



ROUTINE MAINTENANCE MANUAL



MOBILE SHEEP DIPPER (Road Legal)

WARRANTY

The Portequip range of trailers is supplied with a full year's warranty from the date of despatch from the factory. Any malfunctioning equipment, omissions, or deviations from the original specification, must be reported to Portequip Ltd within 10 days of delivery to the dealership. Any damage sustained in transport must be reported to the delivery driver, the Portequip team or the transport company.

Warranty procedure

If you have a claim under warranty, contact the manufacturer's agent, from whom you purchased the trailer, quoting the model and serial number. Do not delay, as you should realise that further or excessive damage caused by delaying the repair of an otherwise warrantable failure may mean the claim cannot be fully accepted. Our continuous improvement policy means that you should provide your dealer with as much information as possible relating to the failure, for example the length of haul, type of material, towing vehicle etc. as this will help to diagnose the cause of any failure.

Note: Normal maintenance and servicing routines are not covered by warranty. No warranty repairs are to be carried out without prior authorisation from Portequip Ltd. After the repairs are completed a warranty claim can be submitted to Portequip's warranty department for consideration. Any new parts supplied relevant to the claim will be invoiced at full retail value and then credited after the faulty material has been returned and the warranty claim approved.

NOTES

MAKE A NOTE OF THE TRAILER SERIAL NUMBER BELOW FOR A FUTURE REFERENCE

SERIAL NUMBER: _____



THESE INSTRUCTIONS MUST BE READ IN FULL BEFORE OPERATING THE DIPPER.

THIS MANUAL MUST ALWAYS REMAIN WITH THE DIPPER

OPERATORS RESPONSIBILITY

It is the responsibility of the operator to read and understand the contents of this manual before operating the trailer for the first time. The operator's manual must always accompany the trailer. If the trailer is resold the operator's manual must be given with the trailer to the new owners.

MANUFACTURER:

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Girvan Road
Newton Stewart
DG8 6RD
01671 402775
sales@portequip.co.uk
www.portequip.co.uk

Agent Details:

How to use this manual

Before use of the trailer familiarise yourself with the manual and its contents. The trailer may only be operated, serviced and repaired by persons who are familiar with the trailer and who have read and understood this manual, and are informed of the risks.

Modifications to the trailer (including the fitment of non original/non approved parts or attachments) without the specific approval of the manufacturer, exclude the manufacturer from any liability or damage resulting from the modifications. Failure to follow the procedures given in this manual could invalidate the warranty given.

!!! WARNING !!!

The operator and user must read this manual fully before commencing work with or transporting the trailer. If the operator or user does not understand any part of this manual further help and advice is available from the manufacturer or from the manufacturer's agent shown above.

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MAINTENANCE INTRODUCTION

In the UK, by Law, every employer, must meets its obligations in relation to Health and Safety under the following pieces of legislation.

- **The Health & Safety at Work Act 1974**
- **The Provision and Use of Work Equipment Regulations 1998**

It is vitally important that all work equipment is maintained in an efficient state, is in an efficient working order and in a good state of repair. Therefore, it is imperative that equipment is maintained so that it is in good mechanical condition.

Planned maintenance should be.

- *Thorough*
- *Regular*
- *Frequent*

Any item that is not functioning correctly should be replaced with genuine Portequip parts before the trailer is used.

The manufacturer will in no way be liable for damage or personal injury caused by failure to comply with this schedule or use parts not supplied by the manufacturer.

This manual is generic and covers a range of Portequip trailers. This manual should be used in conjunction with the manual supplied with this trailer.

TILLY PASS SCHEME

Agricultural Trailers are not registered for road use in the UK. Therefore, unlike a commercial Trailer they are not required to undertake an annual Ministry of Transport test.

“The absence of a Ministry of Transport Test can lead to trailers not being maintained in accordance with the requirements of the Provision and Use of Work Equipment

Regulations 1998 (PUWER) as recommended by Portequip in this manual, potentially leaving the trailer in a dangerous, unroadworthy condition.”

This means that any equipment / machinery used for work purposes should be maintained in good condition and function as it was originally designed and manufactured.

Portequip encourage all UK customers to register their trailer with the Tilly Pass scheme. This is a voluntary scheme for trailers whereby authorised dealers carry out an annual maintenance inspection of the trailer, repair any issues and reinstate the trailer to a safe, functional state thereby ensuring the owner has met their obligations under PUWER.

After a year, the trailer needs to be rechecked, and a new certificate issued.

You can find more information including dealers that have subscribed to this scheme on the website www.tilypass.co.uk



MAINTENANCE & SERVICE SCHEDULES

The Warranty will be void if the maintenance schedule is not followed and genuine Portequip parts used.

Portequip cannot be held liable for damages caused by:

- Improper Product Use ✗
- Use by unqualified and/or unskilled personnel ✗
- Incorrect Installation (if made by the customer) ✗
- Inadequate product maintenance or cleaning ✗
- Unauthorised alterations or work ✗
- Incorrect manoeuvres ✗
- Use of non-original spare parts ✗
- Use of unforeseen accessories or not authorised in writing ✗
- Full or partial failure to follow the instructions ✗
- Exceptional Events ✗

As a memorandum for the user, Portequip Limited, guarantees the technical specifications and part quality in its products.

The Manufacturer's warranty *does not* cover parts whose repair or replacement is due to natural part wear or defects due to incorrect product use by the customer such as, for example, but not limited to:

- Unauthorised Alterations ✗
- Use other than that indicated by Portequip Limited ✗
- Product overloads beyond that indicated by Portequip ✗
- Negligent or poor product part maintenance ✗
- Work on products inconsistent with Portequip instructions ✗
- Failure to replace parts subject to wear, etc. ✗

Important Notices

- Trailers manufactured by Portequip Limited are designed to be operated in accordance with the maximum weight ratings set out in the Serial Plate attached to the trailer and at legal speeds as defined by the Highways Code (or as set out in law in the country of operation)
- Alterations to a Portequip trailer should not be made without first consulting Portequips Technical Engineer's. Alterations could affect the structural integrity of the trailer and void the warranty.
- Welding or other alterations should never be made to any air / oil reservoir, wheel rim or spring.
- Portequip Trailers carry a 1-year warranty from date of delivery. Any defect that applies to Portequip Limited workmanship will be repaired under this warranty. If it is necessary for the trailer to be returned to the factory the transport costs will be charged to the customer.
- Parts that are not manufactured by Portequip Limited are covered by the manufacturers guarantee and are subject to their warranty.
- This Warranty excludes all wearing parts and paintwork
- Please remember that every alteration to the trailer voids the original approval.

Pre-Maintenance Inspection Guide (DEALER / AGENT)

SHEEP
DIPPER

CHECK WITH
INITIALS

■ = Check / take action

Pre Delivery Inspection (To be completed by the selling agent/dealer)

Check lights	■	
Check wheel nut torque	■	
Check for oil leaks	■	
Grease Dipper tank pivot points	■	
Grease sprung drawbar (if fitted)	■	
Check security check chain for rear ramps is secured	■	
Check hydraulic hose condition	■	
Check hydraulic oil level in hydraulic pump	■	
Grease brake linkages	■	
Check connections to towing vehicle	■	
Check towing hitch condition	■	
Check tyre pressures	■	
Check tyre condition	■	
Grease all nipples on running gear	■	
Inspect the trailer for loose nuts and bolts	■	
Check all locking pins are in place in dipper chassis and legs	■	
Check Brake clearance & wear	■	
Adjust Brakes	■	
Check all screws and locknuts	■	
Check the axle hubcaps	■	
Check wheel bearing wear	■	
Tighten all suspension U-Bolts (if fitted)	■	
Tighten all spring drawbar U-Bolts (if fitted)	■	
Lubricate wheel bearings	■	
Check suspension	■	
Check breakaway Cable	■	

NOTES



CAUTION Check nose weight on self-braking tow hitch when putting load on deck for road use.

Nose Weight must be between **150kg and 350kg** for correct operation of hitch

■ = Check / take action	SHEEP DIPPER	CHECK WITH INITIALS
GENERAL MAINTENANCE GUIDE (CUSTOMER)		
Daily		
Check operation of all lights	■	
Check tyre pressures	■	
Check tyre condition and tread	■	
Visually check wheel nuts are tight	■	
Check operation of brakes	■	
Check operation of parking brake / parking brake	■	
Check all electrical connections between the towing vehicle and trailer	■	
Inspect trailer for damage	■	
Check all safety decals are clean and visible	■	
Check condition of the dip tank	■	
Check breakaway cable for damage	■	
Check coupling head and wear indicator	■	
Check Coupling head for positive locking onto tow ball	■	
Check ramp security chain is secure	■	
Check ride height of suspension is sitting level	■	
After use of sheep dipper, ensure that the tank is empty and there is no dip solution left before moving the vehicle		
Weekly – In addition to daily checks		
Coupling Head – Oil moving parts and pivots	n/a	
Coupling Head – Clean and lubricate	■	
Coupling Head – Check for positive locking onto tow ball	■	
Coupling Head – Check wear indicator	■	
Check hydraulic hose condition	■	
Check wheel nut torque	■	
Check the parking brake lever including auto reverse	■	
Grease nipples on all running gear	■	
Grease tank body pivot pins	■	
Grease hydraulic Rams pins	■	
Grease Coupling head	■	
Check Breakaway cable	■	
Grease brake cams	■	
Check for hydraulic oil leaks	■	
Check all locking pins are in place in dipper chassis and legs	■	
Check brake condition and wear	■	
Inspect the trailer for loose nuts and bolts	■	
Check ramp security chain	■	
Check Hydraulic oil level in hydraulic pump reservoir	■	
Check condition of stabiliser legs	■	
Check Dipper tanks and sealed deck for leaks	■	

■ = Check / take action	SHEEP DIPPER	CHECK WITH INITIALS
GENERAL MAINTENANCE GUIDE (CUSTOMER)		
Every 3 Months – In addition to Weekly Checks		
Check brake clearance and wear (or after 300 miles)	■	
Check bellows for damage and apply grease to the two nipples on the drawback tube	■	
Check Wheel bearings (or after 500 miles)	■	
Test ABS (if fitted)	n/a	
Check All Screws and lock nuts	■	
Every 6 Months – In addition to 3 monthly checks		
Check the axle bearing gap	■	
Torque suspension (Commercial axles only)	n/a	
Check sprung drawbar and springs	n/a	
Check the axle hub caps	■	
Tighten all suspension U-bolts (if fitted)	■	
Tighten all sprung drawbar U-bolts (if fitted)	n/a	
Annually – Every Year - In addition to 6 monthly checks		
Check Drawtube for play	■	
Check Damper Operation	■	
Check Coupling head fit onto tow ball	■	
Check Coupling head for loose, worn or damaged parts	■	
Check rubber suspension for soundness	■	
Check Coupling assembly bolt torques	■	
Check axle mounting points	■	
Check tyres for misalignment and wear	■	
Check and lubricate wheel bearings	■	
Check & Adjust parking brake lever including auto reverse on brakes	■	
Check function of compensator	■	
Laying up protection		
Protect all electrical connections	■	
Clean trailer down	■	
Repaint any areas where paint has been removed	■	
Replace any worn or damaged parts	■	
Replace missing or damaged decals	■	
Grease all parts notified on trailer	■	
Cover ends of all quick release connectors	■	

NOTES

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 paint and plastic finishes.
- ✓ Always work on a level, firm hard-standing ground, not muddy, slippery, or soft ground.
- ✓ Always 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 pressure torque fasteners with the trailer on a jack. The force applied can dislodge the trailer from the jack.
- ✓ 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 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 low cost when compared to safety.
- ✓ Use only original equipment parts approved by Portequip.
- ✓ Always use anti vibration nuts (nylon insert type or deformed metal). Knott hub bearing centre nuts are suitable for one use only so if the history of a trailer is unknown, play safe and replace with new. Refer to the trailer manufacturers 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 the correct grade and suitable in length. Use new anti-vibration nuts every time. Ensure tapered washers or shaped washers are used where necessary.
- ✓ Always fit new split pins of the correct length and diameter.
- ✓ Double check that all fasteners are either tightened to the correct torque or securely retained as each item is fitted.
- ✗ **NEVER** weld near rubber bushes or rubber suspension elements as the heat soak will damage the rubber. Protect adjacent areas from weld spatter.
- ✗ **ALWAYS** Remove tyres from hubs and store in a safe place away from heat if performing hot works
- ✓ Discard old brake shoes and dust in a sealed bag.

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 Portequip, 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 the 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 parking brake alone.
- ❌ Trailer and components can be heavy. **DO NOT** try lifting heavy items – get help or use appropriate lifting aids.
- ✅ Remove jewellery. Particularly metal strapped 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 removed or use a proprietary brake cleaning fluid. **DO NOT** use an airline 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 and disposable gloves as a precaution and wash hands as soon as practicable 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 someone is in the vicinity of you.
- ❌ **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 a risk of fire or, worse still, explosion.
- ✅ Beware of fumes from chemicals, cleaners, solvents, glues, and paints. Ensure the work area is ventilated and manufacturer's instructions on the containers are followed.
- ❌ **DO NOT** store fluids in unmarked containers.

COUPLING/ DE-COUPLING PROCEDURE



Please exercise caution when carrying out these tasks

COUPLING TRAILER TO A TOW VEHICLE

1. Whenever possible the dipper trailer should only be couple and uncoupled on level ground.
2. Always couple the dipper trailer with the tank empty.
3. Ensure that the trailer parking brake is firmly applied, or the wheels are chocked to prevent movement of the trailer.
4. Check that the coupling head and towing vehicle ball are lubricated and free from grit and contamination.
5. Use the jockey wheel 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 of the trailer. Ensure that the tow vehicle is parked with the engine off, in gear, and with the parking brake applied.
7. Check the condition of the breakaway cable. Ensure it passes through its guide at the front of the drawbar and secure it to the tow vehicle in the approved manner.
8. Operate the coupling head mechanism and lift the handle to give clearance for the ball and lower the jockey wheel to engage the ball into the coupling head. 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.
9. Retract the jockey unit until it is fully wound up and release the clamp and lift the whole assembly to its highest position and re-clamp.
10. Make the electrical connection to the tow vehicle and confirm that the lights are working correctly.
11. **NOTE** When loading ensure that the nose weight of the trailer is within the limits defined by the towing vehicle, towbar manufacturer and trailer manufacturer.
12. Ensure that the nominal heights of the ball on the towing vehicle and the coupling head on the trailer are compatible. Where possible adjust the height of the ball to ensure that the trailer is towed level.
13. Release the trailer parking brake.
14. **NOTE** Whenever possible have a driver in the towing vehicle applying the footbrake, this is particularly important when releasing the parking brake if it has been necessary to couple the trailer and towing vehicle on an incline.

PARKING & UNCOUPLING

1. Whenever possible the dipper trailer should only be coupled and uncoupled on level ground.
2. Always uncouple the dipper trailer with the tank empty.
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 trailer parked on public highways.
4. Always be alert to the possibility of individuals tampering with a parked trailer and the safety implications.
5. Avoid uncoupling 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 that it will not cause personal injury.

LEVEL GROUND

1. Apply the towing vehicle parking brake, turn the engine off and leave in gear.
2. Release the jockey wheel and re-clamp lower down. Wind out the jockey wheel until it touches the ground.
3. Apply the trailer parking brake taking note that over centre parking brakes need to be 'pulled' on to achieve optimum effectiveness.
4. Release the handle on the coupling head and continue to wind the jockey wheel down, lifting the head of clear of the towing vehicle ball.
5. Disconnect the electrical connection and breakaway cable.
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 jockey wheel assembly for extended periods.
7. As a safeguard at least half the trailer wheels on both sides of the trailer should be chocked. If the trailer is to remain in position for some time (laying up) the recommendation is to use two chocks per wheel and release the parking brake to minimise the risk of brakes sticking, cables stretching and someone inadvertently releasing the parking brake.

FACING UPHILL

1. Apply the towing vehicle parking brake, turn the engine off and leave in gear. If there is any doubt that the towing vehicle parking brake will hold because of the weight of the dipper trailer or the hill is steep, keep the engine running and apply the parking brake and footbrake as an alternative (assistance required)
2. Apply trailer parking brake, with everyone standing clear start the towing vehicle engine, hold the vehicle on the footbrake, release the towing vehicle parking brake 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 parking brake lever. Re-apply the tow vehicle parking brake, stop the engine, and leave in gear.
3. Place chocks behind one wheel on each side of the trailer.
4. Release the jockey wheel and re-clamp lower down. Wind out the jockey wheel until it touches the ground.
5. Release the handle on the coupling head and continue to wind the jockey wheel down, lifting the head of clear of the towing vehicle ball.
6. **CAUTION** The front of the trailer may be light or there is negative nose weight due to the angle of the hill forcing the centre of gravity behind the axle.
7. Disconnect the electrical connection and breakaway cable.
8. Move the towing vehicle clear and lower the jockey wheel until the trailer is horizontal. This avoids leaving extra load on the tyres and jockey wheel assembly for extended periods.
9. Portequip do not recommend leaving a trailer unattended on a steep hill.

FACING DOWNHILL

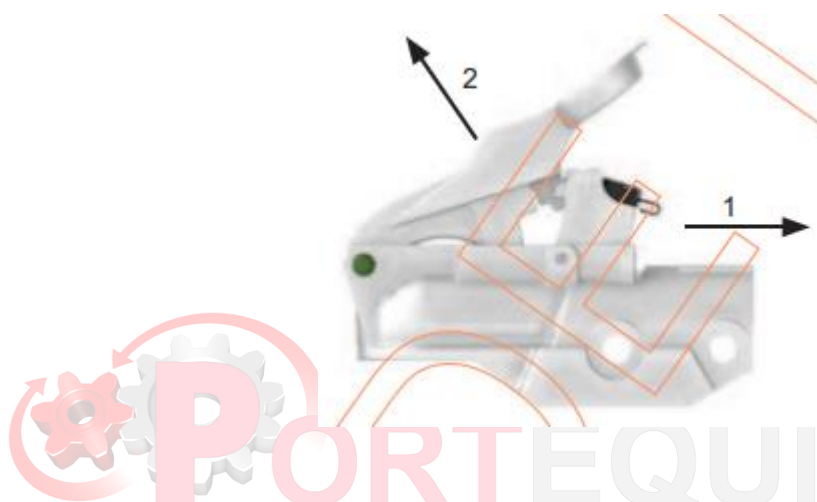
1. Apply the towing vehicle parking brake, turn the engine off and leave in gear. If there is any doubt that the towing vehicle parking brake will hold because of the weight of the dipper trailer or the hill is steep, keep the engine running and apply the parking brake and footbrake as an alternative (assistance required)
2. Place chocks in front of one wheel on each side of the trailer.
3. Apply the trailer parking brake taking note that over centre parking brakes need to be 'pulled' on to achieve optimum effectiveness.
4. Release the jockey wheel and re-clamp lower down. Wind out the jockey wheel until it touches the ground.
5. Release the handle on the coupling head and continue to wind the jockey wheel down, lifting the head of clear of the towing vehicle ball.

6. **CAUTION** Be careful to ensure that there is not excessive weight on the front of the trailer, more so than on level ground as the hill will tend to increase the drawbar weight.
7. Disconnect the electrical connection and breakaway cable.
8. Move the towing vehicle clear and lower the jockey wheel until the trailer is horizontal. This avoids leaving extra load on the tyres and jockey wheel assembly for extended periods.



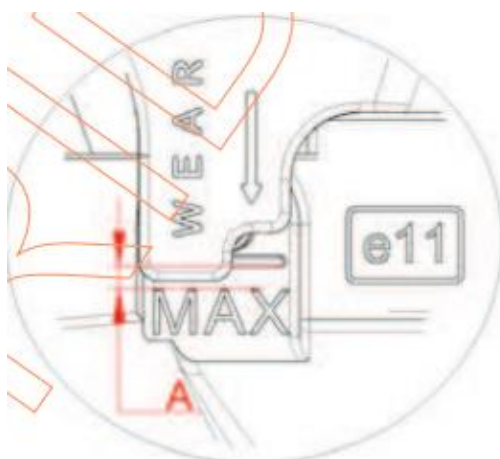
Operation - Knott-Avonride Coupling Head

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



COUPLING HEAD – WEAR INDICATOR

1. When the coupling head is not fitted to the tow ball check and record dimension 'A' indicated in the view below. This dimension should always be greater when fitted to the tow ball.
2. Recheck dimension 'A' at regular intervals. If the dimension is identical when not fitted and fitted to the tow ball, then either the ball or the coupling head is worn or a combination of both. Action must be taken to replace either the ball and/or head.
3. **WARNING** Do not tow the trailer in this condition.



WHEELS & TYRES



Please exercise caution when carrying out these tasks

Wheels

DAMAGE & CRACKS



Check the wheels visually for damage or cracks. Cracks can be detected by showing rust through paint and by air loss in the rim. Pay particular attention to the rim, around the wheel bolts and valve holes and at the end of the 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 severe blowout can cause distortion to the inner rim which may be difficult to see when on the trailer. Damage less severe than that shown in the picture on the left can cause sealing problems between the damaged rim and the 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

With the trailer securely raised on axle stands, with the brakes off, 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 measurements. Total runout should not exceed 2mm. As a guide this should not be visible to the naked eye.

VALVE

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

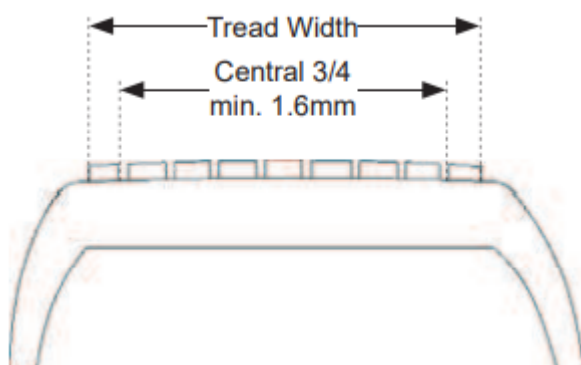
Tyres

SIZE & LOAD SPEED INDEX

Check that the size and load/speed index are correct for the application.

NOTE Car and trailer tyres are often the same size but have a different index.

WARNING 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 75% of the tread width. The tread pattern should be visible on the remaining portion.

Aging

In many applications, tyres last a long time and may require replacement because of crazing or surface cracks between the tread blocks or in the side wall 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.

- ☒ There should be no lumps or bulges in the tread or sidewall.
- ☒ Check for foreign bodies embedded in the tyre.
- ☒ Check tyre pressures.



If in any doubt, refer to the tyre supplier

Jockey Wheels



Please exercise caution when carrying out these tasks

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

1. The thrust washer / bearing can be inspected if a problem is suspected.
2. 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 be withdrawn and greased.
3. 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 re-assembled 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

Top and bottom sections should be replaced as a complete assembly.

PROBLEMS

1. Bent tube

This is normally caused by forgetting to retract the jockey wheel before moving 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 section.

The unit is beyond repair and must be replaced.

2. Damage to the thread

The usual causes of failure are the overloading and raising the jockey wheel under load to the point where the threaded rod disengaged from the lower section.

WARNING In extreme cases, the jockey wheel may collapse so keep the trailer supported and keep clear when checking this issue.

The unit is beyond repair and should be replaced as a complete assembly.

LIGHTS

Check the operation of all the lights on a **DAILY** basis. To do this you must conduct a physical test of the lights by activating each function in turn and getting out of the tractor to ensure the light is working. A second person can be used to assist by either operating the controls whilst you check the light functionality or vice versa. Damaged electrical wiring or components must be repaired or replaced before the trailer is used.

NOTE: - It is the driver's legal responsibility to check all lighting is functioning correctly.

SPREAD LEVER BRAKES



Please exercise caution when carrying out these tasks & refer to the precautions listed at the beginning of this guide.

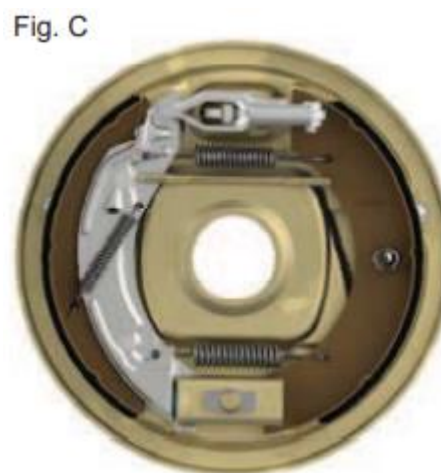
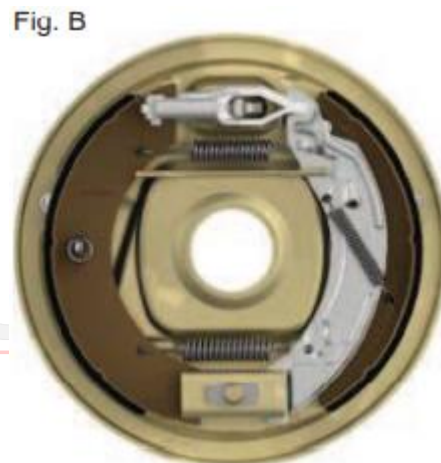
REPLACING BRAKE SHOES

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

Place the trailer on stands with all wheels free.

WARNING The parking brake should be released and the parking brake locking bolt fitted.

- A. Remove the wheels
- B. Remove the hubcap
- C. Slacken off the brake adjuster bolt until free. Some brake assemblies have a ratchet accessible through an aperture in the back plate instead of the bolt.
- D. Remove the axle nut, this may be a castellated nut retained with a split pin or alternatively it may be a locknut.
- E. Remove the brake drum (hub puller may be required) taking care not to displace the bearings.
- F. **WARNING** Avoid inhaling the brake dust. **DO NOT** use an airline to clean the drum. Carefully remove the dust to avoid inhalation.
- G. Check the condition of the brake drum, replace the drum if deep score marks are visible.
- H. 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 back plate and detach the brake cable.
- I. **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 Fig.C (right hand) for reference to Knott 250x40 brake (others similar).
- J. With care and using a suitable lever, lift the sliding shoe carrier away from the expander. Extract expander and retain.
- K. Remove brake shoe retaining spring taking care to retain the spring. Keep plate or pin at the rear of the backplate where fitted.
- L. Lift off the whole brake shoe assembly from the backplate. Take care not to lose the two adjuster wedges.
- M. Examine the components and springs, replace any damaged parts. Clean the mechanism and ensure all parts are free to move.
- N. Re-fit springs to the shoes.
- O. Locate shoes onto backplate and position onto the adjuster wedge or cam block.
- P. Re-fit retaining springs.
- Q. Locate expander into position on fixed shoe.



- R. With care, and using a suitable lever, position the expander between the shoes and release the lever.
- S. Attach brake cable and refit the shell half.
- T. **NOTE** Always replace the brake cables if they show signs of wear, stiffness, damage, or fraying.
- U. Refit the drum and bearing.
- V. **CAUTION** Refer to the axle manufacturer or trailer manufacturer's instructions. Replace the split pin or lock nut dependent on what type of nut is used. Generally speaking, if a split pin and 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 predetermined torque.
- W. Refit the hub cap.
- X. Repeat the procedure on the other drum(s).
- Y. Replace wheels securing wheel nuts, as specified in the manufacturer's handbook.
- Z. Follow the adjustment procedure below.

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 on the drum, then slowly turn the brake adjuster bolt anticlockwise until the wheel begins to rotate freely again. Alternatively advance the adjuster by using a screwdriver 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.
3. **CAUTION** DO NOT overtighten as this will cause the brakes to drag and overheat.
4. **WARNING** Double check that everything has been reassembled with all fasteners secure. Remove the parking brake locking bolt and operate the parking brake several times to ensure that the compensators are seated. Check the travel of the individual brake cables. This should be 2mm – 5mm. If not readjust the brakes as appropriate.
5. With the parking brake engaged, turn each wheel in the reverse direction. They should turn a little then lock as the auto reverse mechanism operates.
6. **NOTE** As each wheel is turned there should be a rearward movement of the parking brake 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.
7. 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.
8. Operate the parking brake and leave on. Lower the trailer to the floor and recheck the torque of the wheel nuts.
9. **CAUTION** The brakes will not be 100% effective until the new linings have bedded in.
10. **NOTE** The brake adjustment should be rechecked after a short journey.
11. **WARNING** The brake drums may be hot.

BRAKING – HINTS & TIPS

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 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.

PARKING BRAKE LEVER MOVEMENT

If the brakes enter reverse mode when the parking brake lever is on (e.g., when uncoupled 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.

CAUTION Allow room for this movement when parking

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 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 the 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

This can occur on new trailers stored with the parking brake on, especially during winter.

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

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

Trailers become far less prone to this condition after the brakes are bedded in.

HUBS SEALS AND BEARINGS



Please exercise caution when carrying out these tasks & refer to the precautions listed at the beginning of this guide.

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

Before carrying out any repair work, place the trailer on suitable stands with all wheels free.

WARNING The parking brake should be released and the parking brake 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 caps. 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 split pin, nut and where fitted, washer.
5. For installations with a high torque nut, unscrew the nut.
6. **WARNING** High forces are needed; ensure that the trailer is stable.
7. Remove the brake drum (hub puller may be required and adjustment may require slackening) taking care not to displace the bearings.
8. 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

1. 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.
 2. **NOTE** if any one part shows damage or wear we always recommend replacing all bearings in the hub and fitting a new oil seal.
 3. Using a brass drift carefully drive out the outer races working around the circumference.
 4. **WARNING** Be sure to wear safety glasses when removing or refitting force fitted parts. Failure to comply could result in an eye injury.
 5. Clean the hub and carefully tap in the new bearing outer races with a brass drift. Be sure that they are seated against the shoulders.
 6. 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.
 7. **CAUTION** Do not fill the cavity between the bearings, this is not necessary and can lead to grease leaking from the seals onto the brake linings.
- ✓ Recommended grease is Shell Retianx EP2
 - ✓ **Bearings should be lubricated every 12 Months or 12,000 miles.**

SEAL INSPECTION & 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 a new seal into place using a clean block of wood. Very lightly lubricate the seal face using a clean block of wood. Very lightly lubricate the seal face with grease.

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 airline to clean the drum. Carefully remove the dust to avoid inhalation.

BEARING ADJUSTMENT & HUB REPLACEMENT

REFITTING TAPER ROLLER HUBS WITH CASTELLATED NUT & 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 castellation lines up with the split pin holes and insert the split pin.
5. **NOTE** Always use a new split pin.
6. Bend over the split pin legs to secure the nut.
7. Nut should be free to move with only restraint being the split pin.



AFTER THE FIRST 1000km WHEEL BEARINGS SHOULD BE CHECKED FOR EXCESSIVE END FLOAT

WHEEL STUDS

1. Remove hub as detailed above
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 out 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.

BOWDEN CABLE



Please exercise caution when carrying out these tasks & refer to the precautions listed at the beginning of this guide.

REMOVAL & REPLACEMENT OF BOWDEN CABLE

Place the trailer on suitable stands with all wheels free.

WARNING The parking brake should be released and the parking brake locking bolt fitted.

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



1. Undo the locknut on the brake rod (font to rear) adjacent to the compensator. Slacken the second nut on the brake rod.
2. Removed the dome headed nut and remove the nut from the inner cable. Take Note of the orientation of any washers and dome nuts. Remove the half shell from the backplate and detach the brake cable. Withdraw the cable assembly.
3. Attach a 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.
5. **NOTE** This procedure covers just the Bowden cable replacement, we would always recommend that a full brake adjustment is carried out including hub adjustment.
6. Follow the procedure under Spread lever brakes.

BREAKAWAY CABLE



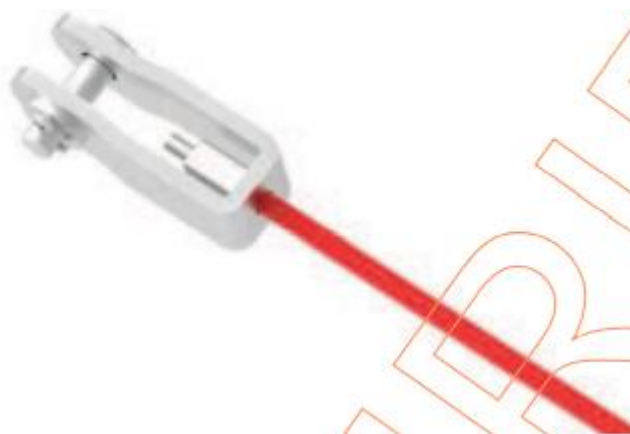
Please exercise caution when carrying out these tasks & refer to the precautions listed at the beginning of this guide.

REMOVAL

It is important that the parking brake lever is prevented from operating.

WARNING The parking brake should be released and the parking brake locking bolt fitted.

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 parking brake mechanism correctly.

1. Insert the clevis pin and retain it with the split pin provided.
2. Thread the cable through the guides.

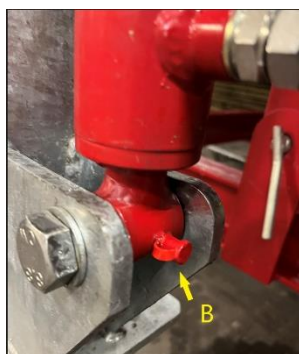
OPERATION

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 towbar manufacturers for location.
4. Ensure that the cable is not pulled tight during articulation of the trailer and remains clear of the ground.

GREASING & LUBRICATION POINTS

Portequips Road Legal Dipper has greasing points in the following places

1. Hydraulic Rams
 - a. Grease point at top end of Hydraulic Rams – 4 points (Labelled C)



- b. Grease point at bottom end of Hydraulic Rams – 4 points (labelled B)



2. Dipper chassis pivot pins
 - a. Grease point at each side of Dipper – 2 Points (labelled A)



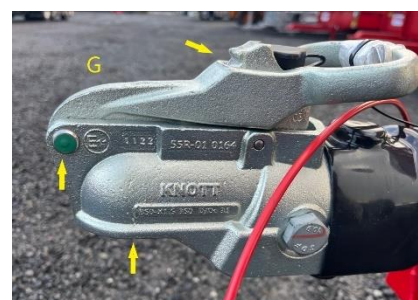
3. Coupling Draw tube
 - a. Grease points either side of the handle – 2 points (labelled D)

4. Braking System Lubrication
 - a. All points as per Knott Avonride manual – (Labelled E)



5. Coupling Hitch Lubrication
 - a. All pins and pivot points as per Knott Avonride manual – (Labelled F)

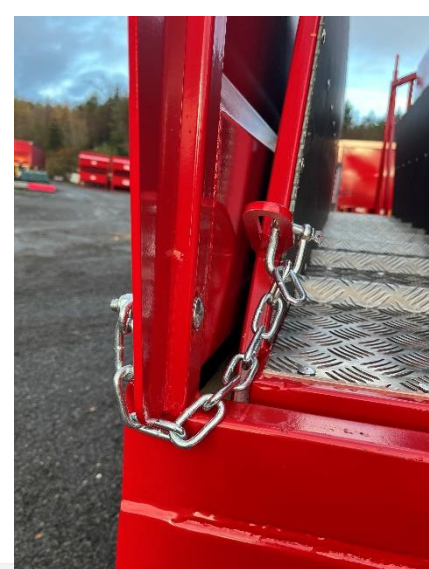
6. Coupling Head Tow jaws
 - a. Clean and grease as per Knott Avonride Manual – (Labelled G)



SAFETY CLIPS & CHECK CHAINS

The Portequip Road Legal Dipper Comes with many moving parts. It is imperative that before the vehicle is used or transported that the daily checks are completed to ensure that everything is stowed correctly, all hydraulic rams are in their travel position and all pins, clips and check chains are in place and secured.

A selection of fittings are shown below.



HYDRAULIC RAMS AND PUMP

The Portequip Road Legal Dipper is fitted with four rams to raise the body when in use. These rams are secured in their travel position with pins and safety clips, these must be removed before operating the hydraulic system when in use.

The hydraulic pump is manually operated and needs to have the oil levels check regularly to ensure correct operation is maintained. Hydraulic oil to agricultural standards is required when topping up.

The hydraulic pump and reservoir are situated on the side of the dip tank.



BOLT TORQUES & LUBRICATION

FASTENER	TORQUE Lb.ft.	TORQUE Nm
M14 grade 10.9 cast head up to 3500kg	92	125
HUB NUT		
Knott Avonride One Piece Bearing		280
Knott Avonride Taper Roller Bearing – tighten, rotate hub, back off, retighten finger tight then fit split pin		70
WHEEL BOLTS / NUTS		
M10 x 1.25 Bolt		55
M12 x 1.5 Bolt*		90
M14 x 1.75 Bolt		145
3/8" UNF Nut		60
7/16" UNF Nut		70
M12 x 1.5 Nut		100
1/2" UNF Nut		90
5/8" UNF Nut		110
M16 x 1.5 Nut		195
WHEEL BOLTS / NUTS		
FASTENERS - GENERAL		55
M10 Grade 8.8		45
M12 Grade 8.8		77
M12 Grade 10.9		115
M14 Grade 10.9		180
M16 Grade 8.8		190
M16 Grade 10.9		280

LUBRICATION	OIL	GREASE
Coupling head cup		YES (Morris K2EP Long Life grease)
Coupling pivots	YES	
Coupling draw tube		YES (Morris K2EP Long Life grease)
Parking brake	YES	70
Jockey Wheel Thread		YES (Morris K2EP Long Life grease)
Exposed cables, rod ends, threads, pivots		YES (Shell Albeida RL1)
Compensator	YES	YES (Shell Albeida RL1)
Tank Pivots		YES (Morris K2EP Long Life Grease)
Hydraulic Ram Pins		YES (Morris K2EP Long Life grease)

GENERAL DATA

LEGAL REQUIREMENT

The Law requires all braked trailers built on or after 1st October 1982 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 'Breakaway Cable'

When fitted to a trailer, its use is **MANDATORY**

PURPOSE OF THE BREAKAWAY CABLE

The breakaway cable applies the trailer 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 shall 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)

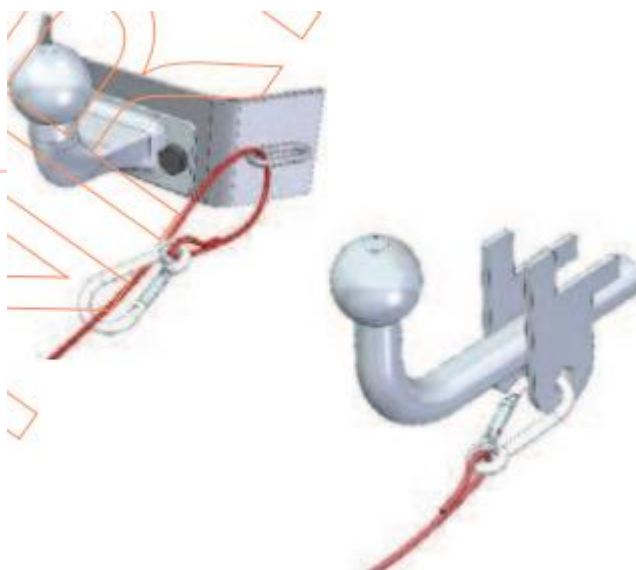
BRAKED TRAILERS (up to 3,500kg GVW)

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 tow ball, the cable be looped around the tow ball shaft.

For removable type tow balls, 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 your dealer or service agent.

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.

HYDRAULIC HOSES



- **DANGER** Hydraulic hose lines may only be replaced by qualified personnel
- **RISK** of skin and eye irritation through contact with hydraulic oil
- **DANGER** due to possible high temperatures of hydraulic oil
- **DANGER** risk of injury from hydraulic lines bursting
- **DANGER** of high-pressure injection due to hydraulic oil escaping at high pressure

Weekly check hydraulic hoses and fittings. Replace if any of the following defects are found:

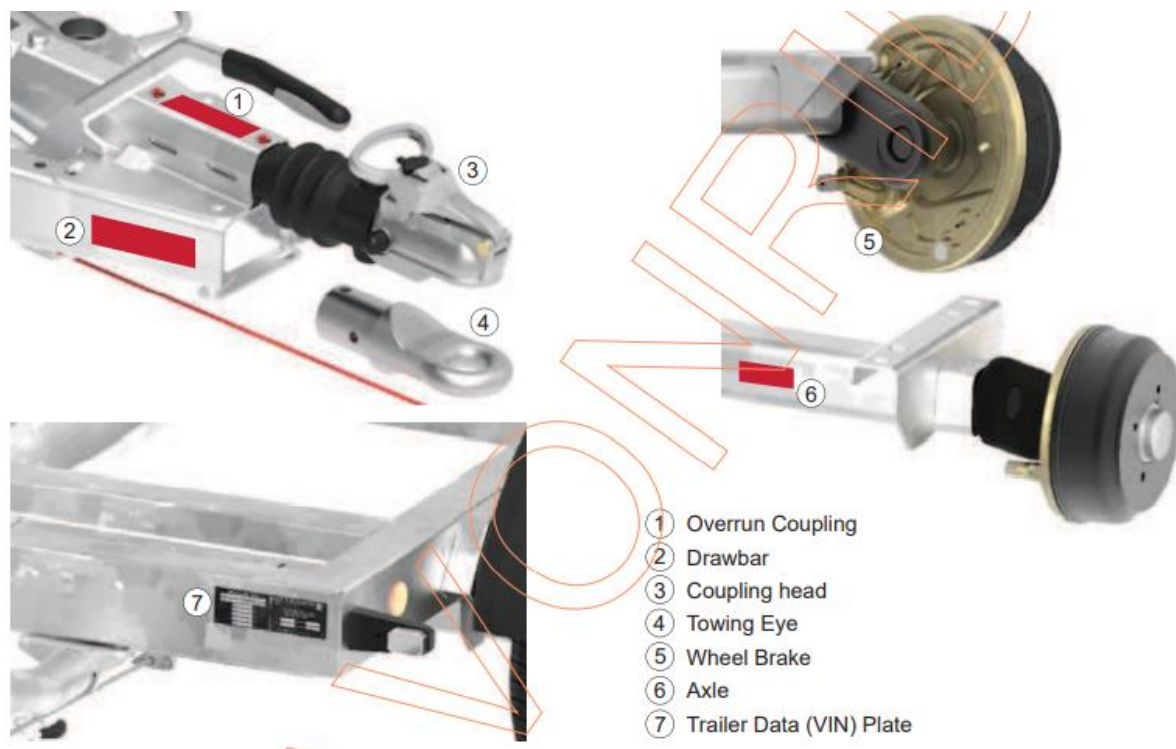
- Damage to the outer layer (chafing marks, cuts, cracks).
- Embrittlement of the outer layer of the lines (cracking).
- Deformations that do not correspond to the natural shape of the hose, both unpressurised and pressurised. (Delamination, blistering, pinch points, kinks).
- Leakage.
- Damage (deformation) of the hose fitting (sealing function impaired).
- Hose moving out of the fitting.
- Corrosion of the fitting that reduces the function and strength.

PARTS IDENTIFICATION

Portequip Ltd use Knott Avonride main components on their Road Legal Sheep Dipper.

When servicing your Portequip Road Legal Sheep Dipper, in order to ensure that you are supplied with the correct replacement part, it is important that you identify the component.

You will find data plates on the major items:



Technical details have been reproduced by kind permission of Knott Avonride. Please use the full documents located at:

www.knottuk.com/business-segments/trailer-technology/documentation/documents-page/

NOTES





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All references in this publication to operating weights, sizes, capacities and other performance measurements are provided for guidance only and may vary dependent upon the exact specification of the product. They should not therefore be relied upon in relation to suitability for a particular application. Guidance and advice should always be sought from your Portequip dealer. Portequip Limited reserves the right to change specifications without notice. Illustrations and specification shown may include optional equipment