

Larrington Trailers



Owner's Manual

Harvester • Majestic • Rootking
Flat Deck • Industria



Welcome

By purchasing a Larrington trailer you have joined a group of elite organisations and farmers throughout the world, including the Ministry of Defence and the British Antarctic Survey.

I am delighted to be able to welcome you to this exclusive club and I would like to assure you that I and Larrington Trailers are at your disposal.

Introduction

This manual is provided to every user of a newly manufactured Larrington trailer to acquaint the owner/operators with the trailer, its safe operation and maintenance.

The life of a trailer can be increased with adequate regular service and an organised maintenance program. We recommend that details of any maintenance inspections are recorded as it is to your advantage to be able

Important Notices

Vehicles manufactured by Larrington Trailers Ltd. are designed to be operated in accordance with the maximum weight ratings set out on the Serial Plate attached to the trailer and at legal speeds as defined by the Highway Code (or as set out in law in the country of operation).

Alterations to a Larrington trailer should not be made without first consulting the Larrington Trailers Engineering Department.

Alterations could affect the structural integrity of the trailer and void the warranty.

There are Warning and Caution stickers prominently displayed on all trailers. All

Contact Details

Office 01205 353 124

Mobile 07970 099 930

E-mail info@larringtontrailers.com

I am sure that you will have many years of trouble-free haulage. If, however, you do experience any problems, or you would like to discuss any aspect of your new trailer, please feel free to contact us using the details listed below.

Richard Larrington

Managing Director –
Larrington Trailers Ltd.

to show that regularly scheduled maintenance inspection checks have been carried out, from a legal standpoint, in the event of an accident involving your equipment.

If Larrington Trailers can be of assistance with regard to maintenance inspections please contact us using the details listed below.

Welding or other alterations should never be made to any air/oil reservoir, wheel, rim or spring.

The maximum weight rating stamped on the Serial Plate is the structural capacity of the lowest rated component of the suspension, springs, hubs, drums, wheels, rims, bearings, brakes or axles.

If components are substituted that affect the rating, the Serial Plate must be amended by adding an "Altered Vehicle" label (this is not necessary if the replacement component is of equal or greater capacity than the original.

personnel operating the vehicle should follow the instructions they contain.

Address : Larrington Trailers Ltd.
Great Fen Rd
Boardsides
Boston
Lincolnshire
PE21 7PB

Warnings



No braking system should be operated from a hand lever.

Do not load/unload the trailer on an uneven surface as this could cause the trailer to slide or overturn.



Do not tip the trailer underneath overhead electric cables.

If the trailer comes into contact with overhead electric cables; the driver should stay in the cab and avoid touching metal parts or coming into contact with the ground. Everyone else should avoid coming into contact with the trailer or tractor.

The driver should sound the horn to alert bystanders who should turn off the power to the cables and/or call for help.



Do not travel along the road with the trailer body tipped or the tail-door open. This will reduce the stability of the trailer and may cause it to overturn.



Trailers using single line hydraulic brakes are rated to travel at a maximum speed of 20mph (UK).



Check the air brake system and hydraulic system (including pipes) for leaks or damage on a regular basis. Contact your dealer or Larrington Trailers for assistance.

There are a number of grease nipples and joints located on the trailer and marked with "Grease and Oil" stickers. Routinely lubricate all pins and grease the drawbar ring and grease nipples.

Notes

About this Owner's Manual

We have made every effort to ensure that you are able to find the information you need in this Owner's Manual as quickly as possible.

The fastest way to find specific topics is by using the detailed contents page following this introductory chapter.

If you are not familiar with the trailer covered in this manual, or if you are a new owner, please start by reading the first chapter "Initial Checks and Setup".

Should you sell your Larrington trailer someday, please remember to hand over the Owner's Manual as well; it is an important component of your trailer.

Additional sources of information

If you have any questions, your Larrington trailer dealer will be happy to advise you.

You can also find information about Larrington trailers at www.larringtontrailers.com or by contacting Larrington Trailers directly.

Symbols used



Indicates precautions that must be followed in order to avoid the possibility of personal injury, death and/or serious damage.



Highlights areas of high risk of serious damage and possible injury.



Indicates information that will assist you in gaining the optimum benefit from your trailer.

Your individual trailer

By buying your Larrington trailer, you have decided in favour of a trailer with individualised features and equipment.

This Owner's Manual describes all models and equipment that Larrington Trailers offer within the same group.

We hope you will understand that equipment and features are described that you might not have chosen for your trailer.

Reporting Safety Defects

If you believe that your trailer has a defect which could cause a crash, injury or death you should immediately inform the

appropriate authorities in addition to notifying Larrington Trailers

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Initial Checks & Setup

1.1 Delivery Checks & Setup (Prior to Usage)

Before using the trailer for the first time a number of checks and setup procedures need to be performed to ensure that the trailer is safe to use.

These checks and processes will also help the new owner/operators familiarise themselves with the trailer and its safe operation.

Upon taking delivery of the trailer perform the following tasks:

- ☑ Couple the trailer to the tractor. See section 1.2
- ☑ Couple the hydraulic hoses. See section 1.3
- ☑ Connect the Electric Cables. See section 1.4
- ☑ Check the trailer's lights. See section 1.4

- ☑ Fold away the swivel drawbar shoe. See section 1.5
- ☑ Check the tyres' pressure. See section 1.6
- ☑ Check the wheel nuts' torque. See section 1.6
- ☑ Check and apply grease and oil. See section 1.7
- ☑ Check the brakes and adjust if necessary. See section 3.4
- ☑ Tip the trailer body. See section 2.1
- ☑ Prop the trailer body. See section 2.6
- ☑ Check for oil leaks. See Section 1.8



It is important to perform the daily checks set out in chapter 5, especially during the first week of use.

1.2 Coupling the Trailer to the Tractor

- ☑ Apply the trailer's hand brake. This will prevent the trailer from rolling away while hitching is taking place.
- ☑ Connect the trailer's drawbar to the tractor's pickup hitch. See Fig 1.1 Connected Trailer
 - ⇒ Do not use the rear hitch on the tractor if a pickup hitch is available as the rear hitch is less secure and allows excessive movement.
 - ⇒ Connecting the trailer to the pickup hitch suspends the trailer further forward on the tractor, resulting in better distribution of the trailer's weight.
- ☑ Apply the tractor's hand brake.



Fig 1.1 Connected Trailer

1.3 Coupling the Hydraulic Hoses

- ☑ Switch off the tractor.
- ☑ Release the pressure in the tractor's hydraulic system.
- ☑ Connect the 1/2" hydraulic hose (with 1/2" probe) at the front of the trailer to the single acting valve bank at the back of the tractor. See Fig 1.2
- ☑ Used to operate the tipping ram.
- ☑ Connect the two 3/8" hydraulic hoses (with 1/2" probes) to the double acting spool valve at the back of the tractor. See Fig 1.2
 - ⇒ Used to operate the tail-door and slide-down sides.
- ☑ Connect the 3/8" hydraulic hose with ISO coupling to the male ISO couple on the back of the tractor. See section 0 and Fig 1.3
 - ⇒ Used to operate the hydraulic brakes.



All braking should be operated from the foot-brake of the tractor.
Do not use the hand lever for braking.



Fig 1.2 1/2" Probe



Fig 1.3 ISO Couple

1.4 Connecting the Electronic Cables

- ☑ Connect the 7-pin (male) socket at the front of the trailer to the corresponding (female) socket on the back of the tractor. See Fig 1.4
 - ⇒ Refer to wiring diagrams in Chapter 6
- ☑ Test the trailer's lights.
 - ⇒ Perform each of the following actions and check (using a mirror or the help of a colleague) that the lights are working correctly: tractor lights, left and right indicators, brakes.



Fig 1.4 7-Pin Male Socket

1.5 Operating the Swivel Drawbar Shoe

The swivel drawbar shoe is mounted underneath the drawbar and supports it when the trailer is not connected to a tractor.

Folding away the drawbar shoe for travel:

- ☑ Couple the trailer to the tractor to support the trailer's weight. See section 1.2
- ☑ Remove the R-clip securing the locating pin and remove the locating pin.
- ☑ Swing the shoe under the drawbar and secure it in place with the locating pin. See Fig 1.1
- ☑ Secure the locating pin with the R-clip.

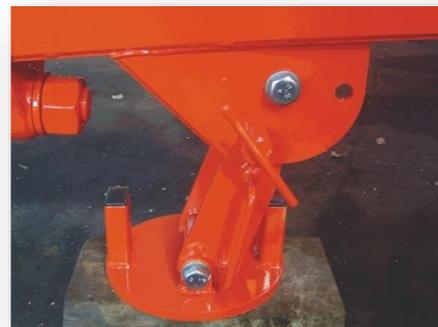


Fig 1.5 Swivel Drawbar Shoe

Unfolding the drawbar shoe before disconnecting the trailer:

- ☑ Apply the handbrake on the trailer to secure it. See Fig 1.7
- ☑ Remove the R-clip securing the locating pin and remove the locating pin.
- ☑ Swing the shoe down and secure it in place with the locating pin. See Fig 1.5
- ☑ Secure the locating pin with the R-clip.

The trailer can now be disconnected from the tractor.

1.6 Tyre and Wheel Checks

- ☑ Check that all tyres are present.
i.e. Single axle trailers should have two tyres, tandem axle trailers should have four tyres and tri-axle trailers should have six tyres.
- ☑ Check the tyre pressure. See section 6.1 for tyre pressure details.
- ☑ Check the wheel nut torque using an accurate torque wrench.
 - ⇒ It is important that the wheel nuts are tightened independently and in sequence to the recommended torque values. See Fig 1.6

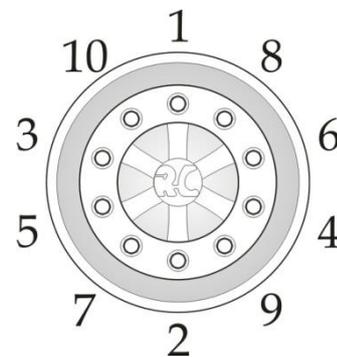


Fig 1.6 Wheel Nut Tightening Sequence

The torque values are listed on the information sticker on the front of the trailer.

For standard commercial axles the M22 wheel nuts must each be torqued to between 450-510Nm (332-376 ft lbs) in the correct sequence. See Fig 1.6

1.7 Check and Apply Grease and Oil



There are several black and yellow “Grease and Oil” stickers located at points on the trailer that require grease and oil to be applied. See Fig 1.8

- ☑ Place grease on the drawbar ring.
 - ⇒ This will reduce wear on the drawbar ring and the tractor’s pickup hitch.
- ☑ Grease the bush supporting the towing eye shaft, checking that the retaining nut is secure.
- ☑ All ram pins require oiling.
- ☑ The axle system of your trailer has six grease nipples per axle (three on each side of each axle) which should be greased.
- ☑ Check and grease/oil grease nipples at the rear hinge points, the hydraulic tail-door, the tail-door’s rear arms and the tail-door’s hinge points. See Fig 1.8



Fig 1.7 Trailer Hand Brake



There may be other grease points at various locations on the trailer, depending on the trailer model.



Fig 1.8 Grease/Oil Sticker above Trailer Body Rear Hinge

1.8 Checking for Oil Leaks

- ☑ Tip the trailer body. See section 2.1
- ☑ Prop the trailer body. See section 2.6
- ☑ Apply the tractor’s hand brake and switch off the tractor.
- ☑ Safely walk round the trailer checking the hydraulic hoses for oil leaks.

To order replacement hydraulic hoses contact your dealer or contact Larrington Trailers directly. See the “Contact Details” section at the start of this manual.

Body & Tail-door Operation

2.1 Tipping the Trailer Body



Check that the area is safe and cleared of personnel before tipping the trailer.

- ☑ Connect and set up the trailer (as set out in section 1.1).
- ☑ Apply the tractor's handbrake. See Fig 1.7
- ☑ Check that the area is safe before starting the tractor.
- ☑ Lift the lever that operates the single acting hydraulic valve in the upward

direction to tip/lift the body upwards.

- ☑ Lowering this lever will lower the trailer body. Always use up for tip and down for lower.



Do not leave the trailer body tipped for any length of time without first propping it. See section 2.6

2.2 Opening and Closing the Tail-door



Check that the area is safe and cleared of personnel before operating the tail-door.

Check that any spilling load will not cause a hazard.

- ☑ Tip the body of the trailer by 6" or more. See section 2.1
 - ⇒ A cut-out switch ensures that the tail-door cannot be operated when the body is resting on the chassis.

- ☑ Lift the lever that operates the double acting spool valve in the upward direction to open the tail-door.
- ☑ Lowering this lever will lower the tail-door.

The tail-door locks and unlocks automatically as it is opened and closed. When connecting the trailer to tractor, check that the tail-door locks engage correctly (see section 2.3).

2.3 Checking and Adjusting the Sequencing Valve



The tail-door lock may close prematurely or late depending on the hydraulic oil pressure from the tractor.

Checking the tail-door lock

- ☑ Open the tail-door fully (see section 2.2)
- ☑ With the help of a colleague, check that the lock's hook engages correctly and pulls the tail-door in as the tail-door closes.
- ☑ If the hook does not engage correctly, follow the steps below to adjust the sequencing valve.

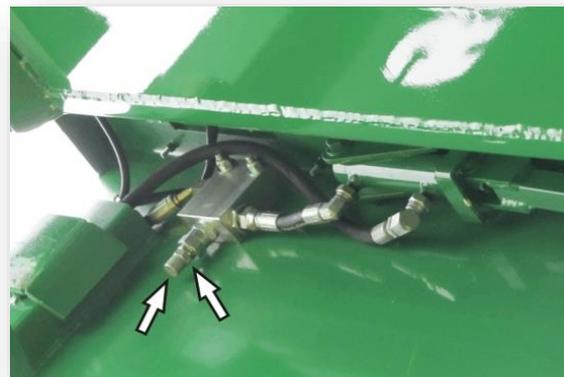


Fig 2.1 Sequencing Valve with Cap & Locking Nut arrowed

Adjusting the Sequencing Valve

- ☑ Lift the tail-door so that the valves are above the trailer body line, that is, so that the Sequencing valve can be accessed (see section 2.2).
- ☑ Remove the valve's cap. See Fig 2.1
- ☑ Loosen the locking nut. See Fig 2.1
- ☑ Use a hex-key to adjust the centre spool bolt as follows:
 - ⇒ If the tail-door lock's hooks operate prematurely turn the spool bolt in (clockwise).
 - ⇒ If the tail-door lock's hooks operate late, turn the spool bolt out (anti-clockwise).
- ☑ Check the tail-door lock again (see above) and adjust as necessary.

2.4 Safely Loading the Trailer



Load the trailer when on an even surface. Loading on uneven ground could cause the trailer to overturn.



Remain within the manufacturers specifications for weight and capacity at all times. See section 6.3



If you have not used a trailer of this size before it is advisable to start with smaller loads.



Fig 2.2 Evenly Loading Sugar Beet

Normal loading (not using an Elevator):

- ☑ Maintain an even load across the body of the trailer while loading the trailer.

Even loading using an Elevator:

- ☑ Start by loading halfway up the front headboard.
- ☑ Allow the elevator to make its way to the rear of the trailer by increasing the speed of the tractor/trailer.
- ☑ Once the back of the trailer has been filled allow the elevator to move to the front of the trailer, resulting in a full and even trailer load.

2.5 Safely Unloading the Trailer



Only unload/tip the trailer on level ground. Tipping on a slope (esp. a crossway slope) may cause the trailer to overturn.

Check for overhead cables before tipping the trailer body.



Check that the area is safe and cleared of personnel before tipping the trailer body or operating the tail-door.

Check that any spilling load will not cause a hazard.



Keep the trailer and tractor in a straight line when unloading the trailer.



When a load leaves a tipped trailer it exerts a force on the trailer, pushing the trailer forwards. If the tractor is at an angle to the trailer when it is unloaded, the tractor and trailer may jack-knife and the tractor may be overturned.

- ☑ Manoeuvre the tractor and trailer into position, ensuring they are lined up and on level ground.
- ☑ Apply the tractor's handbrake.
- ☑ Apply the tractor's foot operated brakes.
- ☑ Open the trailer's tail-door fully. See section 2.2
- ☑ Tip the trailer body slowly. See section 2.1
The driver should feel the load leaving the trailer.
- ☑ While the tractor is in gear, release the hand brake and ease the tractor forward to allow the trailer body to empty.
- ☑ Once the load has been unloaded, lower the trailer body (see section 2.1) and then close the tail-door (see section 2.2).
Do not tow the trailer before lowering the trailer body and closing the tail-door.

2.6 Propping the Trailer Body



Check that the area is safe and cleared of personnel before tipping the trailer body. See section 1.1

- ✓ Tip the trailer body (see section 2.1) to one section of the ram (so that the largest section of the ram is fully exposed).
- ✓ Release the spring loaded bolt catch holding the prop under the trailer body. See Fig 2.3
- ✓ The prop should swing down and make contact with the prop cup guard.
- ✓ Without allowing anyone to go underneath the trailer body, check that the prop and prop cup on the chassis are lined up.
- ✓ Lower the trailer body so that the prop fits into the prop cup securely. See Fig 2.4

Releasing the prop

- ✓ Raise the trailer body (see section 2.1) so that the prop lifts out of the prop cup.
- ✓ Fold the prop away against the trailer body, checking that it is secured by the spring loaded bolt catch. See Fig 2.3
- ✓ Lower the trailer body onto the chassis. See section 2.1

Alternative Body Prop

If your trailer is fitted with one of our alternative body props (see picture opposite) you should the following steps should be taken.



Check that the area is safe and cleared of personnel before tipping the trailer body. See section 1.1

Engaging The Body Prop

- ✓ Tip the trailer body (see section 2.1) to one section of the ram (so that the largest section of the ram is fully exposed).
- ✓ Lift the prop into its 'up' position (resting on the steel stop, as seen in the "Alternative Body Prop" photo opposite) by lifting one of the handles either side of the prop.
- ✓ Lower the trailer body so that the prop fits into the prop cup securely.

Releasing The Body Prop

- ✓ Raise the trailer body (see section 2.1) so that the prop is clear of the underside of the trailer body.
- ✓ Lower the prop into its 'down' position (resting on the rubber stops on the chassis) by grabbing one of the handles either side of the prop and swinging the prop towards the front of the trailer, until the prop is laid flat on the rubber stops.
- ✓ Lower the trailer body onto the chassis. See section 2.1 (until the body rests on the wooden blocks).



Fig 2.3 Spring Loaded Bolt Catch



Fig 2.4 Secured Prop with Cup & Guard below



Alternative Body Prop (in up position)



Alternative Body Prop (in down position)

2.7 Hydraulic Fold-down Side Operation

Trailers with hydraulic fold-down sides are identified by a ram on the front of the trailer, attached to the hinged top section of the side panel. See Fig 2.6

Connection

The hydraulic fold-down side is powered via the tractor's double acting spool valve and shares the hydraulic hoses connected to the valve with the tail-door. For connection instructions see section 1.3

Operation



Check that the area is safe and cleared of personnel before operating the side-door.



Avoid trapping stones, the crop, body parts or the harvester elevator in the fold-down side.

Inadvertently operating the spool valve lever when the fold-down side is not secured using the fixing bolt (see Fig 2.6 - top centre) could cause the trailer's load to spill.

- ☑ Ensure the trailer's body is not tipped.
 - ⇒ A cut-out switch ensures that the hydraulic side-door cannot be operated when the trailer body is tipped.



Fig 2.5 Hydraulic Fold-down Side

- ☑ Before opening the fold-down side remove the fixing bolt at the top left corner of the trailer's side (at the front of the trailer). See Fig 2.6 - top centre
- ☑ Screw the bolt into the nut located at the base of the lower bracket of the fold-down side ram.
 - ⇒ Keeping the bolt with the trailer ensures it will not be lost.
- ☑ Lift the lever that operates the double acting spool valve in the upward direction to raise the hydraulic side upwards.
- ☑ Lowering this lever will lower the side.

2.8 Loading the Trailer with the side down

Hydraulic slide-down and fold-down sides are typically used to facilitate bruise-less loading of a crop via a harvester elevator.

With the side down the harvester elevator can be positioned so that the distance that the crop falls into the trailer is reduced.

As the trailer is filled, the side should be raised so that the trailer can be filled to maximum capacity.



When loading the trailer do not travel faster than the harvester or the elevator will collide with the rear side of the trailer.

Organise a system of operation between the tractor driver and the harvester driver to coordinate using the side. E.g. 1 pip of your horn for *side coming down*, 2 pips for *side going up*.

Braking System Operation

3.1 Connecting the Two Line Air-brake System



Never stand under a raised or tipped trailer body if it is not propped. See section 2.6



Never connect the air-brake couplings and the ISO hydraulic brake cable at the same time. Drain air from the air tank before using hydraulic brakes when air brakes are also present.

Trailers with air-brakes are identified by yellow (service) and red (emergency) air couplings at the front of the trailer. See Fig 3.1

Your trailer may have air-brakes as well as hydraulic brakes, or it may only have one of the braking systems fitted.

- ☑ Connect the yellow and red air couplings to the corresponding couplings on the tractor. See Fig 1.1
- ☑ If a hydraulic braking system is present, connect the ISO hydraulic coupling to the male couple on the trailer's front pipe holder. See Fig 3.1 - bottom right couple.
- ☑ Run the tractor until air has built up in the trailer's air-tank.
- ☑ Operate the tractor's foot brake and (with the help of a colleague) check that the brake cylinder is moving.

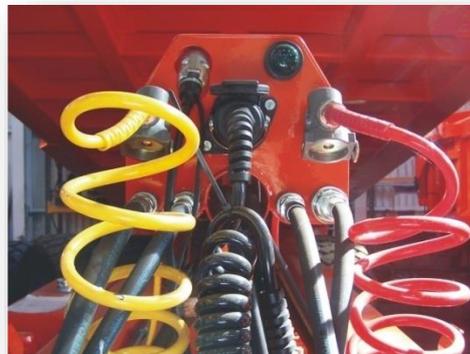


Fig 3.1 Front Pipe Holder with ABS, Air & Hydraulic Brake Cables

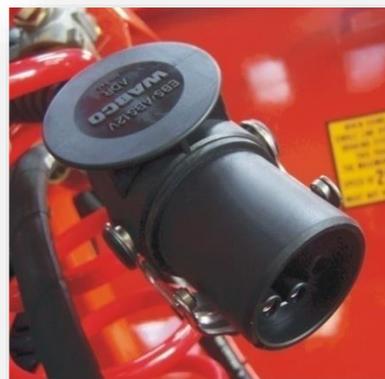


Fig 3.2 ABS Power Socket

3.2 Connecting the Anti-lock Braking System

Trailers with ABS are identified by a green light on the trailer's front pipe holder, an ABS socket and an auxiliary 2 core ABS power cable. See Fig 3.1 - ABS light: top right, ABS power cable: centre.

- ☑ If the tractor has an ABS socket; connect the ABS socket to the trailer's front pipe holder.
 - ⇒ In this case do not connect the auxiliary 2 core ABS power cable.
- ☑ If the trailer does not have an ABS socket; plug the auxiliary 2 core ABS power cable into the tractor's auxiliary power socket in the cab.
- ☑ Switch on the tractor's ignition switch without starting the tractor engine.
- ☑ Check that the green light on the trailer's front pipe holder lights up.
 - ⇒ The ABS makes a clicking sound at the back of the trailer while setting up.
- ☑ When the ABS has finished its setup sequence and is ready to use the clicking sound will stop and the green light will go out.



Fig 3.3 Slack Adjusting Bolt

3.3 Operating the Manoeuvring Valve

The 'pull type' manoeuvring valve is located under the chassis, near the front of the trailer.

Air pressure stored in the trailer's airbrake-tank is used to apply the brakes in the event that the air brakes are disconnected from the tractor during/after being used.

This safety feature means that the trailer will be brought to (or kept at) a stop if any airbrake pipes are damaged or inadvertently disconnected.

In order to release the air brakes the manoeuvring valve is used to release the pressure applied to the brakes.



This operation will need to be performed in order to use the hydraulic only braking system after using the air braking system.

- ☑ Locate the manoeuvring valve as instructed above. See Fig 3.4 and Fig 3.5
- ☑ Pull the button attached to the valve out to isolate the pressure stored in the air-brake system's air-tank.



Air pressure continues to be stored in the trailer's air-tank. Pushing the valve's button back in will cause the air brakes to be re-applied.



Fig 3.4 Manoeuvring Valve



Fig 3.5 Manoeuvring Valve

3.4 Checking the Brakes



Check that the brakes are functioning properly after each time they are reconnected and before travelling with the trailer. Never stand under a raised/tipped trailer body if it is not propped. See section 2.6

- ☑ Tip the trailer body to allow you to inspect the braking system. See section 2.1
- ☑ Prop the trailer body. See section 2.6
- ☑ With the help of a colleague, apply the brakes while you observe the brakes in operation.
- ☑ Measure the maximum distance the brake rams travel when the brakes are applied. See Fig 3.6 & Fig 3.3 - top right.



The maximum distance travelled by the hydraulic brake rams should be no more than 35 mm (roughly 1 1/2") and each ram should travel the same distance to ensure even braking.

If this is not the case the brakes should be adjusted. See section 3.5

Checking for damage or leaks:

- ☑ Tip the trailer body to allow you to inspect the braking system. See section 2.1
- ☑ Prop the trailer body. See section 2.6
- ☑ Check the following items for damage or leaks: braking system couplers, hydraulic hoses, airbrake hose, tank and any other braking system parts.
 - ⇒ See chapter 6 for details related to the braking system's parts.

To order replacement parts contact your dealer or Larrington Trailers quoting the trailer's serial number. See the "Contact Details" section at the start of this manual.



Fig 3.7 Steering Axle Slack Adjuster

3.5 Adjusting the Trailer's Brakes



Improper brake maintenance or adjustment can result in overheating, wheel lock-up, brake failure or under performance which could cause a crash and/or serious injury or loss of life. For assistance with maintaining or adjusting the trailer's brakes please see your dealer or contact Larrington Trailers.



Never stand under a raised/tipped trailer body if it is not propped. See section 2.6

- ☑ Ensure that the trailer and tractor are on level ground.
- ☑ Apply the tractor's hand brake.
- ☑ Tip the trailer body to allow you to inspect the braking system. See section 2.1
- ☑ Prop the trailer body. See section 2.6



Each axle wheel hub can be independently adjusted. The information sticker located on the front of the chassis contains

relevant information for adjusting the braking system.

Commercial Axles only:

- ☑ Locate the sleeve covering the retaining bolt at the base of the slack adjuster.
- ☑ Push the sleeve up the slack adjuster using a spanner handle.
- ☑ Tighten (turn clockwise) the retaining bolt until the brake and hub are locked solid.
- ☑ Turn the retaining bolt ½ a turn anti-clockwise.
- ☑ Repeat this process for each retainer on each hub.

Agricultural Square Axles only:

- ☑ Locate the slack adjusting bolt under the trailer to the rear of the hydraulic brakes. See Fig 3.3 - centre.
- ☑ Turn the bolt clockwise to increase braking efficiency.
 - ⇒ The bolt pushes the slack adjusters forward.
- ☑ When braking efficiency can no longer be adjusted the brake shoes may be in contact with the hubs. In this case back the bolt off by ½ a turn.
- ☑ Repeat this process for each brake ram.

Steering Axles only:

- ☑ Locate and loosen the slack adjusting lock nut on the steering axle. See Fig 3.7 Steering Axle Slack Adjuster - black arrow.
- ☑ Turn the retaining bolt (See Fig 3.7 Steering Axle Slack Adjuster - white arrow) anti-clockwise until the brake and hub are locked solid.
- ☑ Turn the retaining bolt ½ a turn clockwise.
- ☑ Repeat this process for each retainer on each hub on the steering axle.

Checking brake adjustment:

- ☑ Check and measure the distance travelled by each brake ram (see section 3.4), repeating the brake adjustment process if necessary.
- ☑ Jack up each hub end:
 - ⇒ First apply the trailer's handbrake.
 - ⇒ Use a suitable v-shape jack located under the axle near the hub to be jacked up.
- ☑ Check that the jacked up wheel spins freely.
- ☑ With the hub jacked up, check (with the help of a colleague) that the wheels are stopped when the brakes are applied.
- ☑ Test the brakes further by pulling the trailer with the brakes applied. If the tractor is able to pull the trailer forward the brakes may need further adjustment.



Do not over tighten the brakes. Check that they do not catch the side of the hubs when travelling.

3.6 Load Censing Valve

The load censing valve increases the braking pressure for airbrake systems as the weight of the trailer increases, in order to reduce wheel lock and tyre skid.

This does not constitute an anti-locking braking system (not ABS).

The valve is located in the middle of the chassis and is connected to the trailer axils via a rod and rubber joint.

'Easy' Roll-over Sheet

4.1 Closing the 'Easy' Roll-over

- ☑ Retrieve the small handle (stored on the trailer chassis). See Fig 4.2
- ☑ Attach the small handle to the ratchet box at the front of the trailer, ensuring the ratchet box lever is in the right position. See Fig 4.1
- ☑ Turn the small handle clockwise until the roll-over sheet is fully closed.
- ☑ Move the end of the black strap to the other side of the trailer so that it covers the roll-over sheet.
- ☑ Secure the black strap to the side of the trailer.



Fig 4.1 Roll-over Sheet Ratchet Box

4.2 Opening the 'Easy' Roll-over.

- ☑ Release the ratchet box by moving the handle to the left position (turned anti-clockwise).
- ☑ Retrieve the small handle (stored on the trailer chassis).
- ☑ Attach the small handle to the opposite ratchet box.
- ☑ Turn the small handle clockwise until the roll-over sheet is fully open.
- ☑ Move the end of the black strap to the other side of the trailer so that it secures the roll-over sheet.
- ☑ Secure the black strap to the side of the trailer.



Fig 4.3 Roll Over Sheet being closed

Hydraulic Rollover Sheet

4.3 Closing the Hydraulic Roll-over

- ☑ Operate the hydraulic spool to which you have connected the hydraulic rollover sheet's 'CLOSE' pipe.
- ☑ Once closed, ensure the spool is kept in 'FLOAT' to engage the motor's brake.

4.4 Opening the Hydraulic Roll-over

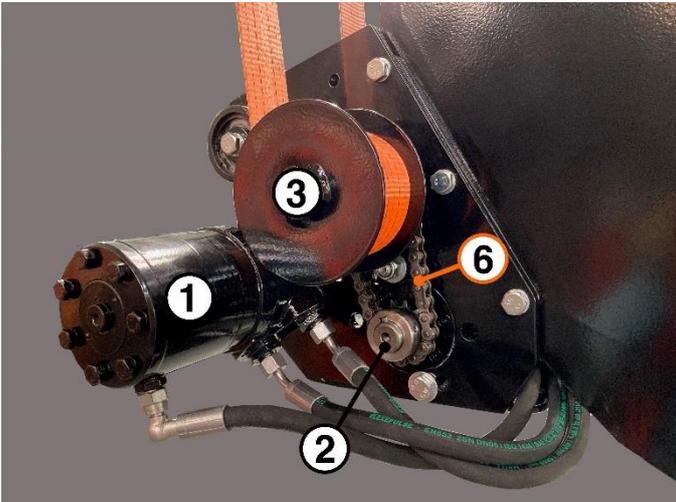
- ☑ When the sheet is closed, operate the hydraulic spool to which you have connected the hydraulic roll-over sheet's 'OPEN' pipe.
- ☑ Once open, ensure the spool is kept in 'FLOAT' to engage the motor's brake.



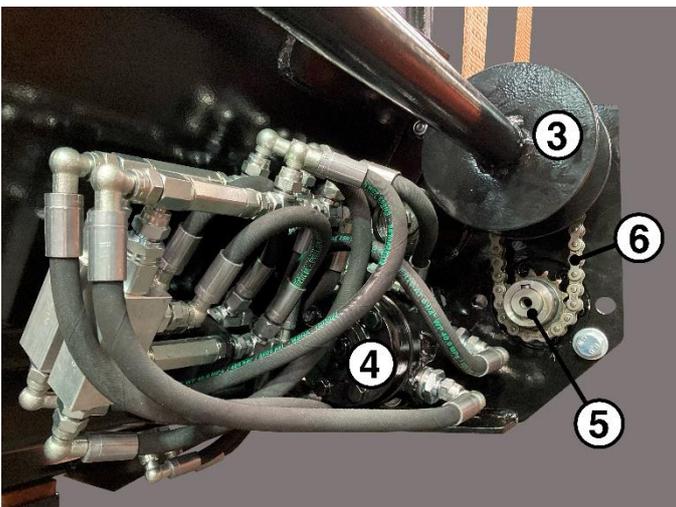
Make sure both pipes for the hydraulic roll-over sheet have been connected to the same double-acting spool.



In the unlikely event that a problem arises with your hydraulic roll-over sheet an overview of the hydraulic sheet mechanism can be found below.
DO NOT modify or tamper with the system unless specifically asked to do so by a Larrington Trailers engineer.



1.	'Close' Hydraulic Motor E0001690
2.	'Open' Sprocket E0001644
3.	Cotton Reel Spindle Sprocket E0001645
4.	'Open' Hydraulic Motor E0001680
5.	'Close' Sprocket E0001703
6.	½" Chain



Maintenance

5.1 Running In Period



Moving parts should be allowed to break in. The procedures described here will increase the life of your trailer, but more importantly are necessary for the safe operation of the trailer.



If you have not used a trailer of this size before it is advisable to start with smaller loads. At all times you must remain within the manufacturers specifications for weight and capacity.

Wheel Nuts

Due to the range of temperatures that the wheel nuts are exposed to; they tend to loosen in the first week of use.

- ☑ Check and re-tighten the wheel nuts daily for the first 7 days of use. See section 1.6

U-Bolts

Check U-bolts fastening annually and initially after **2 weeks**. Check nuts of the U-bolt for tightness. See section 6.2

Tyres

Due to technical factors associated with their manufacture, tyres do not achieve their full traction potential until after an initial wearing-in period.

- ☑ Drive reservedly during the first 200 miles (300 km) after taking delivery of the trailer or fitting new tyres.
- ☑ Obey maximum speed limits.

5.2 Drawbar Ring Check and Replacement

The drawbar ring should be checked for wear or damage regularly. The drawbar ring is constructed using a high tensile steel ring. It is important to replace it with the correct part.

5.3 Hydraulic Ram Check and Replacement

The hydraulic rams should be checked for oil leaks and signs of wear or damage.

An oil leak indicates that the seals should be replaced. It is important to replace the seals with the correct part.



Trailers using single line hydraulic brakes are rated to travel at a maximum speed of 20mph (UK).

Brakes

Brakes require an initial break-in period of approximately 200 miles (300 km) to achieve optimal contact and wear patterns.

- ☑ Drive reservedly during the first 200 miles (300 km) after taking delivery of the trailer or fitting new brake system components.

Maintenance Schedule

The following checks and maintenance procedures should be carried out routinely.

Daily Checks

- ☑ Wheel nuts. See section 1.6
- ☑ Tyre pressure. See section 1.6
- ☑ Brakes. See section 3.4
- ☑ Lights. See section 1.4

Weekly Checks

- ☑ Grease and oil points. See section 1.7
- ☑ Hydraulic rams. See section 4.3
- ☑ Hydraulic hoses. See section 1.8

Monthly Checks

- ☑ Drawbar ring. See section 4.3
- ☑ Tyre structure

To order a replacement drawbar ring contact your dealer or contact Larrington Trailers directly. See the "Contact Details" section at the start of this manual.

To order replacement ram seals contact your dealer or Larrington Trailers with the trailer's serial number.

The ram specifications for your trailer can be obtained from Larrington Trailers. See the "Contact Details" section at the start of this manual.

Technical Details

6.1 Wheels

Tyres are generally the only parts of your trailer/machine to make contact with the ground and are key to providing ride quality, braking efficiency and stability.

- ☑ Check that all tyres are present and in a suitable (and legal) condition for use.



A tandem trailer should have 4 tyres and a tridem trailer should have 6 tyres.



Under no circumstance should the trailer be used with different sized wheels or tyres and/or if any of the wheels are missing.

- ☑ Visually check tyres for signs of damage. The tyre pressure of each tyre should also be checked prior to operating the trailer and adjusted as required.

See the table on the following page for common tyre sizes and pressures.

- ☑ Check all of the wheel nuts are correctly tightened using an accurate torque wrench. This should be done in sequence and up to the correct torque settings which can be found in the table below.



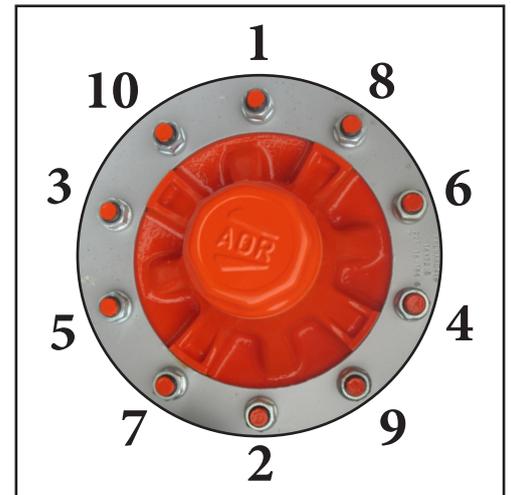
Ensure all of the wheel nuts are on the wheel studs and at least finger tight before proceeding.

- ☑ Tighten the wheel nuts in the numerical sequence outlines in the picture opposite, to the corresponding torque settings outlined in the table below.

- ☑ Once the sequence is completed, go through the sequence a second time to ensure all the nuts are still at the correct torque value.



It's important that the wheel nuts are tightened independently and in sequence to the recommended torque values.



Wheel Nuts & Torque Settings



CHECK WHICH NUTS YOU HAVE AND DO NOT OVER TIGHTEN !

Wheel Nut Size / Torque	Nut + Split Washer		Continental Nut	
	Min.	Max.	Min.	Max.
M20	350Nm	380Nm	415Nm	450Nm
M22	450Nm	510Nm	575Nm	650Nm

Tyre Ratings, Pressures and Maximum Loads

The table below shows tyre information for some of our most commonly fitted tyre options.

If you have different tyres fitted, it's important to get the relevant tyre information to ensure they are inflated to the correct pressure and can handle a sufficient load at the correct speed.

A Blank row has been included so that you can write down your own tyre information for quick reference at a later date.

My Tyres

Size	Tyre	Rating	25mph (40kph)		40mph (65kph)	
			Max. Tyre Load (Kg)	Pressure (BAR)	Max. Tyre Load (Kg)	Pressure (BAR)



The table below has been provided as a guide based on manufacturer data sheets at time of print but these can change over time. Check manufacturer data sheets for up to date information.

Commonly Fitted Tyres

Size	Tyre	Rating	25mph (40kph)		40mph (65kph)	
			Max. Tyre Load (Kg)	Pressure (BAR)	Max. Tyre Load (Kg)	Pressure (BAR)
	Alliance 331	159A8	4375	2.8	-	-
550/60x22.5	Altura T442	166A8	5300	3.0	-	-
	Alliance 331	167A8	5450	2.8	-	-
560/45xR22.5	Alliance 882	152D	4830	4.0	3550	4.0
	BKT FL-693	152D	4830	4.0	3550	4.0
	Nokian CK	152D	4840	4.0	3550	4.0
560/60xR22.5	Alliance 882	165D	7000	5.0	5150	5.0
	Alliance 885	164D	6800	4.0	5000	4.0
	BKT FL-693	161D	6290	4.0	4625	4.0
	Nokian CK	161D	6300	4.0	4625	4.0
	Nokian CT	165D	5150	6.0	7010	6.0
600/50xR22.5	Alliance 390	162D/159E	7510	5.0	4750	5.0
	Alliance 885	159D	5950	4.0	4375	4.0
650/50xR22.5	Nokian CK	163D	6650	4.0	4875	4.0
600/55xR26.5	Alliance 885	165D	7780	4.0	5150	4.0
	Nokian CT	169D	7900	6.0	5800	6.0
650/55xR26.5	Nokian CT	177D	9950	6.0	7300	6.0

Common VF Tyres

Michelin TrailXbib	Rating	6mph (10kph)		25mph (40kph)		40mph (65kph)	
		Max. Tyre Load (Kg)	Pressure (BAR)	Max. Tyre Load (Kg)	Pressure (BAR)	Max. Tyre Load (Kg)	Pressure (BAR)
VF560/60xR22.5	166D	3725	0.8	5000	1.8	5300	3.2
VF650/50xR26.5	174D	4223	0.8	5644	1.8	6700	3.2

6.2 Spring Bolt & Wheel Nut Torque Settings

Correct spring bolt and wheel nut torque pressures are listed on the information sticker on the front of the trailer.

Details are listed here for your convenience:

All Wheel Nuts:

For standard commercial axles the M22 wheel nuts must each be torqued to between 450-510Nm (-376 ft lbs) in the correct sequence. See Fig 1.6

Mono Leaf Spring Bolts:

Torque to 500 Nm (375 lb/ft)

80mm Beam Sq. Axle Spring Bolts:

Torque to 200 Nm (150 lb/ft)

80mm Beam Sq. Axle Wheel Nuts:

Torque to 240 Nm (175 lb/ft)

Air Suspension Spring U-Bolts :

Check U-bolts fastening **annually** and **initially after 2 weeks**, check nuts of the U-bolts for tightness. If loose, tighten nuts alternately a little at a time.

Field check of torque settings with a calibrated torque wrench :

M22 (SW 32) = Torque to 600Nm

M24 (SW 36) = Torque to 800Nm

When mounting a new axle clamp U-bolts :

M22 (SW 32) = Torque to 600Nm (+25/-0)

M24 (SW 36) = Torque to 800Nm (+25/-0)

Notice :

No Welding should be performed on the trailing arm !

6.3 Maximum Loading & Weight Capacity



The maximum weight capacity of the trailer exceeds the weight restrictions on HM Highways and other country's roads. Check and comply with the maximum weight restrictions for the country that the trailer is operated in.

Maximum weight capacity:



The axles have a load capacity of up to 11 tonnes per axle and the tractor carries roughly 3 tonnes by supporting the drawbar.

As the axles have the lowest load capacity, they define the maximum loading capacity of the trailer.

Tandem axle trailer maximum weight:

25 Tonnes*

Tri-axle trailer maximum weight:

36 Tonnes*

* This includes the trailer body's weight.

Maximum volume capacity:

The ram is capable of tipping much higher loads than could safely be carried or tipped. Beware not to overload the trailer.

The trailer has been designed to carry a load with a volume of 1.47 m³ per tonne (52 cu.ft per tonne), unless otherwise specified.

Before loading the trailer check the weight to volume ratio of the load to be carried so that the trailer is not overloaded.

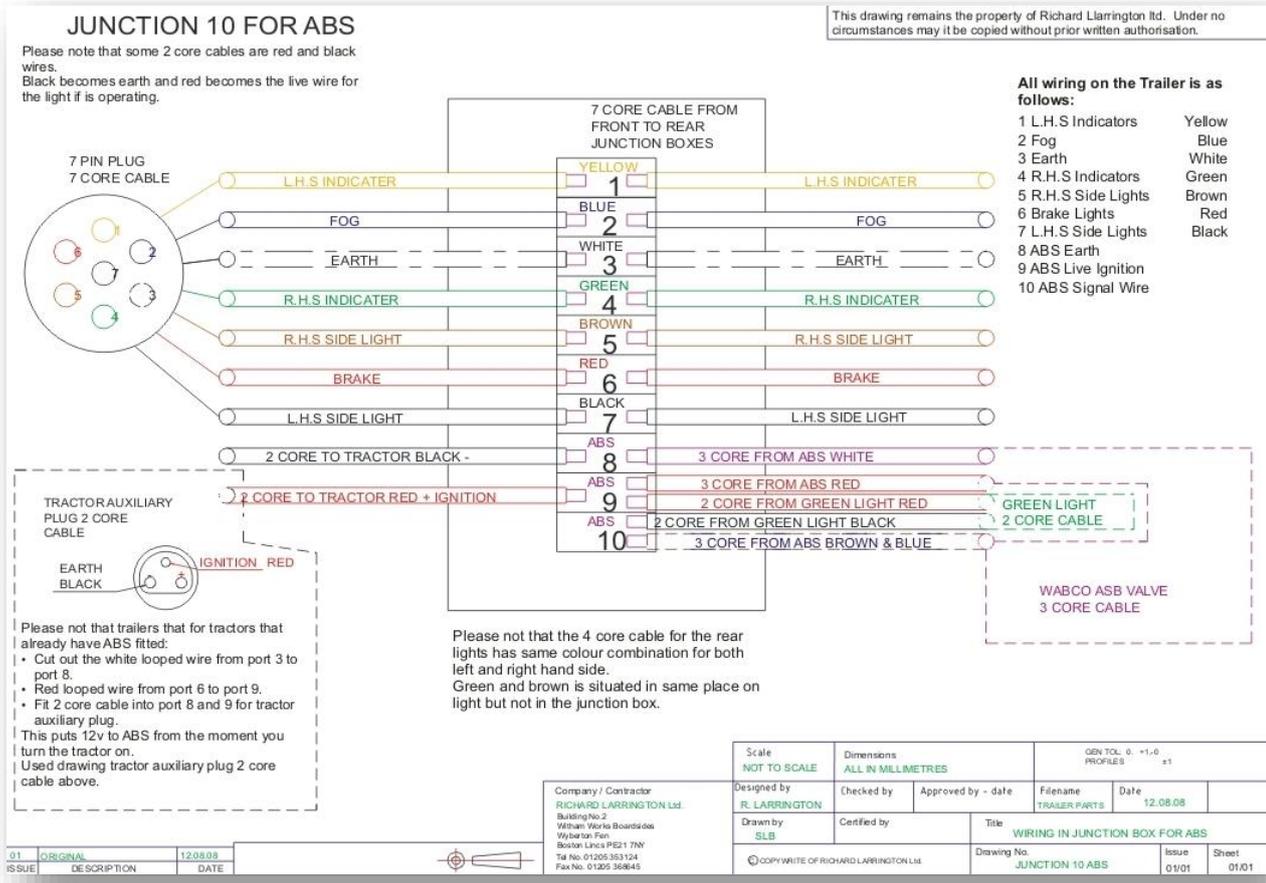
As a guide, the trailer body has the capacity to hold 35 tonnes of soil, level.

Maximum tipping weight:

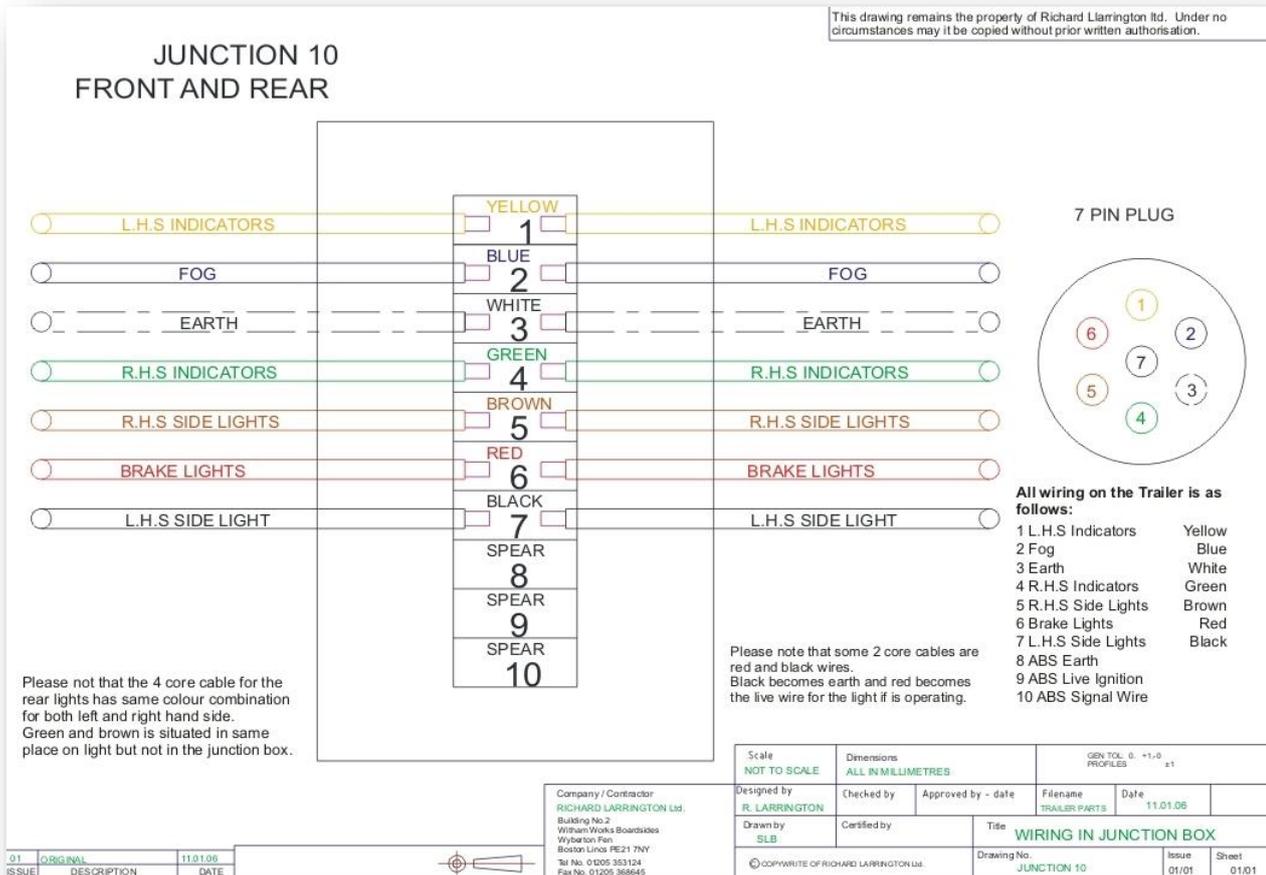
The trailer is capable of tipping 1 tonne per 100 PSI of oil pressure from the tractor.

Standard tractors operate at 3000 PSI, and so could theoretically tip 30 tonnes with this ram.

6.4 ABS Wiring Diagram

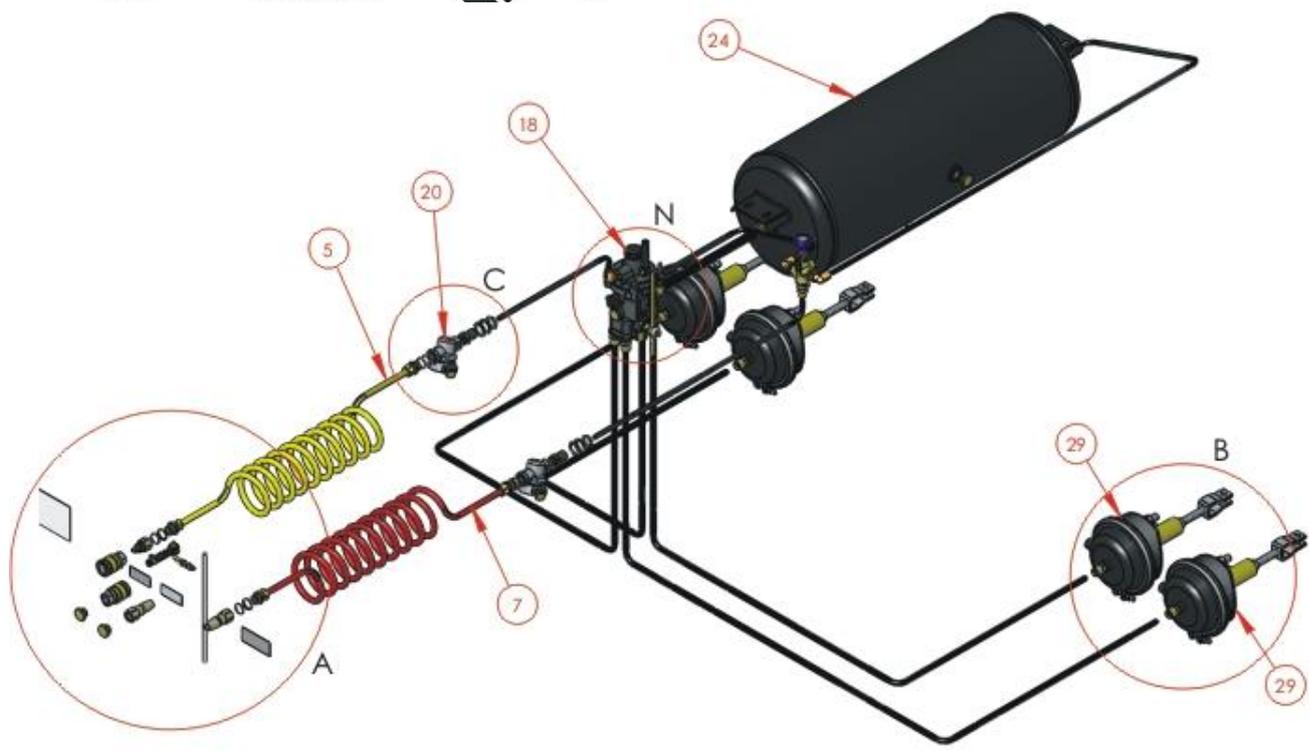
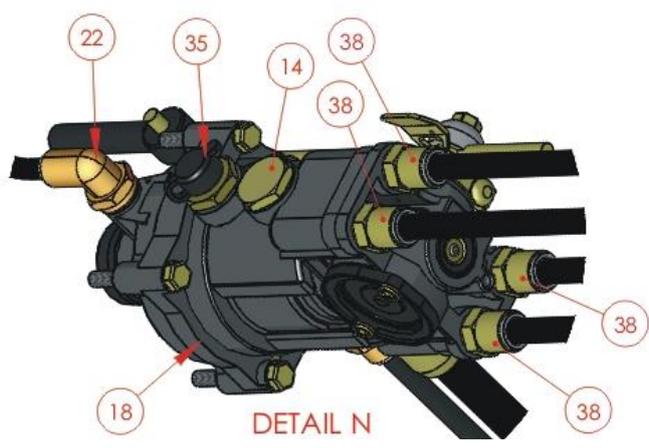
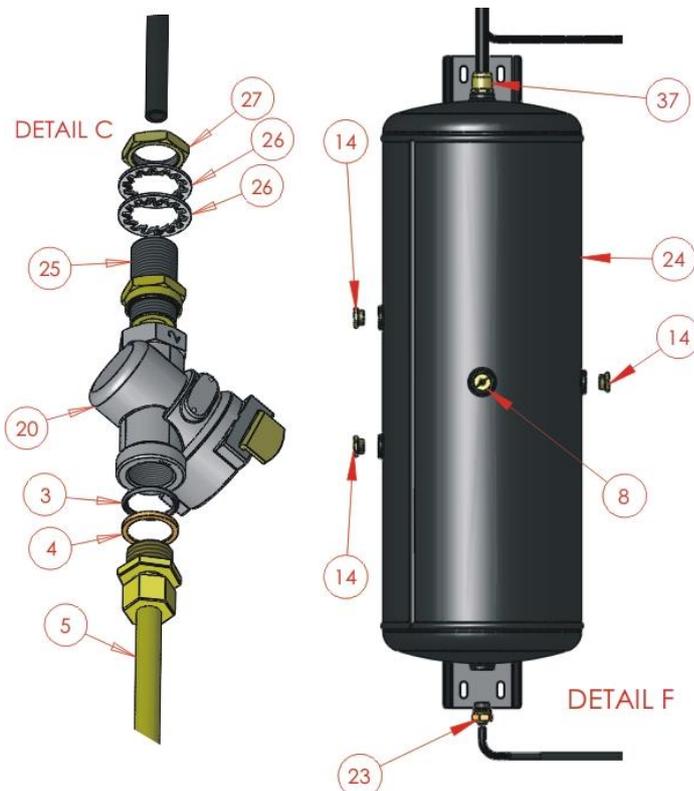


6.5 Trailer Wiring Diagram



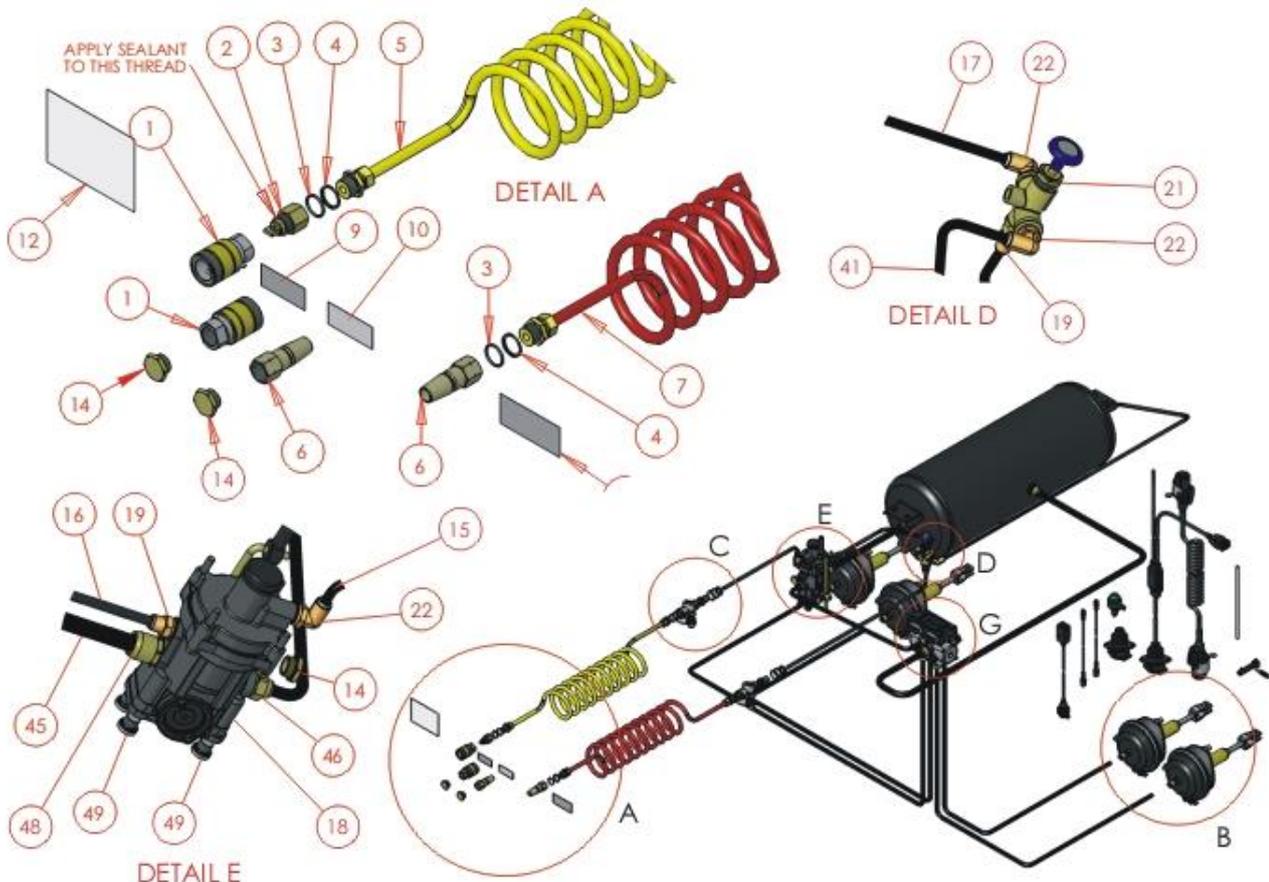
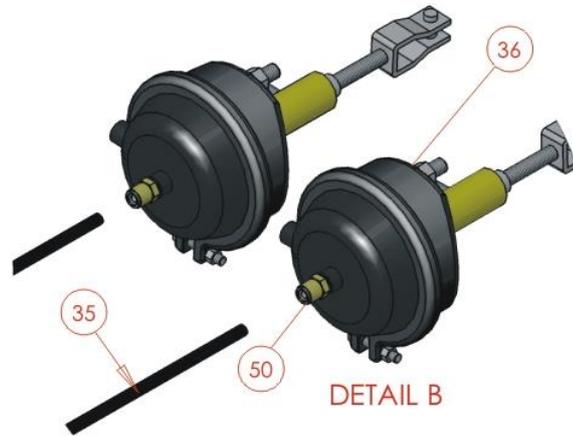
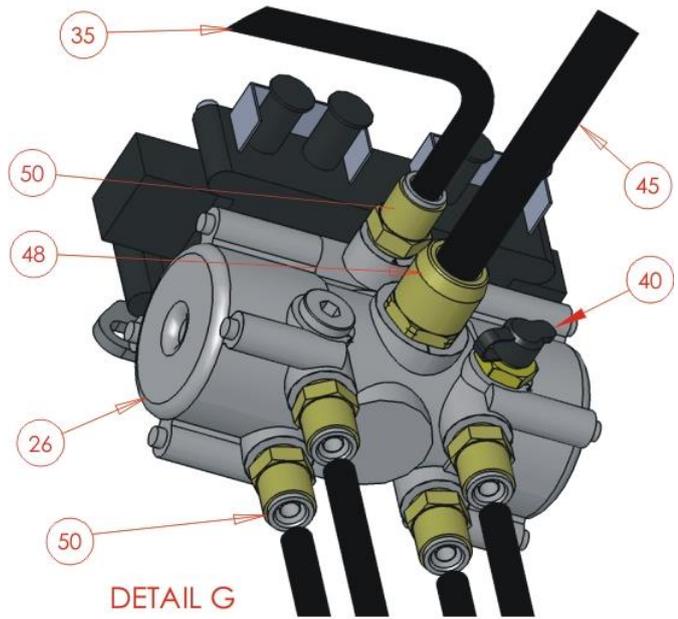
6.6 Twin Axle Braking System

ITEM #	DESCRIPTION	QTY.
1	TRAILER C-TYPE COUPLING (SERVICE) M22	2
2	VALVE LIFTER	1
3	M22 O-RING	4
4	M22 THRUST WASHER	4
5	SERVICE SUZZIE (Y)	1
6	TRAILER C-TYPE COUPLING (EMERGENCY) M22	2
7	EMERGENCY SUZZIE (R)	1
8	M22 MANUAL DRAIN VALVE	1
9	DECAL SERVICE	1
10	DECAL EMERGENCY	1
11	DECAL NYLON PIPES	1
12	TRACTAIR DECAL	1
13	DECAL DRAIN DAILY	1
14	M22 X 1.5 HEX HEAD PLUG	6
17	10MM O/D NYLON	0
18	RELAY LOADSENSING VALVE	1
19	M16 - 10mm ST PUSHFIT ADAPTOR	2
20	IN LINE FILTER M22	2
21	SHUNT VALVE STD	1
22	M16 - 10mm 90 DEGREE PUSHFIT ADAPTOR	3
23	M22 - 10mm PUSHFIT ADAPTOR	1
24	60 LTR RESERVOIR - END MOUNT	1
25	M22 - 10mm BULKHEAD PUSHFIT	2
26	M22 NON-SLIP WASHER	4
27	M22 NUT THIN	2
29	TYPE 24 SINGLE AIR HYDRAULIC B/CHAMBER	4
30	LSV FLEXIBLE LINK ARM	1
31	8mm LOAD SENSING LINK BAR STAINLESS 0.3m	1
35	M22 x 1.5 MALE TEST POINT	1
36	NYLON TUBE OD 18mm BLACK	0
37	M22 - 18mm PUSHFIT	2
38	M16 - 12mm ST PUSHFIT ADAPTOR	8



6.7 Twin Axle ABS

ITEM #	DESCRIPTION	Qty
1	TRAILER C-TYPE COUPLING (SERVICE) M22	2
2	VALVE LIFTER	1
3	M22 O-RING	4
4	M22 THRUST WASHER	4
5	SERVICE SUZZIE (Y)	1
6	TRAILER C-TYPE COUPLING (EMERGENCY) M22	2
7	EMERGENCY SUZZIE (R)	1
8	M22 MANUAL DRAIN VALVE	1
9	DECAL SERVICE	1
10	DECAL EMERGENCY	1
11	DECAL NYLON PIPES	1
12	TRACTAIR DECAL	1
13	DECAL DRAIN DAILY	1
14	M22 X 1.5 HEX HEAD PLUG	5
17	10MM O/D NYLON	0
18	RELAY LOADSENSING VALVE	1
19	M16 - 10mm ST PUSHFIT ADAPTOR	2
20	IN LINE FILTER M22	2
21	SHUNT VALVE STD	1
22	M16 - 10mm 90 DEGREE PUSHFIT ADAPTOR	3
23	GREEN ABS WARNING LIGHT	1
24	M22 - 10mm PUSHFIT ADAPTOR	1
25	12V ABS COIL 4.5m	1
26	NEW ABS VALVE	1
27	ABS SENSOR LEAD	2
28	ABS DIAG LEAD	1
29	ABS MAIN HARNESS	1
30	12V ABS SOCKET	1
31	60 LTR RESERVOIR - END MOUNT	1
32	M22 - 10mm BULKHEAD PUSHFIT	2
33	M22 NON-SLIP WASHER	4
34	M22 NUT THIN	2
36	TYPE 24 SINGLE AIR HYDR. B/CHAMBER	4
37	NYLON TUBE OD 12mm BLACK	0
38	LSV FLEXIBLE LINK ARM	1
39	8mm LOAD SENSING LINK BAR STAINLESS	1
40	M16 MA TEST POINT	1
45	NYLON TUBE OD 18mm BLACK	0
46	M22 - 12mm PUSHFIT ADAPTOR	1
47	NYLON TUBE OD 18mm BLACK	3
48	M22 - 18mm PUSHFIT	4
49	M16 SOCKET HEAD PLUG INC O-RING	5
50	M16 - 12mm ST PUSHFIT ADAPTOR	9



6.8 Twin Axle ABS Upgrade

ITEM #	DESCRIPTION	QTY
1	GREEN ABS WARNING LIGHT	1
2	ABS COIL	1
3	NEW ABS VALVE	1
4	ABS SENSOR LEAD	2
5	ABS DIAG LEAD	1
6	ABS MAIN HARNESS	1
7	12V ABS SOCKET	1
8	M22 - 16mm ST PUSHFIT ADAPTOR	1
9	M22 - 18mm PUSHFIT STRAIGHT SIRIT	2
10	M16 MA TEST POINT	1
11	M16 SOCKET HEAD PLUG INC O-RING	5
12	M22 - 12mm PUSHFIT ADAPTOR	1
13	M16 - 12mm ST PUSHFIT ADAPTOR	1



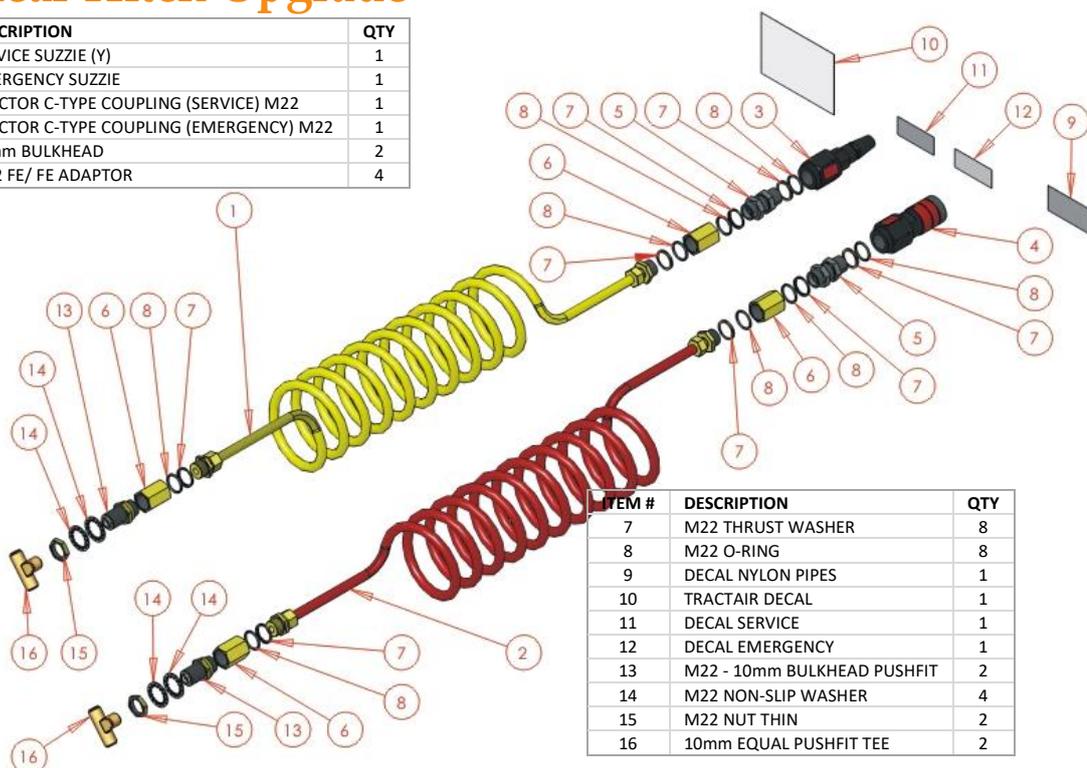
6.9 Third Axle Upgrade

ITEM #	DESCRIPTION	QTY
1	M22 MANUAL DRAIN VALVE	1
2	DECAL DRAIN DAILY	1
3	M22 X 1.5 HEX HEAD PLUG	4
4	60 LTR RESERVOIR - END MOUNT	1
5	TYPE 24 SINGLE AIR HYDRAULIC B/CHAMBER	2
6	M22 - 18mm PUSHFIT	2
7	M16 - 12mm ST PUSHFIT ADAPTOR	4



6.10 Rear Hitch Upgrade

ITEM #	DESCRIPTION	QTY
1	SERVICE SUZZIE (Y)	1
2	EMERGENCY SUZZIE	1
3	TRACTOR C-TYPE COUPLING (SERVICE) M22	1
4	TRACTOR C-TYPE COUPLING (EMERGENCY) M22	1
5	22mm BULKHEAD	2
6	M22 FE/ FE ADAPTOR	4



ITEM #	DESCRIPTION	QTY
7	M22 THRUST WASHER	8
8	M22 O-RING	8
9	DECAL NYLON PIPES	1
10	TRACTAIR DECAL	1
11	DECAL SERVICE	1
12	DECAL EMERGENCY	1
13	M22 - 10mm BULKHEAD PUSHFIT	2
14	M22 NON-SLIP WASHER	4
15	M22 NUT THIN	2
16	10mm EQUAL PUSHFIT TEE	2

Warranty

7.1 Warranty Summary

Larrington Trailers Ltd. manufactured equipment carry a two-year warranty from date of delivery.

Any defect that applies to Larrington Trailers Ltd workmanship will be repaired free of charge. If it is necessary for the machine to be returned to the factory the transport costs will be charged to the customer.

Parts that are not manufactured by Larrington Trailers Ltd are covered by the manufacturer's guarantee and are subject to their warranty.

This warranty excludes all wearing parts and paintwork.

Larrington Trailers Ltd will consider all claims during the warranty period, providing the following procedure is followed:

1. A completed Warranty Registration form has been returned to Agricultural Machinery Sales Ltd. See attached Warranty Registration form.
2. Larrington Trailers is notified immediately of any defect.
3. Warranty authorisation is obtained before any work is carried out.

Full Warranty details available on request.

For your records:

Trailer Serial Number: _____RL_____
(from serial plate)

Date of Purchase: DD/MM/YYYY

Purchased from: _____

7.2 Warranty Registration

Please complete the attached Warranty Validation form and return it to:

Warranty Validation
Larrington Trailers (A.M.S Ltd.)
Great Fen Rd
Boston
PE21 7PB
UK

Warranty Validation Form

Return this form to:

Warranty Validation
Larrington Trailers (A.M.S Ltd.)
Great Fen Rd
Boston
PE21 7NY

Trailer Serial Number: _____RL_____

(from serial plate)

Purchaser's Name: _____

Address: _____

Phone Number: (_____)_____

E-mail: _____

Date of Purchase: _____ DD/MM/YYYY

Purchased from: _____

The information supplied here will be used by Larrington Trailers to properly validate your vehicle for warranty purposes. We may also use the information to enhance your ownership experience. We will not rent or sell your personal information to 3rd parties. Our privacy policy is available at www.larringtontrailers.com or on request.

