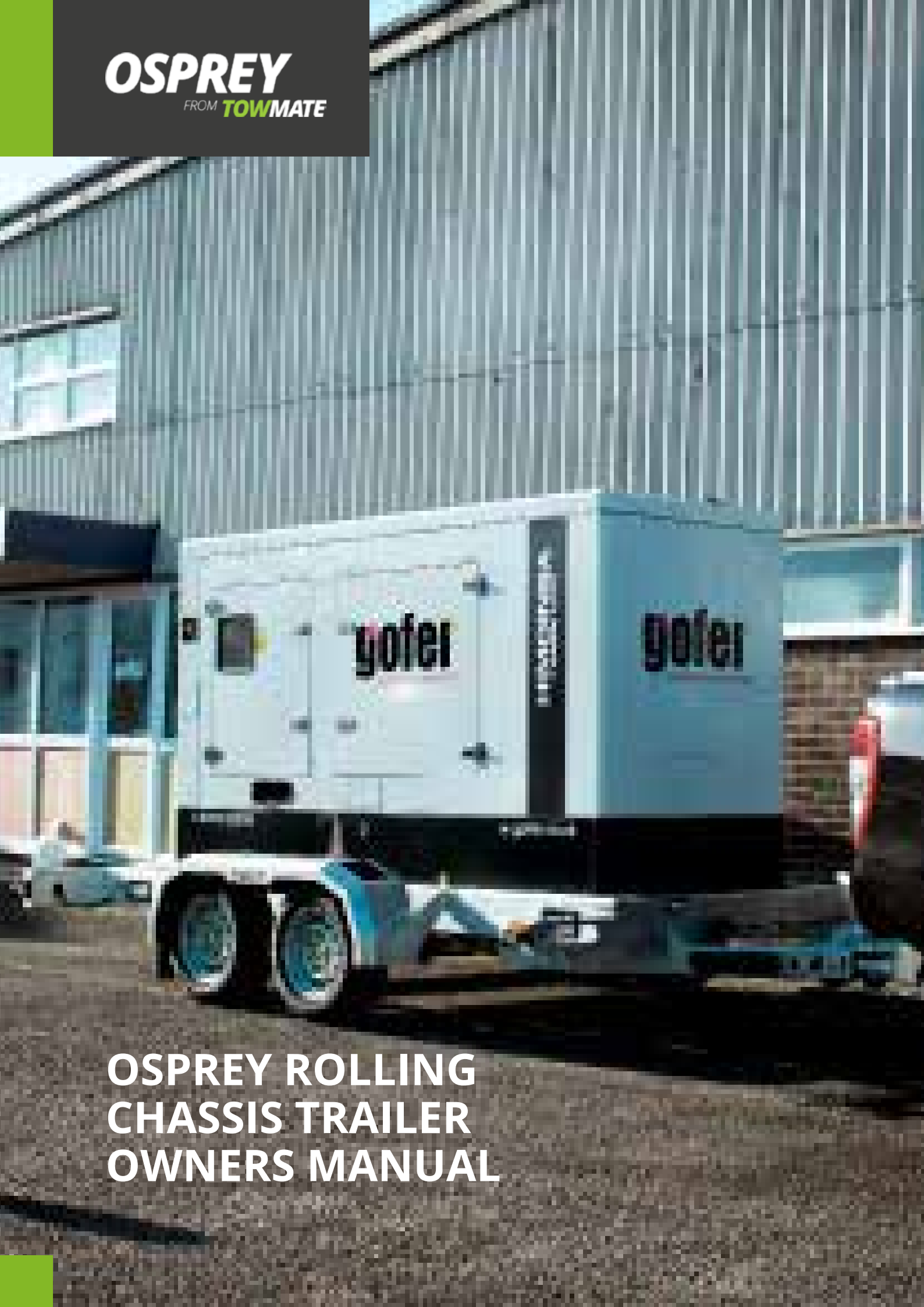


OSPREY
FROM **TOWMATE**



**OSPREY ROLLING
CHASSIS TRAILER
OWNERS MANUAL**

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GENERAL INFORMATION

Support, Servicing, Maintenance, Repair, Spares

Our friendly customer service team is here to help you and to supply the highest quality parts with the best available customer service. For any queries, servicing, maintenance and enquiries regarding trailer parts and spares do not hesitate to contact the team by phone or online. With next day delivery* and support available across the UK, we are always there for you. Our team are available from 7:30am to 4:30pm, Monday to Friday.

Phone: 01206 589550

Website: www.towmatetrailers.com

E-mail: sales@towmatetrailers.com

Address: Towmate Trailers, Whitehall Road, Colchester, Essex, CO2 8WA

*On parts only. Guaranteed for UK Mainland customers only, on stocked lines.

Safety + Compliance

Trailers are subject to the same requirements as motor vehicles, even in the absence of MOT testing in the UK. The Road Vehicle Construction and Use Regulations place a responsibility on operators to ensure the maintenance and use of the trailer in a safe manner and within the limits of the law at all times. Following the maintenance schedule in this manual and its accompanying material will help with that responsibility. As a precautionary note the following safety and compliance criteria are a small example of the main areas that generally cause issues with use of trailers in the UK:

- Tachograph requirements
- Insurances for vehicles, trailers and any additional parts i.e. Diggers.
- Operators license
- Towing vehicle mass
- Vehicle towing capacity
- Trailer & payload mass
- Trailer nose load
- Trailer axle load

All servicing and maintenance should use Towmate supplied parts and consumables to ensure correct working and continued warranty support of the trailer. When carrying out any maintenance and servicing suitable PPE should be worn and precautions taken such as working on level ground, parking brake applied and wheel chocks in place. Workers should also be aware of any hazards associated with handling workshop materials such as chemicals, oils and greases which may be flammable and are likely to be irritant. All work should be carried out in accordance with the manufacturer's manual, with OEM parts and by competent personnel. To make maintenance and servicing easier, a Proline portable trailer lift can be used, this product enables the trailer to be in a position that allows for safe and ergonomic maintenance and servicing. This can be found in the ATE (UK) Ltd catalogue or online [here](#).

We have used "Plain English" descriptions throughout this manual. If you are unsure as to the meaning of a procedure or it is unclear, please use the contact details above.

SAFETY

Working Practice

- ✓ Always work in a clean area, tidying up as you go. Be especially diligent to clear spills and ensure that oils and greases do not contaminate linings and rubber bushes, suspension elements, or tyres. Remember some chemicals (brake fluid) can damage cosmetic finishes (car paint) and plastics.
- ✓ Always work on a level, firm hard-standing ground - not muddy, slippery or soft ground.
- ✓ Allow sufficient time to carry out the task
- ✗ DO NOT rush or take shortcuts which could endanger you during the work and put a potentially dangerous trailer on the road.
- ✗ DO NOT allow animals, pets or children in, around or under the trailer whilst it is being worked on.
- ✓ As a minimum have basic safety equipment available such as fire extinguishers and first aid kit and familiarise yourself with what to do in an emergency.
- ✓ Be honest with yourself and do not embark on tasks outside your capability. If you get stuck, enlist help.
- ✗ DO NOT attempt to undo high torque fasteners with the trailer on a jack in case the force applied pulls the trailer over.
- ✓ Ensure that spanners are the correct size, are in good condition and are suitable for the task. Never use ill fitting spanners.
- ✓ Refer to recommended bolt torques and use a torque wrench.
- ✓ Always replace brake shoes in axle sets and preferably all wheels on a tandem trailer at the same time.
- ✗ DO NOT skimp on spare parts. If there is any doubt replace an item, most trailer parts are fairly low cost.
- ✓ Use only original equipment parts approved by the trailer manufacturer.
- ✓ Always use self-locking nuts (nylon insert type or deformed metal). Hub bearing centre nuts are suitable for use only once so if the history of the trailer is unknown play safe by replacing with new. Refer to the trailer manufacturer's recommendations for specific hub data.
- ✓ Accident damaged components are potentially very dangerous. Wherever any doubt exists replace outright in preference to repairing.
- ✓ Always ensure bolts are of sufficient length, the correct grade and use new locking nuts every time. Ensure tapered washers or shaped washers are used on any surfaces not flat.
- ✓ Always fit new split pins of the correct length and diameter.
- ✓ Double check that all fasteners are tight as each item is fitted.
- ✗ Never weld near rubber bushes or rubber suspension elements or tyres as the heat soak will damage the rubber.
- ✓ Discard old brake shoes and dust in a sealed bag.

SAFETY

Personal Safety

- ✗ DO NOT rely on a jack when working underneath a trailer, always use a reliable secondary means of support such as axle stands.
- ✓ Always ensure that supports have wide bases so they cannot “topple” and that they are placed on firm and level ground.
- ✓ Always use the correct jacking points as stated by the trailer manufacturer, in particular avoid jacking in the middle of the axle. Additional care is needed if the trailer is loaded, take due note of the weight and its distribution. Wherever possible, unload prior to jacking up.
- ✓ Always ensure that jacks and stands are of sufficient load capacity for the task.
- ✓ Always ensure that wheels are chocked prior to carrying out any work, never rely on the handbrake alone.
- ✗ Trailers and components can be heavy. DO NOT try lifting heavy items - get help or use appropriate lifting aids.
- ✓ Remove jewellery. Particularly metal banded wrist watches (these present a special hazard when working on electrics) and rings (easily snagged and are a major problem to remove if there is an injury to a finger).
- ✗ DO NOT inhale brake lining dust. Whilst all brakes have non asbestos linings, it is recommended that a face mask is worn and dust is carefully brushed away, or use a proprietary brake cleaning fluid. DO NOT use an air line to blow out brakes or drums as the dispersed powder takes a long time to settle.
- ✓ Wear eye protection when using power tools or working underneath a trailer.
- ✓ Wear barrier creams or disposable gloves as a precaution and wash hands as soon as practical after completing the work.
- ✓ Look out for trailing items which can be trapped in rotating machinery. Ties, loose wrist cuffs and long hair are always vulnerable.
- ✓ Never work alone. Always ensure that someone is in the vicinity.
- ✗ DO NOT eat, drink or smoke whilst working. Smoking can be especially dangerous as there may be chemicals in the air which become dangerous in the presence of heat. There is also the risk of fire or, worse still, explosion.
- ✓ Beware of fumes from chemicals, cleaners, solvents, glues and paints. Ensure the work area is ventilated and instructions on the can are followed.
- ✗ DO NOT store fluids in unmarked containers.

GLOSSARY

Terms Commonly Used in the Trailer Industry

Unladen Weight	The weight of the trailer (or towing vehicle) less removable optional equipment and load.
Gross Vehicle Weight (GVW)	The total weight of the trailer (or towing vehicle) and load.
Maximum Gross Weight	The maximum figure set by the manufacturer for the gross weight. This will normally be the technically permissible maximum based on the carrying capacity of the tyres, axles, coupling, suspension and chassis but may have been adjusted downwards for commercial reasons.
Technical Permissible Maximum Weight	The technically permissible maximum based on the capacity of the tyres, axles, coupling, suspension and chassis.
Maximum Authorised Mass (MAM)	As maximum gross weight above. The latest EC term as used in Driver Licensing Regulations.
Gross Train Weight	The maximum allowable combined weight (combined MAM) of the towing vehicle and trailer as specified by the towing vehicle manufacturer.
Payload	The difference between the gross weight of the trailer and its unladen weight, i.e. the load carrying capacity.
Kerb Weight	The weight of the towing vehicle (without payload), including all fluids required for operation / driver & nominal luggage.
Nose Load	The weight imposed on the towball or eye by the trailer coupling.
Over-run Braking System	A trailer system operated by the action of the trailer acting on the towing vehicle under deceleration.
Power Operated Braking System	A trailer braking system which is operated directly by the action of the foot brake on the towing vehicle
Wheel Track	Horizontal distance between the centre lines of the wheels across the width of the vehicle or trailer.
Wheel Base	Horizontal distance between the centre lines of the wheels of multi-axle vehicles or trailers along the length of the vehicle, also includes the distance from coupling point to front axle.

PROCEDURES

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TOWING JAWS & HOOKS

Towing Jaws & Hooks

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

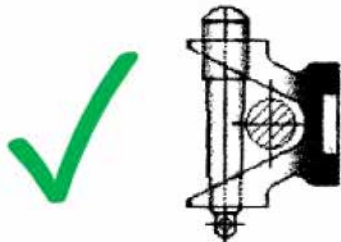
British Standards require that there should be sufficient room behind the pin of any towing jaw to ensure adequate articulation of the eye shaft in both the vertical and horizontal planes. It is also important that this gap is not too great, thus allowing the back of the eye to hit the front of the pin before the front of the eye contacts the throat of the jaw.

A jaw opening that does not comply with the standards and therefore restricts articulation upwards and downwards, is likely to bring about stress fractures on either the coupling or the trailer chassis drawbar.

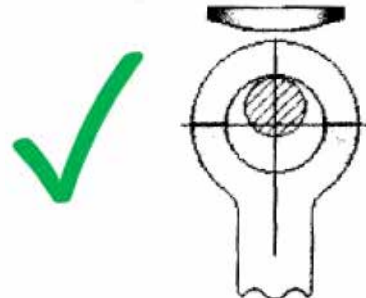
The above standards also apply to the jaw on a combination jaw and towball unit. This type of product provides the flexibility of being able to tow trailers fitted with either an eye or 50mm coupling head, without having to change the fittings on the tow vehicle.

CORRECT

Adequate Clearance

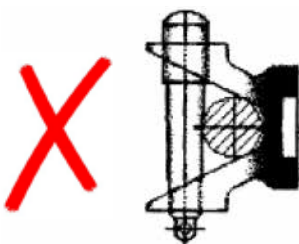


Adequate Clearance

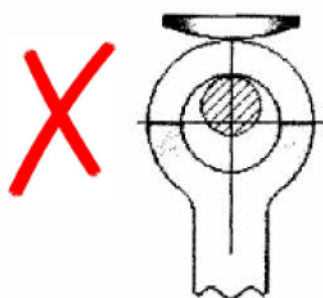


CORRECT

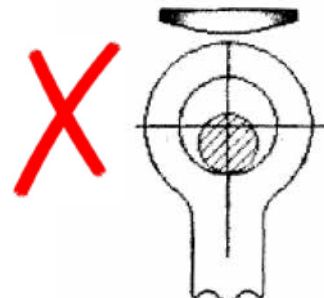
Insufficient Clearance



Insufficient Clearance



Excessive Clearance



COUPLING / DE-COUPLING

Coupling / De-coupling Procedure

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Coupling Trailer To Tow Vehicle

1. Wherever possible, trailers should only be coupled and uncoupled on level ground.
2. Wherever possible couple with the trailer unladen, particularly where livestock/horses are concerned.
3. Ensure that the trailer handbrake is firmly applied or chocks prevent movement of the trailer.
4. Check that the coupling head and towing vehicle ball are lubricated and free from grit and contamination. Where an eye and jaw is used, check for wear.
5. Use the jockey wheel or propstand to raise the coupling head above the height of the towing vehicle ball.
6. Position the towing vehicle such that the ball is directly below the coupling head or the eye is within the towing vehicle jaw. Ensure that the tow vehicle is parked with engine off, in gear and handbrake applied.
7. Check the condition of the breakaway cable (braked trailers). Ensure it passes through its guide at the front of the drawbar and secure to the towing vehicle in the approved manner. Where a secondary coupling (unbraked trailers) is used, connect it.
8. Operate the coupling head mechanism and lift the handle to give clearance for the ball and lower the jockey wheel to engage. Release the handle and check to see that the coupling head is securely engaged on the ball and that any wear indicator shows that the engagement is correct. Where an eye is fitted, ensure that the tow vehicle jaw is compatible with the trailer eye and that the pin and securing mechanism is correctly retained in accordance with the jaw manufacturers recommendations.
9. Retract the jockey until it is wound up. Release the clamp and lift the whole assembly to its highest position and re-clamp.
10. Make the electrical connections to the towing vehicle and confirm that lights function correctly. **NOTE.** When loading, ensure that the noseweight on the trailer is within the limits defined by the towing vehicle, towbar and trailer manufacturers.
11. Ensure that the nominal heights of the ball on the towing vehicle and the coupling head (or eye and jaw) on the trailer are compatible. Where possible, adjust the ball height to ensure that the trailer is towed level.
12. Release the trailer handbrake. **NOTE.** Whenever possible, have a driver in the towing vehicle applying the foot brake, this is particularly important when releasing the handbrake on an incline.

PARKING & UNCOUPLING

1. Wherever possible, trailers should only be coupled and uncoupled on level ground.
2. Wherever possible, uncouple with the trailer unladen, particularly where livestock/horses are concerned.
3. When parking on a public road be aware of the highway regulations particularly regarding lighting, direction of travel and any local restrictions. Avoid leaving a parked trailer on public highways.
4. Always be alert to the possibility of individuals tampering with a parked trailer and the safety implications.
5. Avoid uncoupling a trailer on busy roads.
6. **NOTE.** For added safety it is good practice when leaving the vehicle to take the ignition keys with you.
7. Always ensure that if some unexpected movement occurs, it will not cause personal injury.

COUPLING / DE-COUPLING

Coupling / De-coupling Procedure

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Level Ground

1. Apply the towing vehicle handbrake, turn the engine off and leave in gear.
2. Release the jockey wheel clamp and re-clamp lower down. Wind out the jockey until it touches the ground. Where a propstand is fitted, clamp it in contact with the ground.
3. Apply the trailer handbrake (where fitted) taking note that over-centre handbrakes need to be “pulled” on to achieve optimum effectiveness.
4. Release the handle on the coupling head and continue to wind the jockey wheel lifting the head clear of the towing vehicle ball. Where a towing eye is fitted, raise the eye to the middle of the jaw and remove the pin. If a propstand only is fitted, lift the drawbar but be extra careful to ensure that there is not an excessive weight on the drawbar.
5. Disconnect the electrical connection and breakaway cable (braked trailers) or secondary coupling (unbraked trailers).
6. Move the towing vehicle clear and lower the jockey wheel until the trailer is horizontal. This avoids leaving extra load on the tyres and jockeys for extended periods. Lightweight unloaded trailers can usually be easily pushed clear depending upon the state of the ground.
7. As a safeguard, the trailer wheels should be chocked. If the trailer is to remain in position for some time, the recommendation is to use chocks and release the handbrake to minimise the risk of brakes sticking, cables stretching and someone inadvertently releasing the handbrake.

Facing Uphill

1. Apply the towing vehicle handbrake, turn the engine off and leave in gear. If there is any doubt that the towing vehicle handbrake will hold because the trailer is heavily laden or the hill is very steep, keep the engine running, or apply the handbrake and footbrake as a alternative (assistant required).
2. Braked trailers only: apply trailer handbrake, with everyone clear, start the towing vehicle engine, hold the vehicle on the foot brake, release the towing vehicle handbrake and gently release the footbrake allowing the trailer and tow vehicle to move back slowly as the trailer brakes move into auto-reverse, this can be observed as additional movement of the handbrake lever. Re-apply the tow vehicle handbrake, stop the engine and engage gear.
3. Place chocks behind one wheel on each side of the trailer.
4. Release the jockey wheel clamp and re-clamp lower down. Wind out the jockey until it just touches the ground. Where a propstand is fitted, clamp it in contact with the ground.
5. Release the handle on the coupling head and continue to wind the jockey wheel, lifting the head clear of the tow vehicle ball coupling. Where a towing eye is fitted raise the eye to the middle of the jaw and remove the pin. If a propstand only is fitted, lift the drawbar but be extra careful to ensure that there is not an excessive weight on the drawbar. **NOTE.** the front of the trailer may be light or there may be a negative noseweight due to the angle of the hill forcing the centre of gravity behind the axle, this is particularly noticeable with single axle trailers.
6. Disconnect the electrical connection and the breakaway cable (braked trailers) or secondary coupling (unbraked trailers).
7. Move the towing vehicle clear and lower the jockey wheel until the trailer is parallel to the ground. This avoids leaving extra loads on the tyres and jockeys for extended periods.
8. We do not recommend leaving a trailer unattended on a steep hill.

COUPLING / DE-COUPLING

Coupling / De-coupling Procedure

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Facing Downhill

1. Apply the towing vehicle handbrake, turn the engine off and leave in gear. If there is any doubt that the towing vehicle handbrake will hold because the trailer is heavily laden or the hill is very steep, keep the engine running, or apply the handbrake and footbrake as a alternative (assistant required).
2. Place chocks behind one wheel on each side of the trailer.
3. Apply the trailer handbrake (where fitted) taking note that the over-centre handbrakes need to be “pulled” on to achieve optimum effectiveness.
4. Release the jockey wheel clamp and re-clamp lower down. Wind out the jockey until it just touches the ground. Where a propstand is fitted, clamp it in contact with the ground.
5. Release the handle on the coupling head and continue to wind the jockey wheel, lifting the head clear of the tow vehicle ball coupling. Where a towing eye is fitted raise the eye to the middle of the jaw and remove the pin. If a propstand only is fitted, lift the drawbar. **NOTE.** Be extra careful to ensure that there is not an excessive weight on the front of the trailer, more so than on level ground as the hill will tend to increase the drawbar noseweight, this is particularly noticeable with single axle trailers.
6. Disconnect the electrical connection and the breakaway cable (braked trailers) or secondary coupling (unbraked trailers).
7. Move the towing vehicle clear and lower the jockey wheel until the trailer is parallel to the ground. This avoids leaving extra loads on the tyres and jockeys for extended periods.

OPERATION OF KNOTT-AVONRIDE CAST COUPLING HEAD

1. Ensure the key (if fitted) is in the unlock position
2. Move the thumb catch rearward and hold in place.
3. Pull the handle upward.
4. Lower the coupling head onto the towball.
5. Release the handle and thumb catch. **NOTE.** Always ensure the coupling head and towball are engaged.
6. To remove, move the thumb catch rearward and hold in place.
7. Pull the handle upward and raise the coupling head clear of the ball.

KNOTT-AVONRIDE CAST COUPLING HEAD WEAR INDICATOR

1. When the coupling head is not fitted to the towball, check and record dimension “A” indicated on the coupling. This dimension should always be greater when fitted to the towball.
2. Re-check dimension “A” at regular intervals. If the dimension is identical when not fitted and fitted to the towball then either the ball or head is worn or a combination of both. Action must be taken to replace either ball and/or head. **WARNING! DO NOT** drive in this condition.

COUPLING HEADS / TOWING EYES / BELLOWS

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Replacing Coupling Heads / Towing Eyes

Prior to proceeding it is essential to confirm the condition of the damper. Carry out a damper reaction test. Pull the handbrake lever on as far as possible. Push the ball coupling as far back into the overrunning hitch as it will go. This requires force to compress and should extend smoothly when released. If the drawtube is impossible to compress, compresses with just spring force and no damping resistance, or the extension is very rapid the damper must be replaced carefully following the dampers instructions. If completely satisfied that the damper is in good condition proceed as follows:

1. Follow the procedure for dampers up to and including point (4)
2. If you have been unable to remove the coupling head/eye as instructed in dampers point (4) go straight to instruction (5) below, otherwise continue.
3. The damper will now be retained between the front coupling / eye bolt and the rear damper bracket. It is now necessary to remove the damper without destroying it. **WARNING!** Proceed with extreme caution. The most efficient method is to remove the rear damper mounting bracket but depending upon the coupling, there may still be tension in the damper.
4. Place a lever against the rear damper in such a manner that once the mounting bracket bolts are removed, the tension can be released slowly. Take the tension and remove the mounting bracket bolts, release the tension in the damper.
5. Inspect the shaft for the damage, dress burrs and clean any dirt as the new coupling will be a close fit on the shaft.
6. If a new bellow is fitted, cut the tie-wrap and discard the old one, fit the new and secure with a tie-wrap.
7. Trial fit the new coupling, it should slide into place without any undue force. **DO NOT** hammer the coupling into place, this can damage the coupling itself or the overrun mechanism. If it proves to be tight remove it, and thoroughly clean the shaft, inspecting for burrs.
8. Fit the bolts, washers and secure with **NEW** locking nuts. **DO NOT** re-use the old nuts as this is safety critical. Torque to the figure specified in the relevant section of this manual. Fit the plastic nut covers. Where the damper has been removed ensure that the coupling head rear bolt passes through the hole in the damper body. **NOTE.** If you have any doubts about the condition of the damper, a new one must be fitted.
9. If the damper bracket has been released the rear mounting bracket will need to be re-fitted. This means that the damper needs to be compressed such that the bolts can be located.
10. Re-fit the bellows with the coupling / eye horizontal taking care not to tear or damage the material.

Where the replacement coupling / eye is a different part to the original:

- ✓ Always ensure that the corresponding length bolts are used.
- ✓ Always ensure that the compatible bellows are used.
- ✓ Always ensure that the hole sizes in the coupling and drawbar tube match and that the correct sized bolts are employed

Adjustment

It is not necessary to make any adjustments, simply rotate the coupling / eye to its limits to ensure that the natural position of the bellows is with the head horizontal.



FIG A

AVONRIDE HEAD LOCK

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Replacing Coupling Heads / Towing Eyes

These instructions cover adding a lock to a coupling head originally supplied without one, and also the replacement of an existing lock.

1. Operate the latch and lift the handle to expose the latch pin. Block in position. Using a punch drift the pin out. See Fig A.
2. Lift the lock housing out. See Fig B.
3. If the housing is not currently fitted with a lock, remove the spring for re-use. Remove the washer and the plastic blanking plug and discard.
4. If the housing has a lock fitted remove the spring, centre screw, washer and actuator lever for re-use, followed by the lock barrel ring nut.
5. Fit the plastic cap cover to the new lock, insert lock into casting and secure with the ring nut.
6. Fit the actuator level with washer and centre screw and locate the spring.
7. Place the assembly into position on the coupling body, line up the pivot hole and gently drift in the pin.
8. Check all parts are secure, that the lock mechanism operates and that the safety catch moves freely securing the handle.



FIG A

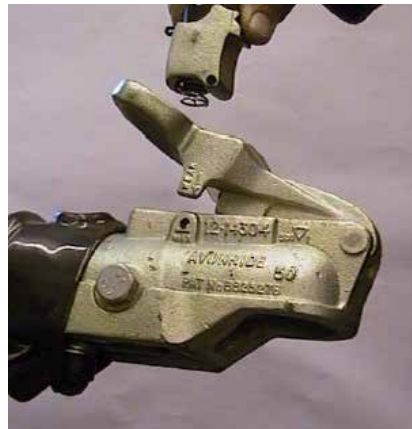


FIG B

DAMPERS

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Safe Removal and Disposal of Dampers

The dampers assembled within overrun couplings are pressurised. During assembly the damper is preloaded and compressed in order that the coupling operates correctly. Care must therefore also be exercised when working on, handling and disposing of the coupling / damper. This is especially important if any damage or misuse of the coupling has occurred. This procedure will ensure that the damper is removed and disposed of safely.

WARNING! DO NOT position anything or stand immediately to the front or rear of the coupling assembly in case a damper fails during the process.

Removal

1. Pull back the bellow from the coupling head / eye to expose the two securing bolts, see Fig A.
2. Undo the self locking nut from the rear bolt of the coupling / eye, as shown in Fig A.
3. Remove the rear bolt - force maybe required as the damper may still be preloaded. Raise the coupling operating handle in order to fully remove the bolt if needed.
4. When the rear bolt is removed the damper will move forward to rest upon the front bolt. **NOTE.** In some instances a retaining pin is fitted (located between the bolt holes). This pin will hold the damper in its original position and will therefore need to be removed in the following manner: Undo the self locking nut from the front bolt, extract the bolt and remove the head. Replace both bolts in the drawtube and finger-tighten the nuts. Knock out the retaining pin and remove the rear bolt, this will allow the damper to move forwards and contact the front bolt. This position is shown in Fig. B. on the cut away photograph.
5. From underneath, through the bolt hole in the drawtube, drill a 3mm diameter hole into the damper body to a depth of 8mm, Fig B. **WARNING!**
 - Observe normal safety procedures for the use of hand tools
 - Wear safety glasses
 - DO NOT lie immediately underneath the bolt hole when drilling.
 - When the drill penetrates the damper body, gas will be allowed to escape
6. The pressure in the damper should now have been discharged. Remove the self locking nut on the front bolt. If the bolt is still difficult to remove it indicates that there is still residual force in the damper and so section (5) should be repeated.



FIG A



FIG B

DAMPERS

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

7. Remove the rear damper bracket retaining bolts. Also remove the nuts and spring washer from the rear of the damper, as shown in Fig C on the cut away photograph. The de-pressurised damper can now be removed by sliding the damper forward through the drawtube and be disposed of as per the DISPOSAL instructions below.

Replacement

1. Fit the rear damper mounting to the new damper, see Fig C and slide the damper loosely into position.
2. Follow the procedure for Coupling Heads / Towing Eyes / Bellows, section (5) onwards.



FIG C

WARNING! This operation should only be carried out if the gas pressure has been discharged. Prior to disposing of the damper it is recommended that the oil remaining in the damper is drained away and disposed of in an appropriate manner. This can be achieved by drilling a 3mm hole in the damper body 60mm from the rod end of the damper.

DRAWTUBES

Removal

1. Follow the instructions for DAMPERS (section 1 to 8) taking due note of the introductory notes.
2. Once the damper is removed the brake rod can be disconnected from the lever which transmits the force from the drawtube to the brake rod. The transmission lever can now be rotated to allow the drawtube to be removed rearwards.
3. If the drawtube has been bent it will prevent removal so the front portion must be sawn off and the remainder removed from the rear of the coupling housing. Once sawn, all burrs must be removed and care exercised to prevent swarf being trapped such that it will jam the mechanism.
4. Clean the bearing surfaces inside the housing.

Replacement

1. Lubricate the drawtube and insert it into the housing ensuring that it is free to slide and that there is not excess clearance between the tube and bearing surfaces.
2. Fit the damper into the drawtube and slide loosely into position, fit the damper mounting to the new damper.
3. Re-fit bellows over the drawtube, place the coupling into position. Fit the bolts, washers and secure with new locking nuts. DO NOT re-use the old nuts as this is safety critical. Torque to the figure specified in the relevant section of this manual.
4. Compress the damper and fit the rear mounting bracket bolts. **WARNING!** Proceed with extreme caution. Compress the damper with a lever and secure the mounting bracket bolts as shown in Fig C above.
5. Reconnect the brake rod to the transmission lever.

Adjustment

It is not necessary to make any adjustments, simply rotate the coupling / eye to its limits to ensure that the natural position of the bellows is with the head horizontal.

BREAKAWAY CABLES

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Removal

It is important that the handbrake lever is prevented from operating. **WARNING!** The handbrake should be released and the handbrake locking bolt fitted.

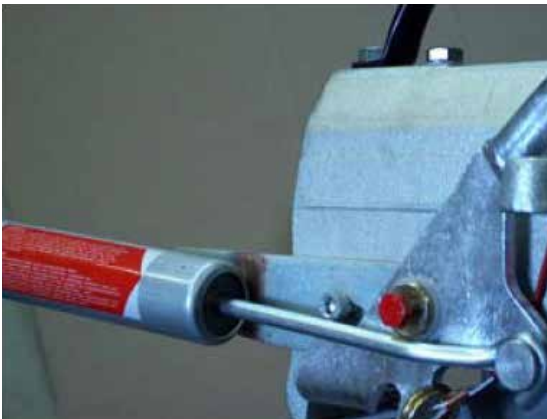


FIG A



FIG B

1. Remove the existing cable from any guides taking note of the route.
2. Remove the split pin and withdraw the clevis pin. See Fig B.

Refitting

WARNING! Always use the correct replacement from the manufacturer as an incompatible cable will fail to operate the handbrake mechanism correctly.

3. Insert the clevis pin and retain it with the split pin provided.
4. Thread the cable through the guides

Operation

1. Ensure that the cable passes through the guides provided. This is important to ensure that the cable operates under the widest range of circumstances.
2. Check that there is no damage or fraying prior to use.
3. Secure the cable to a suitable point on the tow vehicle, refer to the vehicle or tow bar manufacturers specifications for location.
4. Ensure that the cable is not pulled tight during articulation of the trailer and remains clear of the ground.

BOWDEN CABLES

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Removal & Replacement of Bowden Cable

Place the trailer on a lift or stands with all wheels free.

WARNING! The handbrake should be released and the handbrake locking bolt fitted.

Some couplings do not have provision for the locking bolt. In this case or if a bolt cannot be used the handbrake lever should be secured in the off position to prevent the handbrake operating. See Fig A.

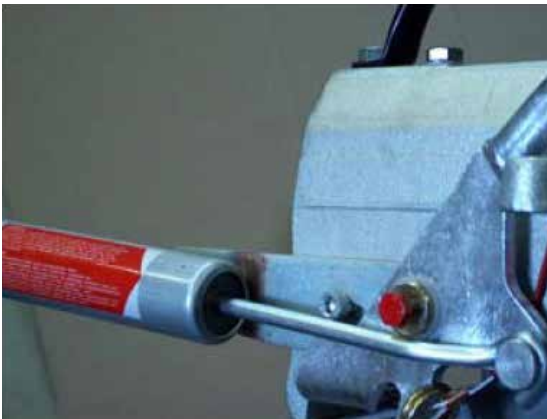


FIG A

1. Undo the locknut on the brake rod (front to rear) adjacent to the compensator. Slacken the second nut on the brake rod.
2. All cables up to mid 2012 had threaded fittings which passed through the compensator and either a domed nut and lock nut or a domed washer and lock nut were fitted. In which case remove the nut from the cable inner and the nut retaining the outer to the bracket. Take note of any washers and orientation of domed nuts. Remove the half shell from the backplate and detach the brake cable. Withdraw the cable assembly.
3. Attach the new cable to the expander in the hub and refit the half shell.
4. Thread the new cable into position, secure the outer with its nut and thread the nut on the inner to approximately the position noted on the old cable. **NOTE.** This procedure covers just the Bowden cable replacement, we would always recommend that a full brake adjustment is carried out including hub adjustment.
5. From mid 2012 fixed length (Pronto Fit) cables were introduced which have a domed mushroom head. These are used with a compensator with slotted pivot points to enable the cable to be assembled to the unit.
6. Follow the adjustment procedure under Spreadlever Brakes starting at item 2.

OIL DAMPED HANDBRAKE ENERGY STORE

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Safe Removal of Handbrake Energy Store

The handbrake energy store dampers fitted to overrun couplings are pressurised. During assembly the damper is reloaded and compressed in order that the coupling operates correctly. Care must therefore also be exercised when working on, handling and disposing of the coupling/damper. This procedure will ensure that the damper is removed and disposed of safely.

WARNING! The handbrake should be released and the handbrake locking bolt fitted.

Some couplings do not have provision for the locking bolt. In this case or if a bolt cannot be used, the handbrake lever should be secured in the off position to prevent the handbrake operating.

1. With the handbrake secure in the relaxed position, release the locking nut securing the brake rod to the overrun coupling transmission lever, disconnect the brake rod from the transmission lever.
2. With brake rod disconnected the handbrake and energy store are free to travel through the full range of motion, pull the handbrake to its engaged position, make sure that the clevis of the transmission lever does not become trapped between the handbrake lever foot and the transmission lever. **NOTE.** If the clevis becomes trapped between the handbrake and transmission lever the handbrake will be prevented from travelling through its full range of motion, which in turn means the energy store will still be preloaded, this will prevent it being removed.
3. Remove the E-clip holding the connecting pin at the handbrake, then connecting pin can then be removed as well.
4. Using a 17mm socket and spanner remove the nut securing the energy store to the mounting plate, the energy store can now be safely removed.

Replacement

1. One end of the energy store is slightly wider than the other, this end should be fitted to the handbrake fixing point, aligning the mounting holes.
2. Fit the smaller securing pin from the inside of the handbrake through the aligned mounting holes, this may require an E-clip to be fitted to one end first, secure the pin in position with an E-clip.
3. At the other end of the energy store fit the anchor bolt to the energy store, fitting the smooth end of the bolt through the energy store mounting hole, secure in position with an E-clip.
4. Raise the unsecured end of the energy store upwards to align the anchor bolt with the hole in the mounting plate, you may need to rotate the handbrake through its range to align the bolt and hole.
5. With the threaded end of the anchor bolt, through the hole in the mounting plate, secure in position with the M10 locking nut, torque tighten to 20Nm +0 / -3Nm.
6. With everything connected and secure, pull the handbrake lever to the "off" position, reconnect the brake rod to the clevis of the transmission lever, tightening off the lock nut against the clevis.
7. Check the brake adjustment

JOCKEY WHEELS

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Servicing

1. Service requirements for jockey wheels are limited to greasing the main threaded rod. To lubricate the thread, wind open the jockey wheel until the top and bottom sections disengage. Apply grease generously over as much of the threaded rod as can be reached. Grease the female thread in the bottom section. Grease will be carried throughout the length of the rod when the jockey wheel is next retracted.
2. The jockey wheel clamp handle cannot be withdrawn directly. Remove the jockey and screw the handle in far enough to release the clamp pad. If the handle is bent, cut it off, leaving enough to cut a screwdriver slot.



Thrust Washer/Bearing

3. The thrust washer/bearing can be inspected if a problem is suspected.
4. Remove the handle from the upper section of the jockey wheel by driving out the roll pin that secures it. The threaded rod and thrust washer/bearing can then be withdrawn and greased.
5. This is not a recommended service procedure unless a problem has been identified, in which case the unit is probably an economic write off.



NOTE. The handle and threaded rod are drilled together and must be reassembled in the same relative position.

Wheel:

The wheel unit itself needs no lubrication

If the plastic bush/bearing or tyre are damaged or worn, replace the wheel by removing the split pin which will release the axle. **NOTE.** Heavy-duty wheels have steel needle rollers in a plastic bearing cage.

Replacement

There have been many changes in specification and compatibility between different upper and lower sections cannot be guaranteed. Jockey wheels are therefore sold only as complete assemblies.

Problems

6. Bent tube: This is normally caused by forgetting to retract the jockey wheel before driving off, resulting in the wheel hitting the road and the lower tube (occasionally the upper) being bent. Look for obvious damage or signs of the inner section rubbing inside the upper. The unit is beyond repair and must be replaced.
7. Damage to the thread: The usual causes of failure are overloading and raising the jockey wheel under load to the point where the threaded rod disengages from the lower section. **WARNING!** In extreme cases, the jockey wheel may collapse so keep clear of the trailer when checking this issue. Again, the unit is beyond repair and must be replaced.

JOCKEY WHEELS

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Propstand/Jockey Bracket

Replacing Brackets

Support the trailer adjacent to the stand bracket leaving a clear working area around the bracket mounting.

1. Remove the jockey wheel or propstand from the bracket and inspect it for damage
2. Remove the fasteners securing the bracket, noting the orientation of the clamping mechanism. See Figs. A & B.
3. Fit the new bracket with the correct bolts.
4. Trial fit the jockey wheel or propstand to ensure that it clamps securely.

WARNING! DO NOT allow any weight to be placed on the support until adjustment is completed and you are confident that the parts clamp properly.



FIG A



FIG B

Adjustment

Split clamp only:

Adjust the locking nut so that there is the same clearance at both sides of the clamp body when the clamp handle is tightened.

WARNING! If the two halves of the body touch, the assembly will not support the weight when tightened.

Jockey Wheel Clamp Handle & Pad

1. Screw clamp handle into jockey wheel clamp housing (located on the side of the coupling) until formed end protrudes through.
2. Locate keyway in clamp pad to formed end of clamp handle
3. Unscrew clamp handle until pad is secure with the clamp housing

NOTE. DO NOT attempt to remove the handle without first removing the pad.

HUBS, SEALS & BEARINGS

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

There are many varieties of hub bearing / seal arrangement, usually specific to each manufacturer. However, these fall into two types; separate bearings (taper roller or angular contact ball races) which are assembled with some clearance and unitised bearings which are a single bearing and are assembled using a high torque locking nut.

WARNING! Be aware that hub bearing failure in service results in catastrophic failure with a high possibility of the wheel becoming detached from the stub with obvious potential consequences. Always err on the safe side and replace suspect components.

Place the trailer on a lift or stands with all wheels free. **WARNING!** The handbrake should be released and the handbrake locking bolt fitted.

Hub/Drum Removal

1. Assess the condition of the bearing by rocking the road wheel to see if there is play in the bearing, then spin the wheel and listen for a rumbling sound which indicates pitting of the races.
2. Remove the wheels and hub cap. Slacken off the brake adjuster if needed.
3. Remove the grease cap by carefully prying progressively around the flange of the cap.
4. For installations with a castellated nut and split pin, remove the pin, nut and, where fitted, washer.
5. For installations with a high torque nut unscrew the nut. **WARNING!** High forces are needed; ensure that the trailer is stable.
6. Remove the brake drum (hub puller may be required and adjustment may require slackening) taking care not to displace the bearings.
7. Once the linings are exposed take extreme care to avoid contaminating them and the friction face of the drum with grease as this will impair braking performance.

Bearing Inspection

Hubs with separate bearings

8. Wash grease and oil from the bearing with a suitable solvent; inspect each roller, inner and outer races. If any pitting, damage or corrosion is present then the bearing must be replaced. **NOTE.** If any one part shows damage or wear we always recommend replacing all bearings in the hub and fitting a new oil seal.
9. Using a brass drift carefully drive out the outer races working around the circumference. **WARNING!** Be sure to wear safety glasses when removing or installing force fitted parts. Failure to comply may result in an eye injury.
10. Clean the hub and carefully tap in the new bearing outer races with a brass drift. Be sure they are seated against the shoulders.
11. Grease the bearings and fit with a new seal. Force grease into the bearing between each roller; apply a light coat of grease to the bearing races. **CAUTION!** DO NOT fill the cavity between the bearings, this is not necessary and may lead to grease leaking from the seals onto the brake linings.

Recommended grease is Shell Retinax EP2, bearings should be lubricated every 12 months or 12,000 miles.

Hubs with Unitised Bearings

Unitised bearings used in our hubs are a single non-adjustable lubricated for life assembly with integral seals. If the check in (1) above indicated excess play in the bearing, then the bearing should be pressed/drifted out having removed the circlip and replaced. The new bearing should be pressed/gently drifted into place ensuring that it remains square to the bore and seats against the shoulder, the circlip is then re-fitted.

HUBS, SEALS & BEARINGS

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Seal Inspection and Replacement

Installations with separate bearings have a seal on the inside end to retain grease, whenever the hub is removed inspect the seal to ensure that it is not nicked or torn and is still capable of properly sealing the bearing cavity. If there is any question that it may be in poor condition, replace the seal.

To replace the seal: Pry the seal out of the hub with a screwdriver. Never drive the seal out with the inner bearing as you may damage the bearing. Tap the new seal into place using a clean wood block. Very lightly lubricate the seal face with grease. Unitised bearings have an internal seal which is less prone to damage and is not replaceable, if failure is suspected the whole bearing must be replaced.

Drum Inspection

Check the condition of the brake drum, replace the drum and bearing if deep score marks are visible.

WARNING! Avoid inhaling brake dust. DO NOT use a compressed air line to clean the drum. Carefully remove the dust using a small brush or brake cleaner.

Bearing Adjustment & Hub Replacement

Refitting taper roller hubs with castellated nut and split pin.

If the hub has been removed or bearing adjustment is required, the following adjustment procedure must be followed.

1. After placing the hub, bearings, washers and spindle nut back on the axle spindle in reverse order as detailed in the previous section on hub removal, rotate the hub assembly slowly while tightening the axle nut to approximately 50lbs-ft. (69Nm)
2. Loosen the axle nut to remove the torque. DO NOT rotate the hub.
3. Finger tighten the axle nut until just snug.
4. Back the nut out slightly until the first castellations line up with the split pin hole and insert the split pin.
5. Bend over the split pins legs to secure the nut.
6. Nut should be free to move with only restraint being the split pin.

Refitting taper roller hubs with castellated nut and split pin.

1. Fit the drum to the axle shaft and tighten the nut to the correct torque (280Nm as specified inside the dust cap of the hubs). **NOTE.** The nut may only be used once so if the history is not known it must be replaced.
2. Refit the hub cap and replace wheels securing wheel nuts as specified in the trailer manufacturers handbook. Confirm that there is no excessive play at the wheel rim.

After the first 1000km wheel bearings should be checked for excessive end float.

HUBS, SEALS & BEARINGS

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Wheel Studs

1. Remove hub as detailed on page 21.
2. Place hub on flat surface with studs showing up, and gently tap out studs.
3. Invert hub on raised surface, allowing room for new studs to be knocked through.
4. Align ribs on new wheel studs with grooves in stud holes.
5. Gently tap in studs using brass drift to protect studs.

Wheel Nuts

Replace worn wheel nuts as necessary.

NOTE. Tighten up to wheel manufacturers recommended torque (if in doubt contact supplier). We recommend that once the hubs have been refitted that the brakes are adjusted - please refer to the adjustment section of the Spread Lever Brakes.

BRAKES - HINTS & TIPS

THE BRAKE ADJUSTMENT SHOULD BE RECHECKED AFTER A SHORT JOURNEY. **WARNING! THE DRUMS MAY BE HOT.**

Force Required to Enter Reverse Mode

There is a small "nib" at the front of the ramp on the brake shoe intended to prevent the shoe inadvertently entering reverse mode. There needs to be enough slack in the system to allow the shoe to ride over this before fully entering auto-reverse mode. If the brakes are adjusted very tightly, this will not happen and the brakes will stay on when reversing.

Slippery surfaces such as mud or wet grass sometimes do not provide enough friction to turn the wheels into reverse mode. The trailer will slide backwards rather than roll.

Residual Braking

The system is kept in auto-reverse mode by friction between the shoe and the brake drum therefore there is always a small amount of braking effect when reversing.

Handbrake Lever Movement

If the brakes enter reverse mode while the handbrake is on (e.g., when uncoupling while facing up a slope) the lever can move sharply and unexpectedly upwards under the force of the energy store spring. The trailer will also roll backwards a few inches as this happens. Allow room for this when parking.

BRAKES - HINTS & TIPS

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Brakes Lock On

Under certain circumstances e.g. on uneven ground, twin axle trailers can sometimes lock their brakes and refuse to reverse. This is caused by two wheels entering auto-reverse mode while the other two are still in forward mode. The compensator transmits only half the normal amount of slack to the coupling which is then still able to apply all four brakes. There are two methods of dealing with this:

1. If possible, begin reversing manoeuvre on adjacent level ground so that all wheels enter reverse mode simultaneously.
2. Manually turn the other two wheels backwards to engage auto-reverse mode.

Sticking Brakes

It is most prevalent on new trailers stored with the handbrake on, especially during winter.

For an immediate fix, tap the brake drum (not backplate) with a hammer. This works in most instances.

In the long term, chock the wheels and leave the handbrake off when leaving the trailer, particularly if it is new and the weather tends to be heavy dew.

Trailers become far less prone to this condition after the brakes are bedded in. Some trailer owners (horse box users in particular) drive so gently that the brakes never bed in. A solution can be achieved by loading the trailer securely and deliberately bedding them by heavy use. Be careful not to endanger or inconvenience other road users with unexpected heavy braking.

SPREAD LEVER BRAKES

Replacing Brake Shoes:

NOTE. It is recommended that brake shoes are replaced in axle sets.

Place the trailer on stands with all wheels free. **WARNING!** The handbrake should be released and the handbrake locking bolt fitted.

See Fig A. Some couplings do not have provision for the locking bolt. In this case or if a bolt cannot be used the handbrake lever should be secured in the off position to prevent the handbrake operating.

1. Remove the wheels
2. Remove the hub cap.
3. Slacken off the brake adjuster bolt until free. Some brake assemblies have a ratchet accessible through an aperture in the backplate instead of the bolt.

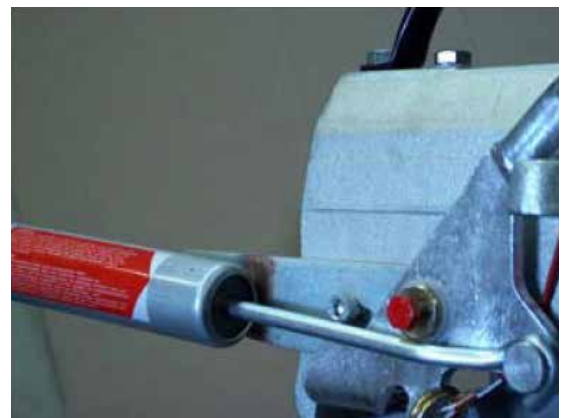


FIG A

SPREAD LEVER BRAKES

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Replacing Brake Shoes cont.:

4. Remove the axle nut, this may be castellated nut retained with a split pin or alternatively it may be a locknut.
5. Remove the brake drum (hub puller may be required) taking care not to displace the bearings. **WARNING!** Avoid inhaling brake dust. **DO NOT** use an airline to clean the drum. Carefully remove the dust with a small brush.
6. Check the condition of the brake drum, replace the drum if deep score marks are visible.
7. Undo the locknut on the brake rod (front to rear) adjacent to the compensator. Slacken the second nut on the brake rod. Remove the half shell from the backplate and detach the brake cable.
8. **NOTE.** Record the orientation of the brake shoes and springs on the backplate to ensure that the new shoes and springs are replaced in the same position as the old. See Fig B. (left hand) and C (right hand) for reference to 250 x 40 brake (others similar)
9. With care and using a suitable lever, lift the sliding shoe carrier away from the expander. Extract expander and retain.
10. Remove brake shoe retaining spring taking care to retain the spring. Keep plate or pin at the rear of the backplate where fitted.
11. Lift off whole brake shoe assembly from backplate. Take care not to lose the two adjuster wedges.
12. Examine the components and springs, replace any damaged parts. Clean the mechanism and ensure that all parts are free to move.
13. Re-fit springs to the new shoes
14. Locate shoes onto the backplate and position onto the adjuster wedge or cam block.
15. Re-fit retaining springs
16. Locate expander into position on fixed shoe.
17. With care, and using a suitable lever, position the expander between the shoes and release the lever.
18. Attach brake cable and re-fit the half shell. **NOTE.** Always replace the brake cables if they show sign of wear, stiffness, damage or fraying.
19. Re-fit the drum and bearing. **CAUTION!** Refer to the axle manufacturer or trailer manufacturer's instruction. Replace the split pin or lock nut dependent on which type of nut is used. Generally speaking, if a split pin or castellated nut is fitted the axle nut must be adjusted to allow the correct bearing clearance. When the locknut is used it is normally tightened to a pre-determined torque.
20. Re-fit the hub cap.
21. Repeat the procedure on the other drum(s).
22. Replace the wheels securing wheel nuts, as specified.
23. Follow the adjustment procedure on the following page.



FIG B

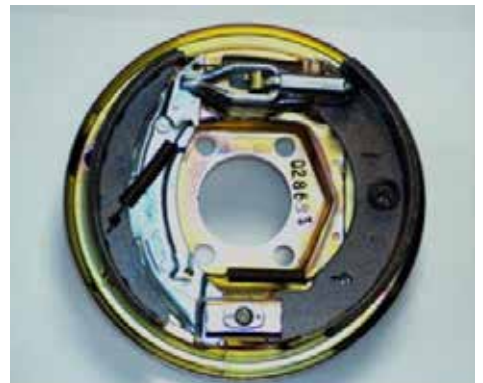


FIG C

SPREAD LEVER BRAKES

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Adjustment:

NOTE. When adjusting the brake drum, only turn the wheel in the direction of forward rotation.

Ensure that the coupling drawtube is fully extended and that there is no tension in the brake rod or cables.

1. Turn each wheel in the direction of forward rotation. Turn the brake adjuster bolt clockwise until some resistance is felt as the brake shoes begin to grip the drum, then slowly turn the brake adjuster bolt anticlockwise until the wheel begins to rotate freely again. Alternatively, advance the adjuster using a screw driver through the backplate hole until resistance is felt, then turn back by a few clicks until the wheel begins to rotate freely again.
2. Turn the nut on the brake rod until the nut is in contact with the compensator. **CAUTION!** DO NOT over-tighten as this will cause the brakes to drag out and overheat.
3. **WARNING!** Double check that everything has been re-assembled with all fasteners secure. Remove the handbrake locking bolt and operate the handbrake several times to ensure that the compensators are seated. Check the travel of the individual brake cables. This should be 2-5mm. If not re-adjust the brakes as appropriate.
4. With the handbrake engaged, turn each wheel in the reverse direction. They should turn a little and then lock as the auto-reverse mechanism operates. **NOTE.** As each wheel is turned there will be a rearward movement of the handbrake lever as the energy store operates. This action should occur once on the rearward turn of each wheel. If any wheel fails to lock there is too much slack in the system.
5. Check the compensators are at 90° to the brake rod with the brakes applied in forward and reverse. Misalignment can be corrected through adjustment of the cable locking nuts. This is particularly important if a new cable has been fitted.
6. Operate the handbrake and leave on. Lower the trailer to the floor and recheck the torque of the wheel nuts.
7. Please note the brakes will not be 100% effective until the new linings have bedded in.

WHEELS & TYRES

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Wheels

Damage and cracks:

Check the wheels visually for damage or cracks. Cracks can be detected by rust showing through paint and by air loss if in the rim. Pay particular attention to the rim, around the wheel bolt and valve holes and at the ends of welds.

There must be no dents or gouges in the tyre seating area. The wheel shown left must be replaced. If any such defects are present, the wheel must be replaced.

A severed blowout can cause distortion to the inner rim which may be difficult to see when on the trailer. Damage less severe than that shown left can cause sealing problems between the damaged rim and replacement tyre.

NOTE. It is important to use wheels with the correct load rating and this is not usually marked on the wheel itself.



Runout:

Rotate each wheel. There should be no visible runout on the vertical face of the bead seating well. If unsure, measure using a dial test indicator. Make sure that there is no load on the wheel, and bearing float is not included in the measurement. Total runout should not exceed 2mm. As a guide, this should be visible to the naked eye.

Valve:

Valve body rubber should show no cracks and a dust cap should be fitted.

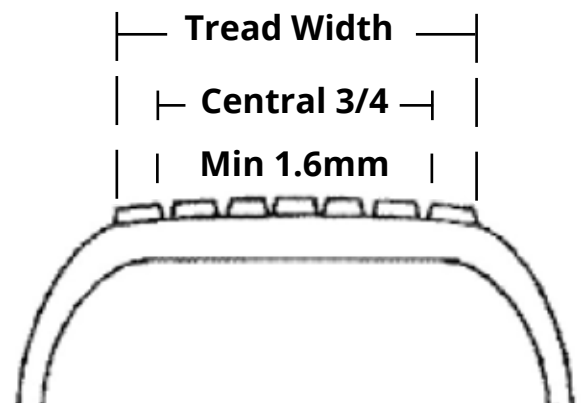
Tyres

Size & Load / Speed Index

Check that the size and load/speed index are correct for the application. **NB.** Car and trailer tyres are often the same size but have a different index. Use of a car tyre with a lower load/speed index is dangerous and illegal.

Tread

Check the tread depth. The moulded 1.6mm tread depth indicator blocks must be below the level of the tread surface all the way around the tyre in the central % of the tread width. The tread pattern should be visible on the remaining portion. Tread depth of less than 3mm should be noted on the service record.



WHEELS & TYRES

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Ageing

In many trailer applications, tyres last a long time and may require replacement because of surface grazing or cracks between the tread blocks or in the sidewall rather than tread wear.

Cuts

Cuts should not be longer than 25mm or penetrate to the underlying reinforcement. Water ingress through the reinforcement can cause delamination.

1. There should be no lumps or bulges in tread or sidewall.
2. Check for foreign bodies embedded in the tyre.
3. **NOTE.** Be aware that gradual pressure loss from a tubeless tyre could indicate the early stages of a cracked rim rather than a tyre problem. If allowed to go uncorrected, this will result in more rapid deflation with a tendency to run the tyre under inflated. In the final instance, the wheel will fail, causing a sudden and potentially dangerous deflation. Always check both the wheel and tyre when investigating a slow leak.
4. Check tyre pressures. **NOTE.** If in any doubt, refer to a tyre supplier.
5. **NOTE.** The manufacturers recommend that tubes are not to be used with tubeless tyres.

LIGHTING SYSTEMS

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Lighting Systems

The service consists of a functional check - if this identifies a fault then an initial visual check followed by a methodical series of tests will be needed.

Visual Inspection

1. 7 Pin or 13 Pin Plug & Trailer to Vehicle Cable
 - Check for damage or deterioration
 - Plug electrodes are clean and not worn
 - Plug body and seal is not damaged
 - Cable is not abraded or cracked, especially near the plug or where secured to the trailer.
 - Open the plug and check the connections for corrosion or loose connections.
2. Junction Boxes
 - Check the junction box(es) for damage. Check that the lid is securely fitted and seals are intact.
3. Fixed Wiring
 - Check for damage, cuts and cracks especially where the cable runs over metal edges or is flexed.

LIGHTING SYSTEMS

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Fault Finding Strategies

These are simple systems and work logically. The difficulty sometimes lies in finding that answer quickly. If a lamp is not working:

1. Check anything that has been disturbed recently
2. Check areas known to be susceptible to damage or deterioration.
3. Check things that are easy and quick

If this does not identify the problem:

1. Follow systems in a logical and thorough manner.

Earth faults are common, particularly on older towing vehicles and can require investigation.

If these do not yield a result, then follow the malfunctioning system through from one end to the other omitting nothing. Be aware that the circuit may pass from one colour wire to another.

Do not assume that the trailer is always at fault. A great deal of time can often be saved by checking the wiring of the towing vehicle at an early stage.

Equipment

2. Proline Electrical Tester: The Proline electrical tester is a battery driven, one-man operated light tester which systematically tests all of your trailer lights and indicates where there is a fault. Contact us for more information.
3. Lighting Board: A specialist fault finding device can be used to check the towing vehicle but a simple lighting board makes a readily available substitute. Make sure it is wired correctly and double check it is still working before using a checking aid. Use this to check the towing vehicle and as an emergency field recovery replacement.
4. Multi-meter: The ranges required for trailer purposes are 12 (occasionally 24) volts DC (direct current) for detecting voltage and resistance for checking continuity.
5. Test Lamp: A small 12 probe, one with a small crocodile clip. Attach the crocodile clip to earth (white lead) and use the probe to detect where a positive voltage is being supplied.
6. Extension Lead: A long extension lead with two crocodile clips to enable a multimeter or test lamp to be used between two remote points e.g. between the 7-pin plug and the junction box or a rear lamp.

Lighting Systems - Faults

! Lamp Does Not Work

FAULT: One lamp doesn't work at all and the others work correctly:

Check for power

1. Check that a voltage appears between the contact and bulb holder when the lamp is switched on. If there is no power then go to the plug at the front of the trailer and check for voltage between live and the white earth cable. Follow the feed for that lamp back to the next connector or junction box and check for voltage again. Check leads coming into and out of each connector/junction box, all the way back to the lamp if necessary. Following a progression from the lamp to the power source will indicate in which connector or cable run the problem lies.

LIGHTING SYSTEMS

PRIOR TO CARRYING THIS PROCEDURE OUT, PLEASE REFER TO PRECAUTIONS

Check Cables

1. If the problem lies in a cable run then identify if the problem is in the feed or ground wires. This can be done by continuity test or by substitution.
2. Check each crimp terminal. Check there is good contact between the crimp and the core and there is no insulation getting in the way. Cores sometimes break just inside the insulation.
3. If both terminals are good, then the fault lies with the wire. If there is no visual damage to indicate the location of the problem, the simplest solution is to replace the cable or add a supplementary cable.

! Wrong Lamp Comes On

FAULT: One lamp comes on instead of the other:

This is almost certainly a wiring error. Follow the cables from the lamp to the vehicle plug to find the mistake.

FAULT: Correct lamp comes on, others come on dimly.

An earth fault. The lamp being tested is trying to earth itself through the other lamps. Follow the earth from the lamp in question to find the fault.

FAULT: Fuses blow in the towing vehicle

Longer trailers with side marker lamps can draw more current from right and left side lamp circuits than the towing vehicle is capable of supplying. **NB.** Each 5 watt bulb draws 0.4 amps over and above the requirements of the towing vehicle itself. Check the fuse capacity on the side lamp circuit. If this is inadequate install a by-pass relay. More modern lighting systems use LEDs for side marker lamps reducing the current consumption.

This problem can be caused by a live feed touching either the chassis or the white earth return wire.

DO NOT use a towing vehicle to test for this problem, use a multi-meter to identify the fault. Use the resistance function of a multimeter to determine which wire has the fault. At the plug check each feed wire in turn against the white earth wire then against the chassis. Low or zero resistance will indicate which feed wire is contacting which return. Follow the feed wire through the system to locate the fault.

LED Lamps

There are sometimes issues with LED lights due to incompatibility with the towing vehicles electrical system. These can normally be overcome with the use of a smartload relay - SKU: [12.1042](#). See www.ate-uk.com.

ELECTRICAL WIRING CONNECTIONS

12N



PIN NO.	COLOUR	DESCRIPTION
1	Yellow	Left hand indicator
2	Blue	Rear fog lamp
3	White	Earth
4	Green	Right hand indicator
5	Brown	Right hand/side tail lights
6	Red	Brake lights
7	Black	Left hand side/tail lights

12S



PIN NO.	COLOUR	DESCRIPTION
1	Yellow	Reverse light
2	Blue	Battery charging (switched live)
3	White	Earth
4	Green	Interior lights
5	Brown	Spare
6	Red	Fridge (switched live)
7	Black	Earth

12V 13-PIN EUROPEAN TYPE



PIN NO.	COLOUR	DESCRIPTION
1	Yellow	Reverse light
2	Blue	Battery charging (switched live)
3	White	Earth
4	Green	Interior lights
5	Brown	Spare
6	Red	Fridge (switched live)
7	Black	Earth
8	Pink	Reversing light
9	Orange	Permanent live
10	Grey	Switched live
11	White/black	Earth for Contact 10
12	White/blue	Coding for Coupled Trailer
13	White/red	Earth for Contact 9

24N



PIN NO.	COLOUR	DESCRIPTION
1	White	Earth
2	Black	Left hand side/ tail lights
3	Yellow	Left hand indicator
4	Red	Brake lights
5	Green	Right hand indicator/ tail lights
6	Brown	Right hand side/ tail lights
7	Blue	Brake control for trailers

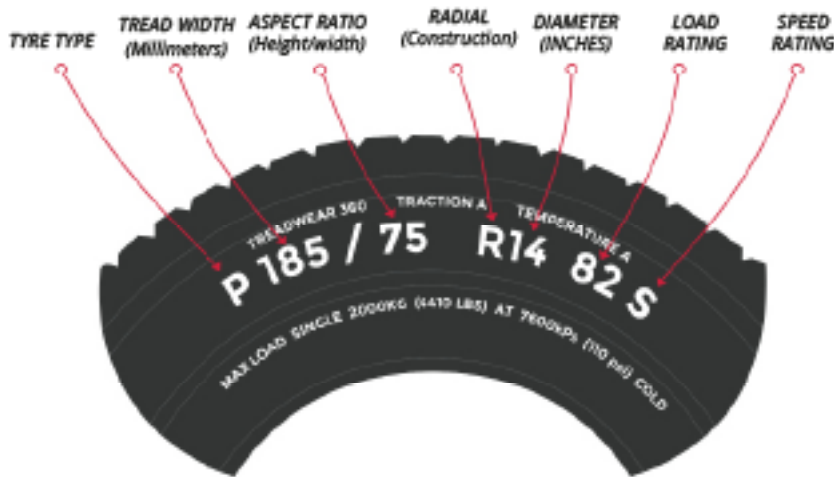
24S



PIN NO.	COLOUR	DESCRIPTION
1	White	Earth
2	Black	Spare
3	Yellow	Reversing light
4	Red	Power supply
5	Green	Sensing device and earth
6	Brown	Spare
7	Blue	Rear fog lamp

TYRE GUIDE & LOAD INDEX

Every new E marked road tyre in use today has size and maximum capacity ratings moulded into the sidewall of the tyre. This type of information is shown in the example below:



TYRE SPEED SYMBOLS

J	60 mph
K	63 mph
L	75 mph
M	81 mph
N	87 mph
P	93 mph
Q	100 mph
R	106 mph
S	113 mph
T	118 mph
U	124 mph
H	130 mph
V	150 mph

TYRE LOAD INDEX

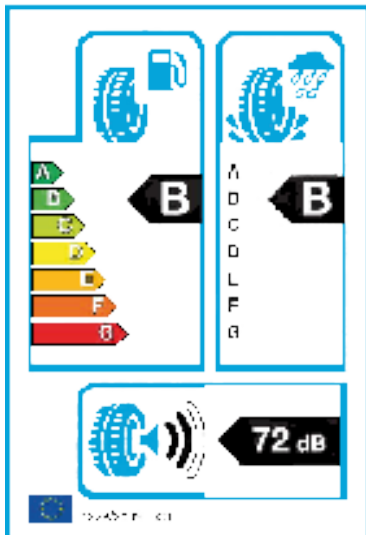
The tyre Load Index is a numerical code associate with the maximum load a tyre can carry at the speed indicated by its Speed Symbol under service conditions specified by E.T.R.T.O 1991, passenger car tyres section 13.

LI	KG	LI	KG	LI	KG	LI	KG	LI	KG	LI	KG
60	230	71	345	82	475	93	600	104	800	115	1000
61	237	72	350	83	487	94	609	105	805	116	1000
62	245	73	355	84	500	95	619	106	810	117	1000
63	252	74	365	85	515	96	700	107	815	118	1000
64	260	75	377	86	530	97	700	108	1000	119	1000
65	269	76	400	87	540	98	700	109	1000	120	1000
66	278	77	412	88	560	99	775	110	1000	121	1000
67	287	78	425	89	580	100	800	111	1000	122	1000
68	295	79	437	90	600	101	825	112	1000	123	1000
69	305	80	460	91	615	102	850	113	1000	124	1000
70	315	81	482	92	630	103	875	114	1100	125	1000

KG = Load (kg) LI = Load Index

TYRE GUIDE & LOAD INDEX

Since November 2012, tyres sold in the UK & EU have been labelled to enable buyers to make a more informed choice. Descriptions of the components shown on this label and laid out below:



Fuel Efficiency

The energy lost when a tyre is rolling is expressed as a 'rolling resistance'. Lower rolling resistance reduces fuel consumption and CO2 emissions.

Wet Grip

Provides information on the tyre's grip on wet roads, tyres with a higher rating indicate excellent grip and shorter braking distances on wet roads.

Noise Levels

The tyre's exterior noise grading in decibels, one black wave indicates at 3dB below the legal limit, which was made mandatory from November 2016.

BOLT TORQUES & LUBRICATION

Wheel Bolts / Nuts

Thread Type	Torque Value
M10 x 1.25 Bolt	55 Nm
M12 x 1.5 Bolt	90 Nm
M14 x 1.75 Bolt	110 Nm
3/8" UNF Nut	60 Nm
7/16" UNF Nut	70 Nm
M12 x 1.5 Nut	100 Nm
1/2" UNF Nut	90 Nm
5/8" UNF Nut	110 Nm
M16 x 1.5 Nut	195 Nm

Head Securing Bolts

Thread Type	Torque Value
M12 Grade 10.9	100 Nm
M14 Grade 10.9	125 Nm

Fasteners (in general)

Thread Type	Torque Value
M10 Grade 8.8	45 Nm
M12 Grade 8.8	70 Nm
M12 Grade 10.9	125 Nm
M14 Grade 10.9	170 Nm
M16 Grade 8.8	195 Nm

Hub Nuts

One Piece Bearing	Taper Roller Bearing
280 Nm	70 Nm (rotate hub) then back off. Retighten finger tight then fit split pin
350 Nm	
280 Nm	

BOLT TORQUES & LUBRICATION

	OIL	GREASE
Coupling Head Cup		Yes (Morris K2EP Longlife Grease)
Coupling Pivots	Yes	
Coupling Drawtube		Yes (Morris K2EP Longlife Grease)
Handbrake	Yes	
Jockey Wheel Thread		Yes (Morris K2EP Longlife Grease)
Exposed Cables, Rod Ends, Threads, Pivots		Yes (Shell Albeida RL1)
Compensator	Yes	

GENERAL DATA

Legal Requirement

The laws requires all braked trailers built on or after 1st October 1982 (caravans, horseboxes, flat bed car trailers etc.) to be fitted with a safety device to provide protection in the event of the separation of the main coupling while in motion by applying the trailer brake. This device is described as a 'break-away cable'.

When fitted to a trailer, its use is mandatory.

Purpose of the Breakaway Cable

The breakaway cable applies the trailer's brakes should the main coupling device become parted from the towing vehicle. If this happens the cable should be able to pull tight, without hindrance, engaging the trailer brakes and is designed to then break, allowing the trailer to come to a halt away from the towing vehicle.

An attachment point should be incorporated by the towing bracket manufacturer for the attachment of either secondary couplings or devices necessary to enable the trailer to be stopped automatically in the event of separation of the main coupling (as per the requirements of ECE Reg.55 1.6.).

Braked Trailers (Up to 3,500kg GVW).

Either:

Pass the cable through the attachment point and clip it back on itself.

Or,

Attach the clip directly to the designated point.

Where a designated attachment point for the cable attachment has not been provided on the towbar, it is suggested that in the case of a fixed towball, the cable be looped around the towball. For removal type towballs, **always** consult the manufacturer to determine if this method of attachment is acceptable.

Correct procedure for use:

Regularly check the cable and clip for damage, if in doubt, contact Towmate. Make sure the cable runs as straight as possible and goes through a cable guide underneath the trailer coupling.

Check to ensure once the cable is attached:

That the cable cannot snag in use on the trailer coupling head, jockey wheel, or any accessory.

That there is sufficient slack in the cable to allow the towing vehicle and trailer to articulate fully without the cable becoming taut and applying the brakes.

That it cannot make contact with the ground; if left loose, the cable may scrape along the ground, damaging it and potentially causing it to fail.

Breakaway cables are designed to function at pre-determined loads depending on the trailers braking system characteristics. It is important that any replacement complies with the specification of the original cable.

Secondary Couplings (fitted to unbraked trailers)

A 'secondary coupling' is a chain or cable that shall be fitted between an unbraked trailer and the towing vehicle and maintains the connection of the two in the event of separation of the primary coupling. This is a legal requirement on trailers manufactured after 1st January 1997.

TOWING INFORMATION

The following information is for reference only and should not be used to mitigate or replace any current policies used by the trailer operator.

Trailer – Towing vehicle coupling

To ensure safe and trouble free towing it is important to ensure the coupling between trailer and towing vehicle is correct. The below are the main criteria relating to coupling:

1. It is advised to always couple up on flat ground with an unladen trailer, as a rule when hitched up to a towing vehicle and fully loaded the trailer should be level with as little up or down angle as possible.
2. The nose load of the trailer is set by the towing vehicle, check the manufacturers information for the maximum load. The payload on the trailer should be positioned such that it offers a nose load of no less than 50kg and no more than that specified by the towing vehicle manufacturer. Note: It is also advised to check the plate on the hitch to ensure its specified maximum load is not exceeded.
3. Check the coupling on the trailer is undamaged and suitable for that of the towing vehicle i.e. a 50mm ball coupling or eye coupling. There should be no dirt or grit on the coupling and it should be in correct working order, additionally an eye coupling should not have any wear giving an 'egg' shape eye, if this is the case a replacement should be sought.
4. Ensure the breakaway cable or safety chain (on trailers up to 1500kg) is undamaged and shows no sign of corrosion or wear. It should always be used and be secured back onto itself securing to a substantial structure on the towing vehicle. Be sure to check the length is suitable to enable the trailer to articulate without engaging the system.

Masses and capacities

Always check that the trailer and towing vehicle are not overloaded, this relates to the GVW and also individual masses of both the trailer and towing vehicle. Check the trailer information plate located on the A-frame for the maximum permissible mass and also the maximum axle and nose load masses. Check the towing vehicle manufacturers information for the relevant masses. Where there are overlapping mass specifications the lowest number must always be used. **NOTE:** It is also important to ensure that the tyres on both the towing vehicle and trailer are appropriately rated for the loads imposed on them. Always check the load index and speed rating marked on the tyre.

SERVICE SCHEDULE

The following schedule is the minimum required to upkeep the Towmate warranty, failure to keep the monthly service schedule and records of it will result in the warranty being void. Any additional servicing/maintenance specified by operators does not constitute any part of the standard Towmate service schedule/operations.

For daily checks refer to checklist [here](#).

500 Mile / Monthly Service

Check Wheel Nut Torque – Use a calibrated torque wrench to check and tighten if necessary all wheel nuts to the recommended torque as per page 35.

Check Braking – Check the braking system and adjust if necessary at the backplate and check all rods and cables along with couplings. To adjust brakes follow page 23-26.

Check Wheel Hubs – Check hubs for side play if there is noticeable side play check for damage and refer to page 21-23. Check for roughness and high pitched noise while rotating the wheels if there is refer to page 21-23.

Check Axle – Check swing arms and axle beams for damage and ensure ride height is unchanged side to side (make sure trailer is unloaded).

Coupling – Oil all moving parts and clean, for oil type see page 25.

Jockey Wheel – Check jockey wheel for any damage and ensure smooth and easy operation, dismantle and lubricate if necessary.

6000 Mile / 6 Monthly Service

All checks as per 500 mile / monthly service

Check Pivot Axle System.

Check all steelwork on trailer for signs of damage or fatigue – Any damage should be recorded and reported to Towmate for analysis. If there is a potential issue with the working or safety of the trailer Towmate will provide the solution and if it constitutes a warranty claim.

12000 Mile / "MOT" Style Annual Check

All checks as per 500 mile / monthly service and 6000 mile / 6 month service.

See page 42.

[DOWNLOAD DAILY TRAILER CHECKLIST HERE](#)

500 MILE / MONTHLY CHECK

Coupling Head	<p>Oil moving parts and pivots.</p> <p>Clean and lubricate coupling head.</p> <p>Check coupling head for positive locking onto towball.</p>
Coupling Assembly	<p>Check bellows for damage and apply grease to the two grease nipples on the coupling body and check drawtube for play.</p> <p>Carry out a damper reaction test. Pull the handbrake lever as far as possible. Push the ball coupling as far back into the overrunning hitch. This requires force to compress and should extend smoothly when released.</p> <p>Check the handbrake lever including auto reverse.</p> <p>Braked: check break-away cable for damage, fraying and security of the fittings.</p> <p>Unbraked: check secondary coupling (cable, chain) for damage and security of the fittings.</p> <p>The use of a break-away cable or secondary coupling is a legal requirement. Always use a compatible cable from the original manufacturer.</p>
Wheelbrake / Brake Rod Mechanism	<p>After 500 miles, and then every 300 miles (or annually), adjust the wheel brakes at the backplate and re-check the mechanism. NOTE. It is important that the brake wear is taken up by adjusting the brake hubs and not by adjusting the linkage to compensate for mis-adjusted hubs. Ensure that cables / rods are not pre-tensioned prior to adjusting the wheel brake.</p>
Rubber Torsion Axle	<p>Check ride height.</p> <p>Check wheel bearing</p>
Jockey Wheel	<p>Dismantle and lubricate</p>

6000 MILE / 6-MONTHLY CHECK

Coupling Head	<p>Oil moving parts and pivots.</p> <p>Clean and lubricate coupling head.</p> <p>Check coupling head for positive locking onto towball.</p>
Coupling Assembly	<p>Check bellows for damage and apply grease to the two grease nipples on the coupling body and check drawtube for play.</p> <p>Carry out a damper reaction test. Pull the handbrake lever as far as possible. Push the ball coupling as far back into the overrunning hitch. This requires force to compress and should extend smoothly when released.</p> <p>Check the handbrake lever including auto reverse.</p> <p>Braked: check break-away cable for damage, fraying and security of the fittings.</p> <p>Unbraked: check secondary coupling (cable, chain) for damage and security of the fittings.</p> <p>The use of a break-away cable or secondary coupling is a legal requirement. Always use a compatible cable from the original manufacturer.</p>
Wheelbrake / Brake Rod Mechanism	<p>After 500 miles, and then every 300 miles (or annually), adjust the wheel brakes at the backplate and re-check the mechanism. NOTE. It is important that the brake wear is taken up by adjusting the brake hubs and not by adjusting the linkage to compensate for mis-adjusted hubs. Ensure that cables / rods are not pre-tensioned prior to adjusting the wheel brake.</p>
Rubber Torsion Axle	<p>Check ride height.</p> <p>Check wheel bearing</p>
Jockey Wheel	<p>Dismantle and lubricate</p>
Lights	<p>Check all lights are intact, securely fastened and all working correctly.</p>
Pivot Axle System	<p>Check pivot axle system.</p>
Steelwork	<p>Check all steelwork on the trailer for signs of damage or fatigue - any damage should be recorded and reported to Towmate for analysis. If there is potential issue with the working or safety of the trailer, Towmate will provide the solution and if it constitutes, a warranty claim.</p>

“MOT” STYLE ANNUAL CHECK

TEST	METHOD	GO / NO-GO
Check drawtube for play	Grasp and feel play vertically and horizontally	Max 1-2m play at the head
Check damper operation	Force inwards and allow to extend	Requires force to compress and extends smoothly
Check coupling head “fits onto” towball	Trial fit to towball	Head indicators should show acceptable
Check coupling head and coupling assembly for loose, worn or broken parts. Particularly the bellows for damage.	Inspection and check moving parts.	All parts move freely, no damage or wear.
Check rubber suspension for soundness	Visual inspection and measurement	Ride height at the same height on both sides
Check coupling assembly and suspension mounting points (axle pads) for security.	Use spanner to check critical fasteners (coupling or delta plate plus axle pad bolts)	All secure
Look at tyre treads for any clues to misalignment or possible suspension failure.	Inspection	Tyres must be legal, have the correct load rating and any unusual treadwear investigated further.
Check wheel bearings.	Raise trailer, rock wheel.	No / minimal play
Check the handbrake lever including brakes in auto reverse	Apply handbrake, push rearwards and observe lever.	Brakes should re-lock as handbrake lever travels further overcentre.
With trailer handbrake on, check adjustment	Apply handbrake	Check the compensator remains parallel
With trailer handbrake on, check function of compensator.	Raise trailer, turn each wheel backwards until it locks.	Wheels should lock one at a time, compensator must articulate and return to a parallel position when all wheels are locked.

“MOT” STYLE ANNUAL CHECK

TEST	METHOD	GO / NO-GO
Check the trailer holds securely on the handbrake	Apply handbrake and attempt to tow forwards with vehicle	Braking effect should be felt plus likelihood of skidding wheels on poor terrain.
Inspect linkage, cables and compensator for security and corrosion.	Inspection	All secure and minimal corrosion.
Check the pivot axle system	Check there are no signs of wear around the central pivot point. Check the circlip is still intact. Check all fixing to ensure all are secure. Check there are no signs of damage	No signs of wear and tear or damage and all fixings secure.
Check all lights are intact, securely fastened and all working correctly.	Check that all lights are securely fixed and in good order. Check that all lights work. (A useful tool for this is the ATE Electrical Tester. SKU: 26.4011)	All lights are working and secure on the trailer.
Check all steelwork on the trailer for signs of damage or fatigue	Check the general condition of the body work and chassis. Make sure there is nothing loose or missing and that everything is straight.	All is secure and in good condition. Nothing loose or missing.

SERVICE RECORD

MODEL:

MANUFACTURE DATE:

VIN NUMBER:

SERVICE INTERVAL	
DATE	
NOTES:	
PRINT + SIGN	

SERVICE INTERVAL	
DATE	
NOTES:	
PRINT + SIGN	

SERVICE INTERVAL	
DATE	
NOTES:	
PRINT + SIGN	

SERVICE INTERVAL	
DATE	
NOTES:	
PRINT + SIGN	

SERVICE INTERVAL	
DATE	
NOTES:	
PRINT + SIGN	

SERVICE INTERVAL	
DATE	
NOTES:	
PRINT + SIGN	

FAULT FINDING

FAULT	CAUSE	SOLUTION
Braking too weak	Too much play in the brake system	Re-adjust
	Brake linings not run in	Drive with caution and re-check
	Brake linings oiled or damaged	Replace shoes and clean drum and brake components
	Over-run hitch stiff in operation	Lubricate and check for free movement
	Brake rod bent	Inspect and replace
	Brake cables rusty, frayed, buckled or damaged.	Inspect and replace
Jerky braking	Too much play in the brake system	Re-adjust
	Defective coupling damper	Replace damper
	Auto-reverse brake shoe binding in carrier	Clean, check for wear and lubricate or replace
Trailer slews under braking	Wheel brakes working one side	Check system, replace as necessary, adjust
	Brake linings oiled or damaged in one or more hubs	Replace shoes and clean drum and brake components.
Trailer brakes when tow vehicle throttle released but brakes not applied	Defective coupling damper	Replace damper
Difficulty reversing (brakes lock)	Brake system too tightly adjusted	Re-adjust hubs and cables DO NOT overtighten
	Pre-tension in cables	Check hubs, cables and links for adjustment
Handbrake too weak	Too much play in the brake system	Re-adjust
	Brake rod bent	Inspect and replace
	Brake cables rusty, frayed, buckled or damaged	Inspect and replace

FAULT FINDING

FAULT	CAUSE	SOLUTION
Wheel brakes get hot	Possible normal operation	Request opinion of service centre
	Brake system too tightly adjusted	Re-adjust system taking care not to overtighten
	Pre-tension in cables	Check hubs, cables and links for adjustment
	Overloaded trailer	Ensure that heating is not simply due to high duty.
Ball coupling does not locate - fails to lock on.	Inside of coupling head dirty	Clean and lubricate
	Incorrect tow vehicle ball hitch	Ensure that hitch is ISO 50mm (49.61/50.0 diameter)
Ball coupling does not locate - loose or play evident.	Wear in head or ball	Inspect and replace
	Faulty head	Replace head

CONTACT DETAILS

We're here to maximise your towed fleet efficiency and really care about keeping your business and machines running. We live by a set of values that apply to everything we do - we share knowledge and always innovate - anticipating market needs, and moving to meet them fast. You can guarantee that when you communicate with us, there's a warm friendly personality at the end of the phone.

Our friendly customer service team is here to help you and to supply the highest quality parts with the best available customer service. For any queries, servicing, maintenance and enquiries regarding trailer parts and spares do not hesitate to contact the team by phone or online. Our team are available from 7:e0am to 4:30pm, Monday to Friday.

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