.uk
e11*2007/46*ABCD		
SHT		
	Kg	
0 -	Kg	
1 -	Kg	

THIS PRODUCT IS PROTECTED BY **DESIGN RIGHT**  
W028




**KEEP WHEEL NUTS TIGHT  
 CHECK DAILY**  
 REFER TO THE OPERATORS MANUAL  
 FOR CORRECT TYRE INFLATION PRESSURE  
DELIVER TO THE VEHICLE MAXIMUM WEIGHTS OR TRAILER MAX WEIGHT  
W120

Off road trailer weight plate

		Manufacturing Ltd, Foundry Industrial Estate Bridge End, Hexham, Northumberland UK Tel: +44(0)1434 606661 Fax: +44(0)1434 608143 www.LogicToday.co.uk sales@LogicToday.co.uk		
MODEL / TYPE	<input type="text"/>	YEAR	<input type="text" value="201"/>	
MAXIMUM GROSS MASS	<input type="text"/> KG	UNLADEN MASS	<input type="text"/> KG	
MAXIMUM DRAWBAR MASS	<input type="text"/> KG		<input type="text"/>	

WPOS

 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 XRT-OXR 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 XRT-OXR 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/ weight plate or the trailer specification on page 26 for unladen lifting weight.







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 18 to 25 for the care and maintenance of the axle and braked hitch.



Do not exceed the recommended tyre pressures.

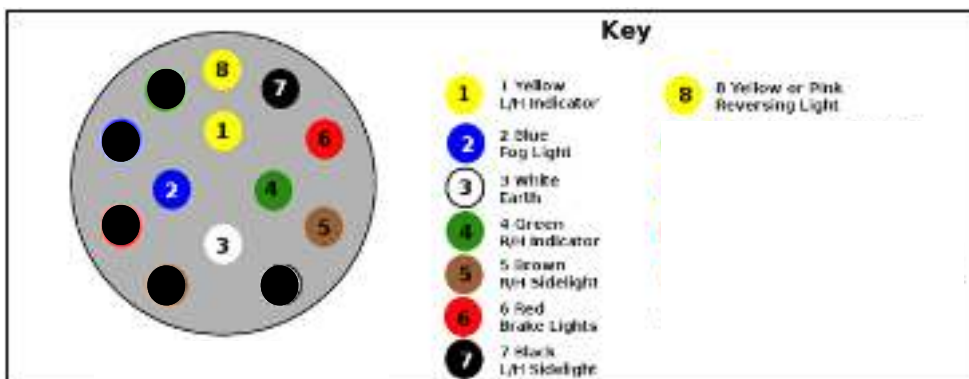
- Tyre pressure for **20.5X8.0-10** max **35Psi**  
**165X80 R14** max **36Psi**  
**195x60 R14** max **44Psi**  
**AT22X11-8** max **10Psi**

### WIRING DIAGRAM 7 Pin plug



1 Left indicator lamp	5 Right tail/ side and number plate lamp
2 Fog lamp (rear)	6 Stop lamp
3 Earth	7 Left tail and side lamp
4 Right indicator lamp	

### 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:

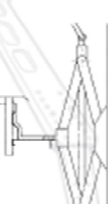
The Corner Steadies Should never be used to jack up the caravan. When jacking becomes necessary use the AL-KO Side Lift Jack or 2-Tonne Jack system. **NOTE:** It is essential that the car & caravan are hitched together before commencing jacking. All AL-KO chassis from 1992 onwards have 2 holes punched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



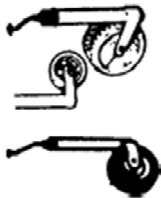
## 2-Tonne Jack



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.

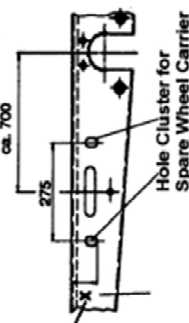
The telescopic frame tubes should be lubricated periodically.



## 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)



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

## General Information:

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

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

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

The chassis is Hot Dipped Galvanised. This is regarded as one of the best forms of corrosion protection. It does however require minimal maintenance in certain circumstances.

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

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 "Achslast") 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:

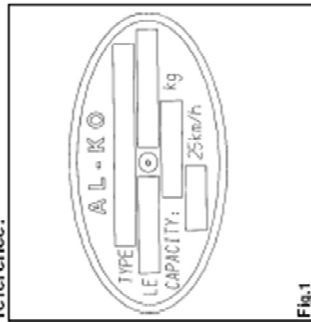


Fig. 1

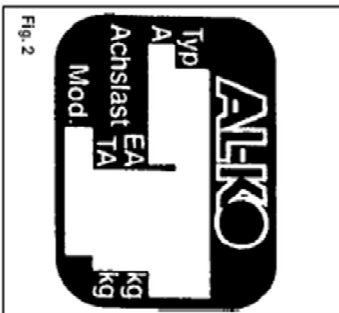


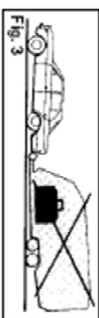
Fig. 2

**Loading:**

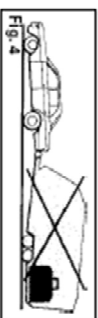
Loads to be carried in the caravan should be placed directly over, or as close as possible to the axle(s), otherwise the handling will be impaired.

Maximum gross weight, as advised by the caravan manufacturer, must not be exceeded without approval from AL-KO.

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



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



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



**Load Over Axle Fig. 5.**

Optimum road holding together with maximum braking effect. Exceptionally heavy loads should be packed directly over the axle.

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

**AXLE TYPES:**

**Safety Precautions:**

No welding is permitted on AL-KO Axles

It is important that the wheel and hub/brake drum are compatible. This means that the PCO, 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:**

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.

**Service Brake:**

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:**

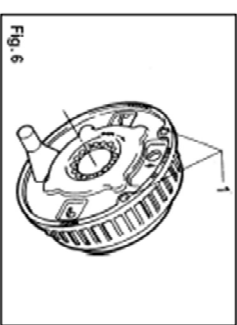
With the gas strut version, pull the handbrake lever until upright. With the spring cylinder version, pull the handbrake lever right up to the last tooth. The caravan is then braked. See page 12/13 for further details on different handbrake types.

**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. 6item 1).



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

**Trouble Shooting & Fault Finding:**

Table 3 Overrun Devices:

Fault	Cause	Remedy
Poor Braking	Overrun shaft tight. Overrun shaft corroded. Body housing damaged.	Lubricate overrun shaft and replace any damaged parts.
Brakes Overheating During Towing	Handbrake not fully released. Braking system incorrectly set. Incorrect attachment of breakaway cable.	Release handbrake. Reset brakes as page (4). Ensure correct attachment as listed on page (12) or refer to Braked Trailers Use of Breakaway Cables sheet.
Handbrake Force Low	Defective gas strut. Incorrect setting of spring cylinder.	Replace gas strut. Reset spring cylinder as page (4).
Brakes Apply During Deceleration or Downhill Travel	Overrun damper is defective.	Replace the overrun damper.

**Accessories:**

**Corner Steadies:**

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

**Stabilisers:**

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

**Shock Absorbers:**

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.

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 Solid 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 &amp; 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.

**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 spirit.

**SPARE PARTS:**

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

If repairwork or servicing is required, AL-KO has a large network of 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

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.

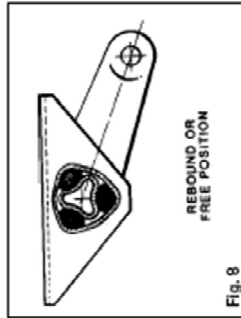


Fig. 8

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.

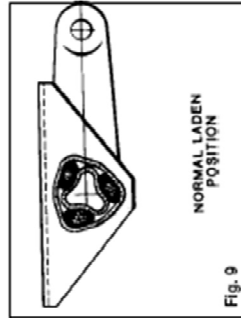


Fig. 9

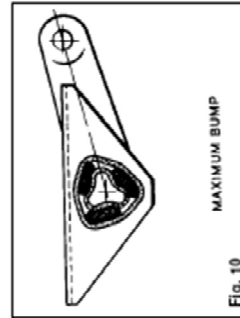


Fig. 10

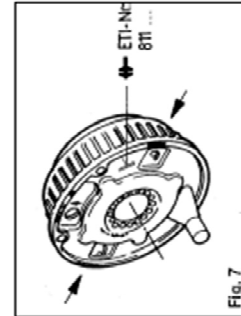


Fig. 7

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 failing or any other obstruction; then the failing 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 "stanwheel" adjuster access. (Figs. 11 & 12).
5. ALWAYS rotating the road wheel in the forward direction - NEVER backwards; adjust the stanwheel 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 stanwheel 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 nuts 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. OVERADJUSTMENT 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 Device):**  
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 outcut in body to its highest position (ensure it doesn't come into contact with the brake rod assembly), fully tighten Jockey Wheel Clamp handle to ensure the Jockey Wheel is firmly held in position (Fig. 44).

**Uncoupling (All Types):**

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

**Handbrake Lever With Gas Strut (Fig. 41):**  
Ensure handbrake is fully applied (as highlighted). This will ensure that the gas strut will automatically re-apply the wheel brakes if the trailer starts to roll backwards.

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

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

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

**Handbrake Lever With Spring Cylinder (Fig. 42):**  
Apply handbrake fully ensuring that handbrake is in the vertical position. This will ensure that the spring cylinder energy store is fully loaded and will automatically re-apply the wheel brakes if the trailer starts to roll backwards.

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

**Automatic Handbrake Lever (Fig. 43):**  
Ensure handbrake is fully applied (as highlighted). This will ensure that the gas strut or spring cylinder will automatically re-apply the wheel brakes if the trailer starts to roll backwards.

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

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

**Handbrake Lever With Spring Cylinder and Gas Strut (Fig. 45):**  
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).

**Service:**  
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.

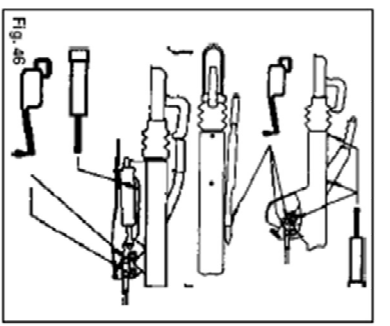


Fig. 46  
Recommended lubricant. General purpose grease to DIN 51825 KTA 3KA.

Service and care of hot dip galvanized parts:  
The formation of white rust is only a surface coating and has no adverse effect on the anti-corrosion properties of galvanising. In order to minimise the potential for the formation of white rust the following precautions should be taken:  
Ensure there is adequate air circulation when storing hot dip galvanized parts. After winter journeys it is recommended that surfaces are washed with clean water.

**Spare Parts:**  
Spare parts are safety critical parts! For this reason when fitting spare parts in our products we recommend the use of original AL-KO parts or those parts that we have explicitly approved. The reliability, safety and suitability of parts designed especially for our products, has been determined using a special test procedure. In spite of constantly monitoring the market we are unable to assess or vouch for other products. If repair work or servicing is required, AL-KO have a large network of AL-KO service stations throughout Europe. To establish the correct spare parts required you should always quote the model and type of overrun device in question along with the ETI No. which is stamped into the overrun device housing. The ETI number for the Euro Overrun can be found on the handbrake lever (See Fig. 44). For Troubleshooting and Fault Finding, please see Table 3 on Page 15.