OPERATION & MAINTENANCE MANUAL | JULY 2025

AGRICULTURAL & CONTRACT TIPPERS
ARABLE & ROOT CROP TRAILERS
BALE & PALLET TRAILERS | PEOPLE CARRIER
LOW LOADERS | FUEL BOWSERS | WATER BOWSER

THE TRAILER IN FRONT

WARRANTY

The Bailey range of trailers is supplied with a full two year warranty from the date of despatch from the factory.

Any malfunctioning equipment, omissions or deviations from the original specification, must be reported to Bailey Trailers Ltd within 7 days of the delivery to the dealer.

Any damage sustained in transport must be reported to the delivery agent or transport company.

There are some exclusions, namely:-

Wheels and tyres, damage caused by misuse and abuse, damage caused by overloading.

For full details refer to the manufacturer's warranty documentation.

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 and the issuing of a claim number from Baileys' warranty department.

After the repairs are completed a warranty claim can be submitted to Baileys' 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.

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 operators manual must accompany the trailer at all times. If the trailer is resold the operators manual must be given with the trailer to the new owners.

Manufacturer

Manufacturers name : **Bailey Trailers Ltd**
Manufacturers address : **Pride Parkway, Sleaford, Lincolnshire NG34 8GL**
Tel: +44 (0) 1529 303411
baileytrailers.co.uk

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.

Make a note of the trailer serial number in this box for future reference and when ordering replacement parts.

PRE DELIVERY INSPECTION SHEET

ALL BAILEY TRAILER MODELS

The purpose of this document is to ensure that operator or owner is fully appraised of all safety guidelines and operating and maintenance methods before taking possession of this machine. We require all boxes initialling plus dealer and customer signatures where indicated. This inspection should last approximately 45 minutes.

GENERAL		
1	Ensure the operator receives a copy of the instruction manual.	
2	Draw attention to the safety decals located on the machine.	
3	Explain the functions of the machine.	
4	Locate, identify and explain trailer to towing vehicle air, hydraulic and electric connectors.	

STRUCTURE		
5	Visual check of body and drawbar.	
6	Check all suspension and drawbar U bolts.	
7	Check all nuts and bolts are secure	
8	Grease all points if necessary, (see manual).	

BRAKING		
9	Check operation of parking brake.	
10	Check operation of service brake.	
11	Check brakes are functioning correctly, ensure cylinders are retracting fully to the off position, wheels should move freely without brake binding.	

LIGHTING		
12	Check operation of lights.	
13	Check condition of cabling and 7 pin connector.	

HYDRAULICS AND PNEUMATICS		
14	Check hydraulic hose condition especially brake hose and connectors.	
15	Check hydraulic cylinder for leaks and damage.	
16	Check air system hose condition and connectors, (option).	

WHEELS AND TYRES		
17	Check condition of tyres.	
18	Ensure tyre pressures are correct for speed and load.	
19	Check wheel nut torque, (check daily for first week of use).	

DATE	SIGNATURE	
I have received a copy of the instruction manual and understand the method of operation, the safety requirements and the maintenance methods.		OPERATOR
I have given basic instruction in the method of operation, the position of safety stickers, methods of maintenance and ensured that the owner / operator is in possession of the manual.		DEALER

CONTENTS

INTRODUCTION

This manual provides information for the use, adjustment and maintenance of the Bailey Range of trailers.

Models covered are:-
Beeteaper trailers
Root Special trailers
Bale & Pallet trailers
Agricultural & Contract Dumpers
Low Loaders & Fuel Bowsers

By ensuring the correct operation, and by carrying out maintenance and service work with care, you will be able to make full use of the technical knowledge and the experience with which your trailer was originally designed.

Failure to carry out maintenance work correctly, or incorrect operation will result in poor efficiency of your vehicle and loss of valuable time.

Following the advice on the correct operation, maintenance and servicing procedures will ensure maximum performance and a long service life for your trailer.

The Bailey range of trailers covered in this manual are trailed agricultural implements designed and constructed for the sole purpose of carrying and redistributing agricultural crops and associated materials. This is their intended use.

Contract Trailers, Low Loaders and Fuel Bowsers are also featured.

The trailers may contain additional equipment which may function under the direct control of the operator of a towing vehicle or, in certain circumstances, automatically and autonomously.

Use of the trailer in any other way is considered by the manufacturer to be contrary to the intended use.

Consequently the manufacturer does not accept any liability for such use and the user therefore accepts all risks arising from such use.

Intended use also includes the observation of the service, maintenance and repair conditions and routines as prescribed by the manufacturer.

Within this manual is the information required by an operator to assemble and put the trailers to work, operate and maintain them and lay them up for storage.

Additionally comprehensive information relating to the trailers' safe use and the responsibilities of the operator is also given.

IMPORTANT

Note that the Bailey range of trailers may also be referred to simply as the trailer(s) in the following sections.

The instructions set forth in this manual must be read carefully and followed by all persons concerned with the operation, maintenance, repair or inspection of this trailer in order to prevent accidents. Read especially sections relating to safety and before operation.

The use of spare parts, accessories and additional equipment which is not originally manufactured, checked and released by Bailey Trailers Ltd can have a negative effect on specific design features of the trailer and on its operability. This may impair its operating safety, as well as safety at work for the operator and will invalidate the warranty. Modifications not approved in writing by Bailey Trailers Ltd may compromise the effective and safe operation of the trailers and will invalidate the warranty.

Bailey Trailers Ltd will in no way be liable for damage or personal injury caused by the use of other than original Bailey Trailers Ltd parts, accessories and additional equipment.

Technical specifications, dimensions and weights are given with the usual tolerances.

Front, rear, right and left refer to the direction of forward travel as viewed from the operators seat of the towing vehicle.

Bailey Trailers Ltd operates a policy of continual improvement, as such some items in this manual may differ slightly from that of your trailer. Bailey Trailers Ltd reserve the right to make changes to the trailer or this manual without notice. Some images are generalised to reflect the manufacturers range and due to the bespoke nature of this product may not accurately reflect your vehicle.

If in any doubt regarding any aspect of the design or operation of this trailer contact Bailey Trailers Ltd or your Bailey Trailers Ltd agent for clarification.

SAFETY DECALS

Safety decals & warning symbols are placed in danger areas of the trailer to help identify risks of injury.

The decals fixed to a trailer do not make the trailer safe they are there as a guide and to direct appropriate behaviour when using the trailer.

The operator is ultimately responsible for his own safety and that of other persons around the trailer. Never permit anyone to ride on the trailer or to approach the trailer or any of its components whilst operating.

The information in these decals show how to avoid injury and accidents by appropriate behaviour.

The location of the decals on the trailer and their wording is shown on the following pages.

Over time the manufacturer may change the type and quantity of decals. A trailer may therefore contain a mixture of all of the decals shown.

The numbers against the explanation correspond to those showing the location on the illustrations.

CAUTION

Immediately replace damaged or illegible safety decals with new replacements.

When replacing parts with decals affixed to them, make sure you affix new decals again to the new parts.

LOCATION OF SAFETY DECALS

1

a b c

Service checks

(a) Reminds the operator to refer to the operators manual for information on wheel nut torques. repeated on both sides of the trailer.

(b) Reminds the operator to refer to the operators manual before undertaking service or maintenance work.

(c) Reminds the operator to refer to the operators manual for information on tyre pressures. Repeated on both sides of the trailer.

LOCATION OF SAFETY DECALS

2

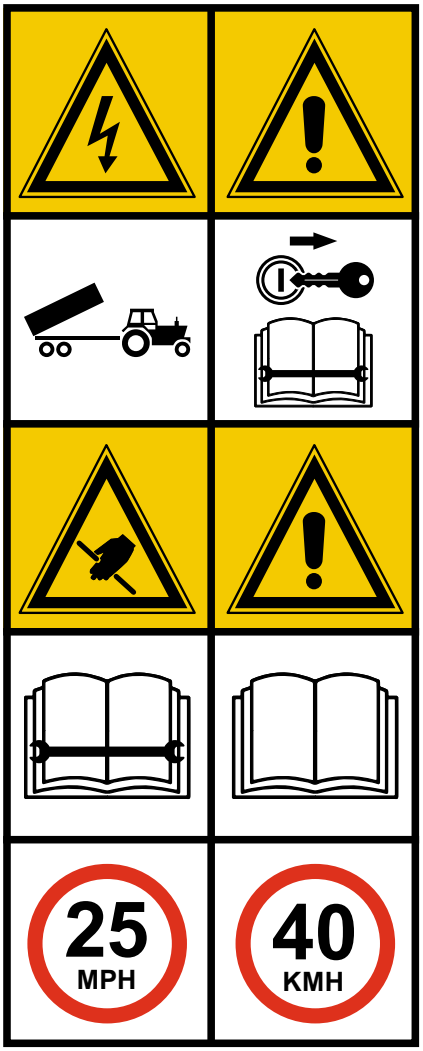
a

b

c

d

e



Service checks

(a) Overhead power lines
Warns the operator not to raise the body or any lifting device in the proximity of overhead power lines or obstructions.

(b) Refer to operators manual
Reminds the operator to refer to the operators manual and to remove the vehicle key and release stored energy before undertaking maintenance.

(c) Hydraulic & pneumatic pressure
Warns the operator of the danger of trapped residual pressures when coupling and de-coupling the trailer.

(d) Technical data
Reminds the operator to refer to the operators manual for Technical information and data.

(e) Maximum allowable speed
Reminds the operator of the maximum permissible towing speed.

CAUTION

Decals are fitted to machinery for a purpose. Should any decal become unreadable or defaced it should be replaced immediately.

3

Crush prevention

Bailey Trailers are designed in a way that allows access to all Service/Adjustment points without the need to raise the Tipping body. This decal warns the operator that the potential for crushing injuries still exist if working in the area between the Tractor and trailer and adjacent to a raised Tipping body. Operators should also be aware of the potential for falling objects and debris.

LEGAL REQUIREMENTS

Identification plate

The trailer number (VIN), this number is required with all orders for spare parts and technical enquiries. This is necessary in order to ensure correct delivery of spare parts.

The identification plate with the trailer number (VIN) is attached to the near side of the trailer frame **(1)** on all trailers.

NEW White ID plates

Operating on public roads

Before operating on public roads the trailer must be correctly connected to the towing vehicle, the lights must be connected and function of the lighting equipment must be checked.

The trailers are equipped with hydraulic and/or pneumatic braking systems, these must be correctly connected to the towing vehicle and checked for correct operation.

If the trailer has an air brake system the brake lines and any breakaway rope (breakaway brake) must be connected.

Number plate

To 15 m.p.h. (25 km/h): trailers must be fitted with a number plate issued to the vehicle owner for one of his vehicles.

Over 15 m.p.h. (25 km/h): trailers must be fitted with a duplicate of the number plate fitted to the towing vehicle.

Road transport

Observe the applicable road regulations in your country.

Disposal of trailer

Upon completion of the useful life of the trailer, all parts can be disposed of at a suitable waste disposal facility.

Care must be taken if oxy-acetylene cutting equipment is to be used.

The wheels and tyres, hydraulic & pneumatic cylinders, valves and hoses must be removed before using cutting equipment.

Oil must be drained collected and disposed of in accordance with current legislation.

Electrical components must be disposed of in accordance with the relevant legislation.

GENERAL SAFETY

General hazard perception and safety

Warnings or cautions for hazards that may be present when operating the trailer, or during maintenance of the trailer, are shown in the following sections.

Before operating the trailer

The following warnings and cautions are of a general nature and are not task specific. All personnel operating or maintaining this trailer must be fully aware of these warnings.

WARNING

Before operating the trailer

This trailer must be operated only by correctly trained and authorised personnel. Certain local operating conditions may require the trailer operator to obtain an operators licence or a certificate. The trailer operator must be fully aware of the trailers capabilities and limitations. The operator must also be familiar with the local working area or site and in particular:

- Check the area for vertical and horizontal clearances.
- Check for overhead obstructions.
- Check for electrical power lines and make sure the trailer keeps at least 7.6m (25 ft) away.

Check the work area or site for changes in the stability of the ground surface, back filled trenches and structural integrity of buildings, roofs etc.

Make sure that all protective guards and covers are correctly installed on the vehicle.

Make sure that if the trailer is equipped with a fully working lighting system that is adequate for the working conditions, and is compliant with local or national road traffic regulations.

Make sure that the trailer reverse alarm and other warning devices are in full working order.

Make sure that all obstacles are cleared from the intended path or route of the trailer.

Make sure that before the trailer is moved, there are no personnel on, under or near the trailer.

Collision of high speed road traffic and slow moving trailers can cause personal injury or death. When on a public road, use flashing beacon and other lights according to local laws. Use a Slow Moving Vehicle (SMV) emblem displayed at the rear of the trailer where this is a national requirement. Pull over to let faster traffic pass. Signal and slow down before turning off the road.

Use warning devices (flags, SMV emblem, lights, etc.) which are approved for use by your local government agencies, when using equipment on public roads. Keep these devices clean and in good working order.

General

Unauthorised personnel must **not** be permitted to operate or maintain this trailer.

Make sure the location of high voltage power lines and buried power cables are known. Serious injury or death, by electrocution, can occur if the trailer contacts these hazards.

Do not wear loose clothing or jewellery, which can snag on the controls or trailer structure, causing personal injury.

Make sure that all protective guards and covers are secured in place on the trailer. If guards and covers are removed, a hazard to personnel will exist.

Make sure that all foreign objects and materials, such as oil, tools, debris and other items, are kept clear from equipment, walkways and steps on the trailer. Failure to do this can cause personal injury.

Make sure that all loose items, such as tools, lunch boxes and other items, which are not part of the equipment, are secured correctly before operating the trailer. Failure to do this can cause personal injury.

Always wear the correct protective equipment, including a hard hat and protective glasses, as required.

Trailer operators must be aware of the correct hand signals and those personnel authorised to give them.

Operators must accept hand signals only from a single and authorised person.

Make sure that all fluids used during maintenance of the trailer are stored in the correct containers. Never store these fluids in other types, such as glass containers.

Make sure that all fluids are disposed of correctly and in accordance with Local Health and Safety Regulations.

Make sure that all cleaning fluids are used with care and that any necessary repairs are reported immediately.

Make sure the size of the trailer, including any load, is known. This will ensure a correct and safe clearance is maintained, when operating the trailer in confined spaces or near obstacles.

GENERAL SAFETY

WARNING

Pressurised air and water

If released, air or water in pressurised trailer systems can cause debris or hot water to be ejected. This can cause personal injury. Care must be taken when working on pressurised trailer systems.

Operators using pressurised air or water for cleaning purposes must wear the correct protective equipment. This includes protective clothing, shoes/boots and goggles or face shield.

Operators using pressurised air or water for cleaning purposes must not exceed the following maximum operating pressures:

Air – 205 kPa (30 psi)

Water – 275 kPa (40 psi)

Residual hydraulic pressure

Refer to the service manual before releasing hydraulic pressure. Non-operating hydraulic systems can retain residual hydraulic pressure. If released, this residual pressure can cause:

- Sudden movement of the trailer or trailer attachments.
- Disconnected hoses to whip.
- Hydraulic fluid to be sprayed, causing a personal hazard through direct contact or ingestion.

Fluid penetration

Residual hydraulic pressure must be released before any hydraulic maintenance, disconnection or component removal is done. Refer to the service manual before releasing hydraulic pressure. Non-operating hydraulic systems can retain residual hydraulic pressure. If not released correctly, personal injury can occur.

Leaking fluid, even from a pin hole leak, can penetrate the skin, causing serious injury or death. Always use cardboard or a board to check fluid leaks. If fluid penetration of the skin occurs, you must seek medical help immediately, preferably from experienced medical staff.

Fluid spillage

Care must be taken to avoid fluid spillage during trailer maintenance, testing, adjusting and repair. Before any possible fluid spillage can occur, a suitable container must be positioned to collect the fluid.

Disposal of waste material

The disposal of waste materials, including potentially harmful fluids, must be in accordance with local health and safety regulations.

Improper disposal procedures can be harmful to personnel and the environment. Always use the correct and leakproof type of container for the storage of waste fluids. Do not dispose of these fluids by pouring onto the ground, into water sources or into drains. Improper disposal procedures can be harmful to personnel and the environment.

Asbestos hazards

Contact with asbestos must be avoided, particularly inhalation of airborne dust, which can cause serious Injury or death.

If it becomes necessary to come into contact with asbestos, you must use the guidelines that follow:

- Avoid creating dust if handling debris or components that may contain asbestos, such as brake pads and bands, liner material, clutch plates and some gaskets.
- Never use compressed air for cleaning purposes.
- Avoid machining or brushing materials that may contain asbestos.
- Before disposal, use a wet, damping down method to concentrate material dust and debris.
- If possible, a vacuum cleaner fitted with a high particle air filter (HEPA), should be used to collect debris and dust.
- Use exhaust ventilation on permanent machining work.
- Wear an approved respirator if there is no other way to control any dust produced.
- Always comply with the applicable environmental regulations for the disposal of asbestos.
- Stay away from areas that may contain airborne asbestos particles.
- Always comply with the applicable rules and regulations for the work place.
- Use genuine Bailey equipment, components and parts, which are supplied asbestos free.

GENERAL SAFETY

WARNING

Crushing or cutting prevention

Support equipment correctly before you do any work or maintenance from beneath that equipment.

Unless instructed otherwise, never attempt to do adjustments whilst the trailer is moving or the engine or other power source is running.

Clearances in trailer control linkages will change with control operation or trailer movement.

Always keep clear of controls or areas that may experience clearance changes.

Always keep clear of rotating or moving parts of the trailer. Always re-install any guard or cover that has been temporarily removed.

When handling cables, always wear protective gloves. Never use kinked or frayed cables.

Striking any object can cause debris chips to fly off, causing personal injury.

Always wear protective glasses/goggles before striking an object and make sure that the area is clear of other personnel.

If a retaining pin is struck with force, it may be ejected and cause personal injury. Always wear protective glasses/goggles before striking a retaining pin and make sure that the area is clear of other personnel.

Burn prevention

Some components will get hot during operation, causing a potential burn hazard to personnel. Before you do any maintenance on these parts, you must:

- Always allow these parts to fully cool before you do any maintenance work.
- Always release residual pressure in the air, hydraulic and lubrication systems and associated pipe lines/hoses, before you do any maintenance work.
- Hot fluids and surfaces can cause personal injury. Avoid direct contact with hot fluid or surfaces.

Fire and explosion prevention

All fuels, most lubricants and some coolant mixtures are flammable and if leaking onto a hot surface or electrical components, can create a fire. Fire can cause severe personal injury or death.

Do not operate the trailer close to a naked flame or heat source.

Always clean pipes thoroughly with a non-flammable solvent first.

Examine all electrical wires daily and check and tighten all electrical connections. If necessary, repair loose or frayed wires before you operate the trailer.

Dust produced from repairs to non-metallic components, such as hoods or fenders, can be flammable.

Always repair such components in a well ventilated area, away from naked flame and heat sources.

Leaking pipes and hoses can cause a fire. Examine all pipes, hoses and associated supports for wear, deterioration and damage and ensure that pipe and hose clamps are secure.

Make sure pipe and hose connections are correctly torqued.

Remove all flammable materials such as fuel, oil and debris from the trailer. Do not allow the accumulation of flammable materials on or around the trailer.

Always store fuels and lubricants in the correct and properly marked containers and away from unauthorised personnel.

Always store soiled oily rags and other flammable materials in protective containers.

Do not smoke in areas that are used for the storage of flammable materials.

Do not operate the trailer close to naked flames.

Do not weld or flame cut any pipes or tanks that contain flammable fluids or gases. Always clean such pipes and tanks thoroughly with a non-flammable solvent first.

WARNING

Pipes, tubes and hoses

Leaks from loose or damaged pipes, tubes or hoses can cause a system failure or a fire. Examine pipes, tubes and hoses regularly, particularly for signs of damage, leaks or being loose.

Never use bare hands to check for leaks from pipes, tubes or hoses. Always use cardboard or a board and if necessary, torque connections to the recommended value.

Do not bend or strike high pressure pipes or install a bent or damaged high pressure pipe.

You must replace any pipe, tube or hose if:

- End fittings are damaged or leaking.
- Outer coverings are chafed or cut.
- Wires are exposed.
- Outer covering is blistered or ballooning.
- Flexible portion of a hose is kinked.
- Outer covers have embedded armouring.
- End fittings are damaged or displaced.

Clamps, guards and heat shields are installed to prevent vibration, contact between components and excessive heat. Make sure that all clamps, guards and heat shields are installed correctly.

Tyre hazards

An air inflated tyre can expand and explode if excessive heat is applied through welding, heating rim components, external fire or excessive use of the brakes. An exploding tyre can eject axle and wheel debris 500 m (1500 ft) or more from the vehicle, causing damage and possibly personal injury or death. All personnel must be aware of the hazards of overheating tyres.

An over-inflated tyre can blow out or cause a rim failure. This can cause damage or personal injury. Inflation of tyres must only be done by trained personnel.

When you inflate a tyre, you must stand behind the tyre tread and use a self attaching inflator. Maintenance on tyres and rims can be hazardous. The use of incorrect procedures can result in a tyre exploding. An exploding tyre can eject axle and wheel debris 500 m (1500 ft) or more from the vehicle, causing damage and possibly personal injury or death. Maintenance on tyres and rims must be done only by trained personnel, using the correct tools and procedures. The tyre dealer or manufacturers instructions must be followed.

Mounting and dismounting

You must never attempt to mount, dismount or jump from a trailer that is moving.

Always mount or dismount the trailer at the recognised locations, which have steps and/or hand holds. Make sure the steps and/or hand hold are clean and examined regularly. Make any necessary repairs.

When you mount or dismount the trailer, always keep a three-point contact with the steps and hand holds. Three-point contact can be two feet/one hand or two hands/one foot.

When you mount or dismount the trailer, always face the trailer and never attempt to carry tools or supplies. Tools and supplies should be raised or lowered from the Trailer using a hand line or other suitable method.

GENERAL SAFETY

General safety instructions

Check that the trailer is roadworthy and safe to operate every time it is put into operation.

1. Observe the current regulations regarding safety and accident prevention as well as the information in the operator's manual.
2. When using public roads observe all traffic regulations.
3. Make yourself familiar with all equipment and controls and their functions before starting work as it will be too late once you have set off.
4. Make sure that there is no one in close proximity to the trailer before putting it into operation (be especially aware of children). Check that visibility is good, particularly when reversing (have someone direct you if necessary).
5. Clothing worn by the operator must be close fitting. Avoid wearing loose fitting clothing when operating or maintaining the trailer.
6. Keep the trailer clean to prevent fire.
7. If it is necessary to access the trailer, the engine of the towing vehicle must be switched off. The ignition key of the towing vehicle must be removed.
9. Any safety guards must be checked regularly for wear and replaced if necessary.
10. Any safety decals that are missing must be replaced immediately.

General

1. Use only the recommended fastenings on the trailer.
2. Do not exceed the maximum load on the trailer drawbar.
3. Use extreme caution when coupling and uncoupling the trailer from the towing vehicle to avoid risk of injury.
4. During maintenance or after use prevent the trailer from rolling away by use of the parking brake or wheel chocks.
5. A risk of injury due to crushing exists in the vicinity of the towing vehicle 3-point linkage.
6. Couple and uncouple the trailer to the towing vehicle only as specified in the instructions.
7. The performance of the towing vehicle can be influenced by the trailer, ensure the towing vehicle has sufficient steering and braking capacity.
8. Make sure no one is between the trailer and the towing vehicle unless both are secured and prevented from moving.
9. The travel speed must always be matched to the under wheel conditions. Avoid sudden turns and braking when driving up or down hill or across a slope.
10. Observe the maximum permissible axle loads and total weights.
11. Operate the trailer only when all guards are fitted and in the correct position.
12. Ensure that the trailer is stable when parked.
13. Ensure all equipment is placed in the transport position before driving on the road.
14. Always switch off the engine of the towing vehicle before carrying out troubleshooting, and for repair, maintenance and cleaning work. Remove the towing vehicle ignition key.
15. When working under raised covers ensure that they are sufficiently supported.
16. When handling sharp-edged parts, wear appropriate protection (gloves, shoes etc).
17 . Do not stand near hinged covers.

GENERAL SAFETY

Brakes

1. Check the brakes before every journey.
2. Check the brake system thoroughly at regular intervals.
3. If the brake system malfunctions, do not use the trailer, stop the towing vehicle immediately. Repair faults immediately.
4. Any adjustments and repairs to the brake system must be carried out by your Bailey Trailers Ltd agent or approved specialist workshop.
5. Engage a lower gear before going downhill.
6. Engage the parking brake before coupling or uncoupling the towing vehicle.
7. The brakes must always be correctly adjusted. No liability can be accepted for normal wear or unauthorised modifications.

Hydraulic system

1. The hydraulic system is under high pressure.
2. When connecting the hydraulic hoses to the towing vehicle hydraulics, make sure that the hydraulic systems are de-pressurised on the tractor side and on the trailer side.
3. The female and male couplings between the tractor and the trailer should be labelled to prevent incorrect connections. If connections are reversed (e.g. lifting/lowering), there is a risk of accident.
4. Keep the hydraulic plugs clean.
5. Check hydraulic lines at regular intervals, and replace them if they are damaged.
6. Any replaced hydraulic lines must meet the technical requirements of the manufacturer.
7. The towing vehicle engine must be switched off and the system de-pressurised before starting work on the hydraulic system.
8. Repair work on the hydraulic system must be carried out by approved specialised work shops only.

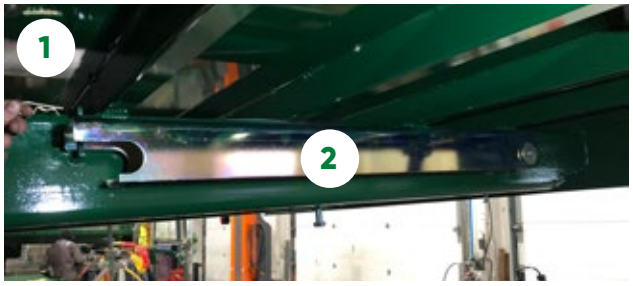
Wheels and tyres

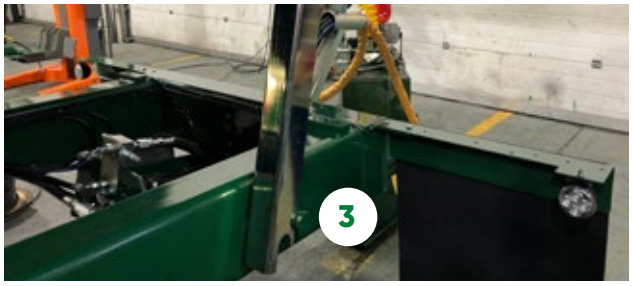
1. Repair work to the tyres must be carried out by qualified technicians using suitable tools.
2. When working on the wheels make sure that the trailer is secured and that wheels are chocked to prevent it from moving.
3. Tighten the wheel nuts after the first trip with a load.
4. After replacing the wheels re-tighten the wheel nuts or bolts after the first 10 operating hours, then check them every 50 hours.
5. Make sure that the jack used has sufficient load capacity.
6. Avoid excessive inflation pressure.
7. The specified tyre pressure must be maintained.
8. Stand clear of the tyre when inflating.
9. Check the pressure regularly.
10. Regularly check nuts and screws for tightness and re-tighten them, if necessary.
11. All mounting bolts and nuts must be tightened to the torque specified by the manufacturer.

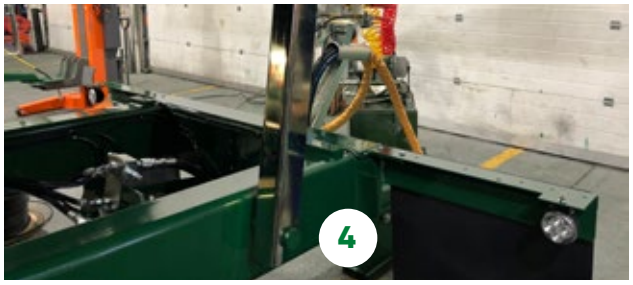
Maintenance

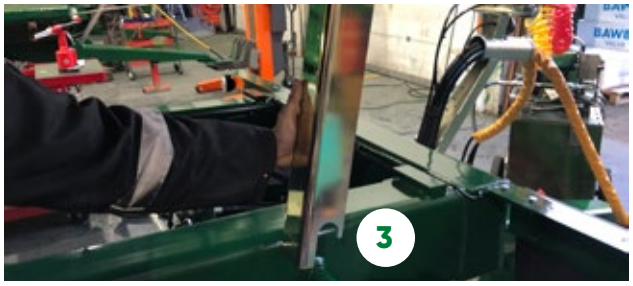
1. Always switch off the towing vehicle engine before carrying out any troubleshooting, and before all repair, maintenance and cleaning work. Remove the ignition key.
2. Use suitable tools and wear safety gloves when replacing working parts.
3. Always disconnect the power supply before working on the electrical system.
4. Protection devices that are subjected to wear must be checked at regular intervals and replaced as necessary.

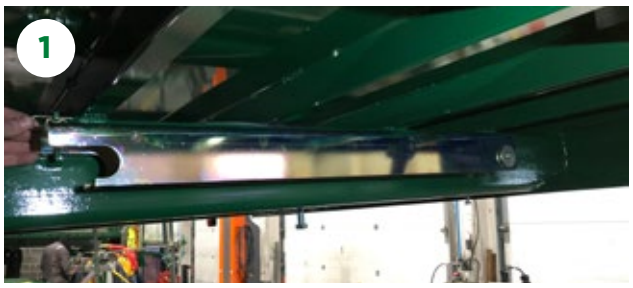
GENERAL SAFETY











Tipping body support

Introduction

The tipping body trailers manufactured by Bailey Trailers from May 2021 are all fitted with a mechanical body support.

For normal maintenance and repairs it is not necessary to raise the body, the design of the trailer permits normal maintenance activities and adjustments to be undertaken without the need to raise the tipping body.

In extraordinary circumstances where it may become necessary to raise the body deploy the support as described below.

WARNING

Never work beneath the raised trailer body unless it is securely propped and supported.

Never park the trailer with the body in the raised position.

This operation should be undertaken by Two persons.

Tipping body support deployment

The tipping body support is located beneath the body and is accessed from the offside of the trailer.

With the tipping body fully down, remove the R clip **(1)**

Remove the prop **(2)** from its location and rest on the support on the bottom chassis **(3)**

Raise the tipping body slowly, until the prop **(2)** locates on the chassis support **(3)** then lower the trailer into it supported position **(4)**

WARNING

At no point should you ever work under a raised trailer body.

Tipping body support storage

Raise the tipping body until the prop **(2)** swings free of the chassis support **(3)**

Secure the prop **(2)** into its location on the top chassis and replace the R clip **(1)**

Lower the trailer into the down position

Jacking the Trailer

Introduction

All trailers can be raised in the event of a tyre inspection or wheel change by jacking beneath the relevant axle.

No specific jacking points are provided.

Use a suitable hydraulic cylinder **(4)** or trolley jack with a minimum of 5 tonne lifting capacity and a cup of sufficient size to engage the underside of the axle tube as shown without slipping.

Place the trailer on firm level ground, support the jack if necessary with suitable shoring.

Raise the jack until at the required height support the axle using a trestle or axle stand before removing the wheel.

WARNING

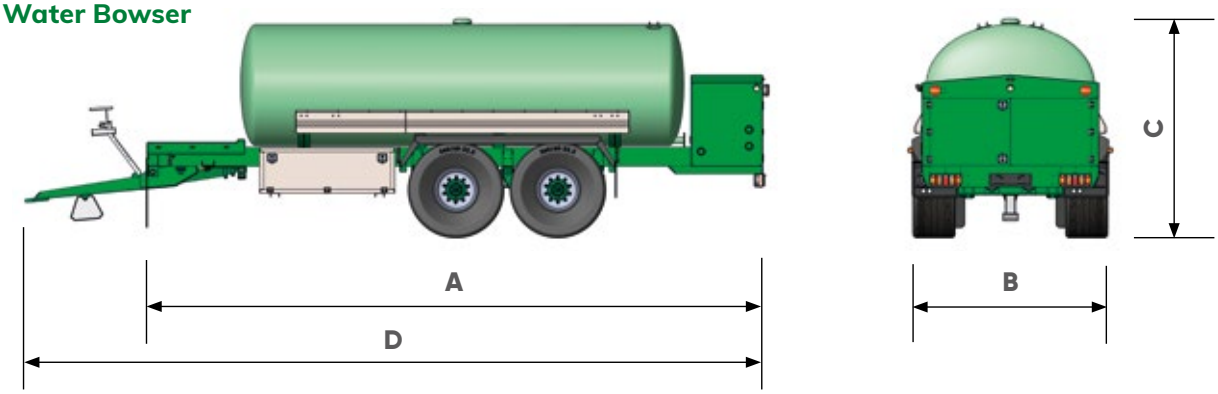
Do not work on the trailer or remove the wheel when only supported by the jack.

Loaded trailers should only be jacked in exceptional circumstances, and then by specialist contractors.

GENERAL SPECIFICATIONS

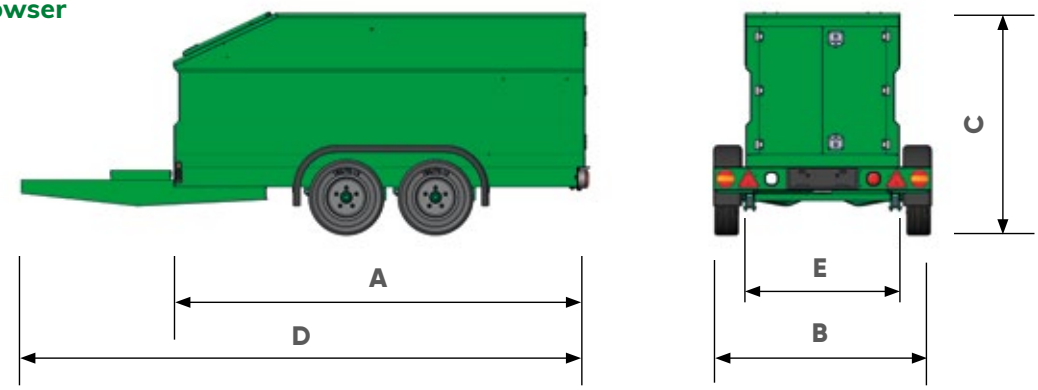
Model		TB & Beeteaper	Dumper	Root Special	Bale & Pallet/ Water Bowser	Contract Tipper	Low Loader	High Lift/ Ejector
Electric system								
Voltage	**V(dc)**	12	12	12	12	12	12	12
Current (cont)	**A**	10	10	10	10	10	10	10
Current (max)	**A**	15	15	15	15	15	15	15
Braking system								
Standard		Single line hydraulic brakes						
Option 1		Dual line airbrakes with Load Sensing and/or ABS						
Speed								
Std. braking system	**kmh**	65	65	65	65	65	65	65
Option 1	**kmh**	max. towing	max. towing	max. towing	max. towing	max. towing	max. towing	max. towing
Option 2	**kmh**	vehicle speed	vehicle speed	vehicle speed	vehicle speed	vehicle speed	vehicle speed	vehicle speed
Hydraulic system								
Supply		as towing vehicle						
Working hyd. pressure	**bar**	as towing vehicle						
Max. hyd. pressure	**bar**	207	207	207	207	207	207	207
Min. hyd. pressure	**bar**	172	172	172	172	172	172	172
Max. brake pressure	**bar**	150	150	150	150	150	150	150
Min. brake pressure	**bar**	120	120	120	120	120	120	120
Max. hyd. flowrate	**L/min**	90	90	90	90	90	90	90
Noise	**dB(A)**	<70	<70	<70	<70	<70	<70	<70

Water Bowser



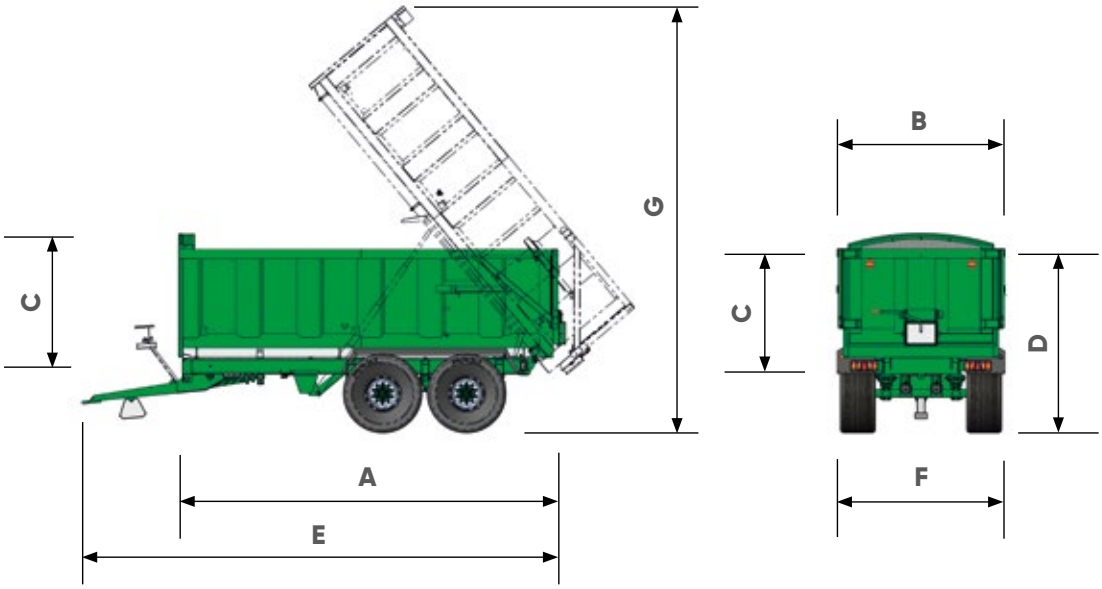
Model			12,000L	15,000L	16,500L	18,000L
Dimensions						
Body length	**A**	**mm**	7320	7820	8370	8905
Overall width	**B**	**mm**	2610	2610	2610	2610
Overall height	**C**	**mm**	2950	2950	2950	2950
Overall length	**D**	**mm**	8850	9400	9950	10485
Misc.						
Number of axles			2	2	2	2
Axle beam	**mm/studs**		2xcom/10			
Brake size			420x180			420x220
Brake option			H/A			
Tyre size			385/65 R22.5			

Fuel Bowser



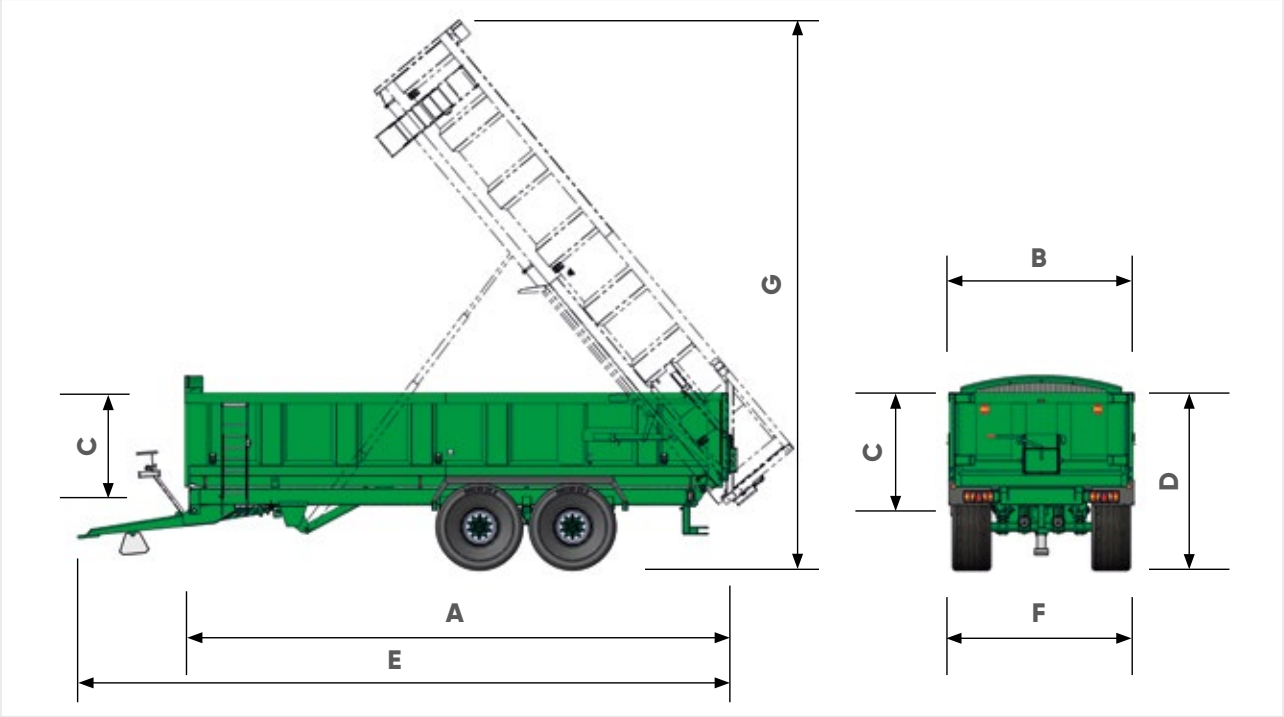
Model			Standard
Dimensions			
Body length	**A**	**mm**	3220
Overall width	**B**	**mm**	1705
Overall height	**C**	**mm**	1735
Overall length	**D**	**mm**	4660
Body width	**E**	**mm**	1200
Misc.			
Number of axles			2
Axle beam		**mm/studs**	50/5 Stud
Brake size			250 x 40
Brake option			Over run
Tyre size			185/70 R13

TB



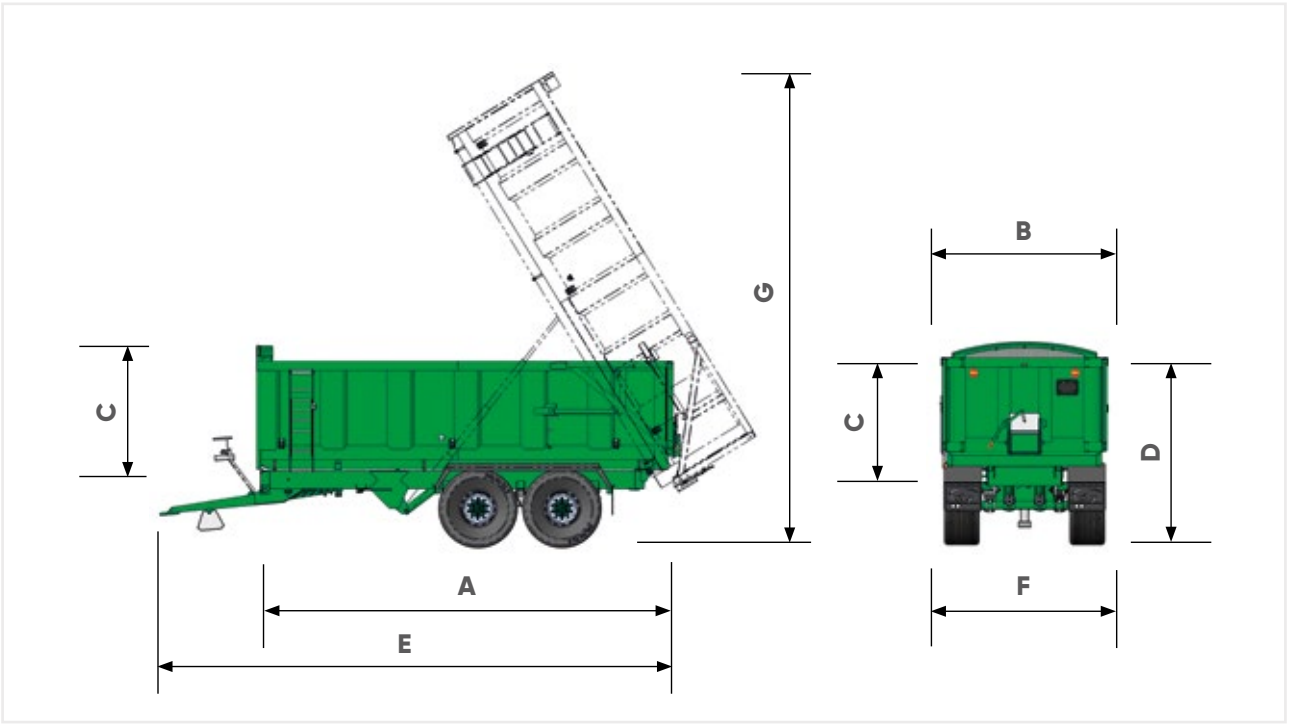
Model			TB 8	TB 9	TB 11	TB 12	TB 14	TB 15	TB 16	TB 18	TB 20	TB 22	TB 24
Dimensions													
Body length	**A**	**mm**	3900	4350	4800	5400	6000	6000	6600	7200	7800	8400	9000
Body width	**B**	**mm**	2350	2350	2500	2500	2500	2500	2500	2500	2500	2500	2500
Body height	**C**	**mm**	1225	1225	1225	1225	1300	1375	1375	1375	1375	1375	1375
Loading height	**D**	**mm**	2360	2360	2550	2550	2620	2700	2700	2700	2700	2800	2950
Overall length	**E**	**mm**	5540	5990	6450	7060	7670	7670	8280	8890	9500	10110	10720
Overall width	**F**	**mm**	2350	2350	2760	2760	2760	2760	2760	2760	2760	2760	2760
Tipped height	**G**	**mm**	4750	5000	5700	6500	7000	7100	7500	8000	8500	9100	9750
Body capacity		**m³**	10.7	11.9	14.0	15.8	18.7	19.7	21.7	23.7	25.7	30.7	32.9
Misc.													
Hydraulic oil		**L**	15.5	24.6	24.6	33.5	33.5	33.5	36.5	40.0	46.0	58.0	70.0
Number of axles			1				2					3	
Axle beam		**mm/studs**	2x70/6	2x80/8	2x90/8		2xcom/10					3xcom/10	
Brake size			300x60	350x90		406 x120	420x180				420 x220	420x180	
Brake option			H		H/A								
Tyre size			12.5/ 80x15.3	435/50 R19.5			385/65 R22.5				445/65 R22.5		
Bottom chassis			200x100 RHS		250x100 RHS		250x150 RHS				300x150 RHS		
Top chassis			150x75 RHS				150x100 RHS					200x100 RHS	

ROOT SPECIALS



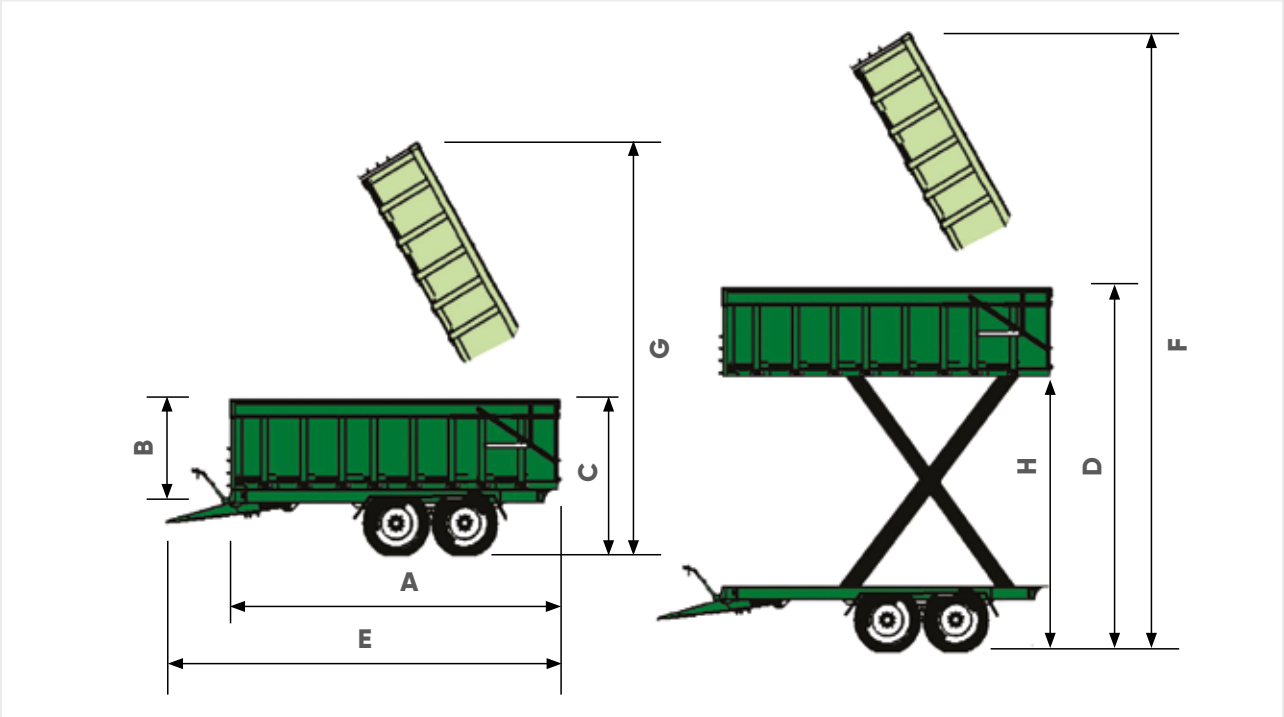
Model			ROOT 12	ROOT 14	ROOT 15	ROOT 16	ROOT 18	ROOT 20
Dimensions								
Body length	**A**	**mm**	6000	6600	7200	7800	8400	9000
Body width	**B**	**mm**	2500	2500	2500	2500	2500	2500
Body height	**C**	**mm**	1150	1150	1150	1150	1150	1150
Loading height	**D**	**mm**	2440	2440	2440	2440	2500	2500
Overall length	**E**	**mm**	7600	8200	8800	9400	10000	10600
Overall width	**F**	**mm**	2760	2760	2760	2760	2760	2760
Tipped height	**G**	**mm**	6700	7100	7600	8000	8600	9200
Body capacity		**m³**	16.20	17.80	19.70	22.20	23.02	24.02
Misc.								
Hydraulic oil		**L**	33.5	36.5	40.0	48.0	52.0	60.0
Number of axles					2			
Axle beam		**mm/studs**			2xcom/10			3xcom/10
Brake size			406x120		420x180			420x180
Brake option					H/A			
Tyre size					385/65 R22.5			
Bottom chassis			250x100 RHS		250x150 RHS			300x150 RHS
Top chassis			150x75 RHS		150x100 RHS			200x100 RHS

BEETEAPER



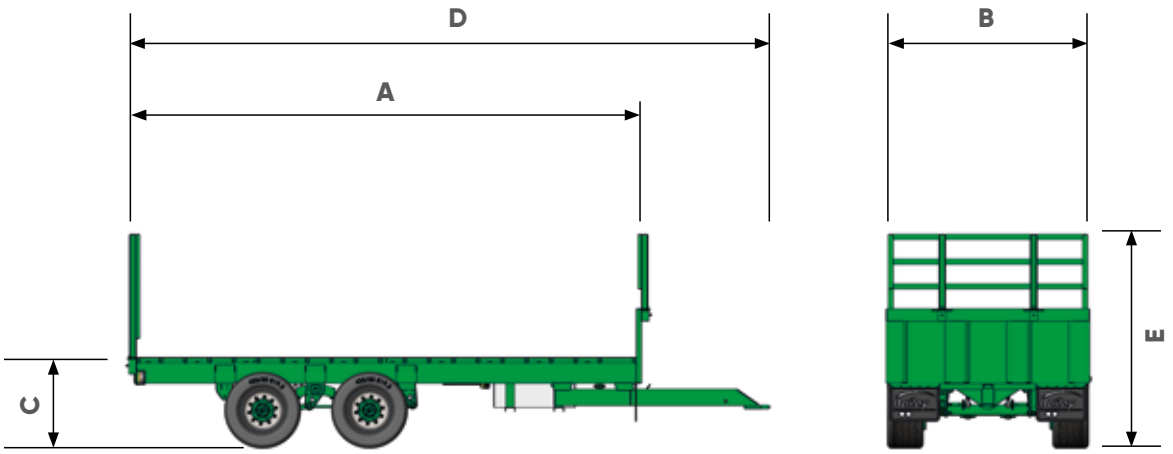
Model			BEET 16	BEET 18	BEET 20	BEET 22/2	BEET 22/3
Dimensions							
Body length	**A**	**mm**	6000	6600	7200	7800	7800
Body width	**B**	**mm**	2500	2500	2500	2500	2500
Body height	**C**	**mm**	1525	1525	1525	1525	1525
Loading height	**D**	**mm**	2970	2970	2970	2970	2970
Overall length	**E**	**mm**	7820	8430	9040	9650	9650
Overall width	**F**	**mm**	2620	2620	2620	2620	2620
Tipped height	**G**	**mm**	7210	7550	7980	8410	8410
Body capacity		**m³**	22.0	24.1	26.3	28.5	28.5
Misc.							
Hydraulic oil		**L**	40.0	40.0	52.0	70.0	70.0
Number of axles			2				3
Axle beam		**mm/studs**	3xcom/10				
Brake size			420x180		420x220		420x180
Brake option			H/A				
Tyre size			560/60 R22.5		650/50 R22.5		560/60 R22.5
Bottom chassis			300x150 RHS				
Top chassis			150x100 RHS				

HIGH LIFT



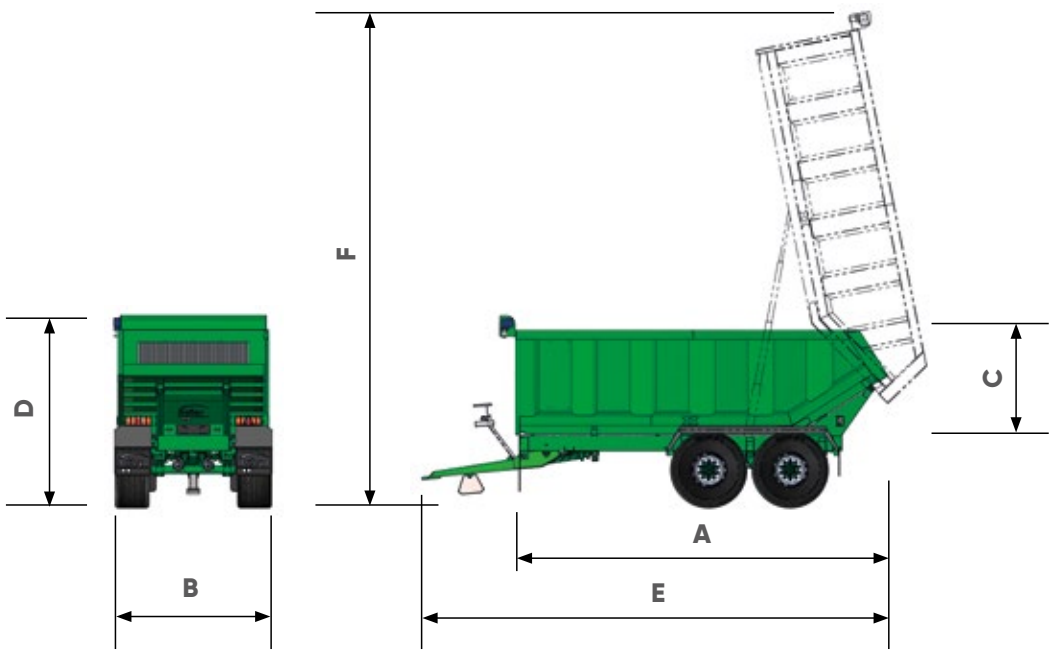
Model			HL14 Ton
Dimensions			
Body length	**A**	**mm**	6000
Body height	**B**	**mm**	1225
Loading height	**C**	**mm**	2770
Elevated height	**D**	**mm**	6100
Overall length	**E**	**mm**	7700
Elevated tipped height	**F**	**mm**	10500
Tipped height	**G**	**mm**	6750
Lifted height	**H**	**mm**	4750
Body capacity		**m³**	17.27
Misc.			
Hydraulic oil		**L**	98.0
Number of axles			2
Axle beam		**mm/studs**	2xcom/10
Brake size			420x180
Brake option			H/A
Tyre size			385/65 R22.5
Bottom chassis			220x90 Chan
Top chassis			150x75 RHS

BALE & PALLET



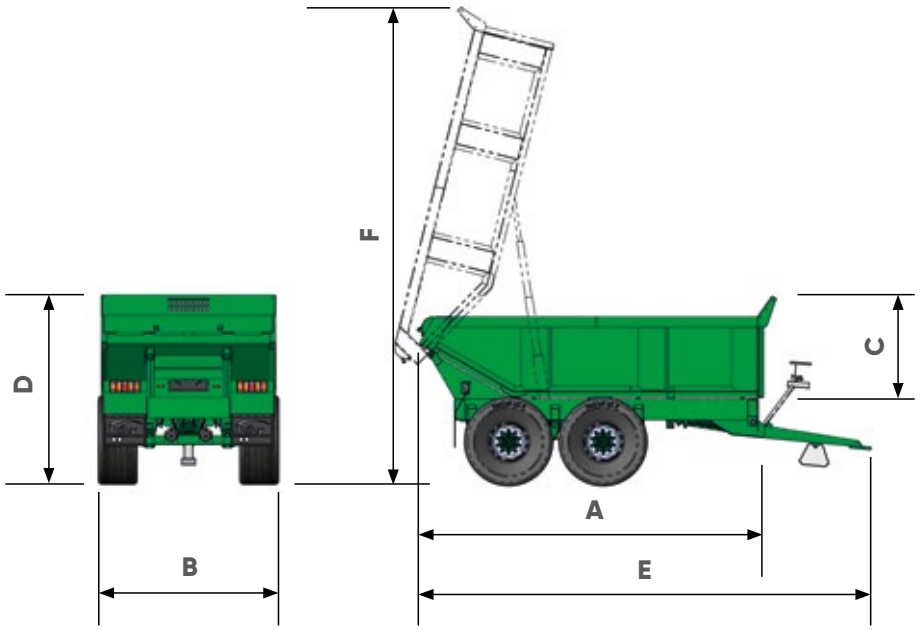
Model			FLAT 6	FLAT 8	FLAT 10	FLAT 12	FLAT 14	FLAT 16	FLAT 18	FLAT 20
Dimensions										
Body length	**A**	**mm**	5700	6600	7500	8400	9300	10200	11100	12000
Body width	**B**	**mm**	2500	2500	2500	2500	2500	2500	2500	2500
Loading height	**C**	**mm**	1020	1070	1220	1220	1220	1220	1270	1070
Overall length	**D**	**mm**	7200	8100	9000	9900	10800	11700	12600	13500
Overall height	**E**	**mm**	2540	2590	2720	2720	2720	2720	2770	2770
Misc.										
Number of axles			1	2						4
Axle beam	**mm/studs**		1x70/6		2x90/8		2xcom/10			4xcom/10
Brake size			300x60		350x90		420x180			
Brake option			H				H/A			
Tyre size			12.5/80x15.3		385/65 R22.5					435/50 R19.5
Bottom chassis			200x100 RHS			250x100 RHS		250x150 RHS	300x150 RHS	

AGRICULTURAL DUMPERS



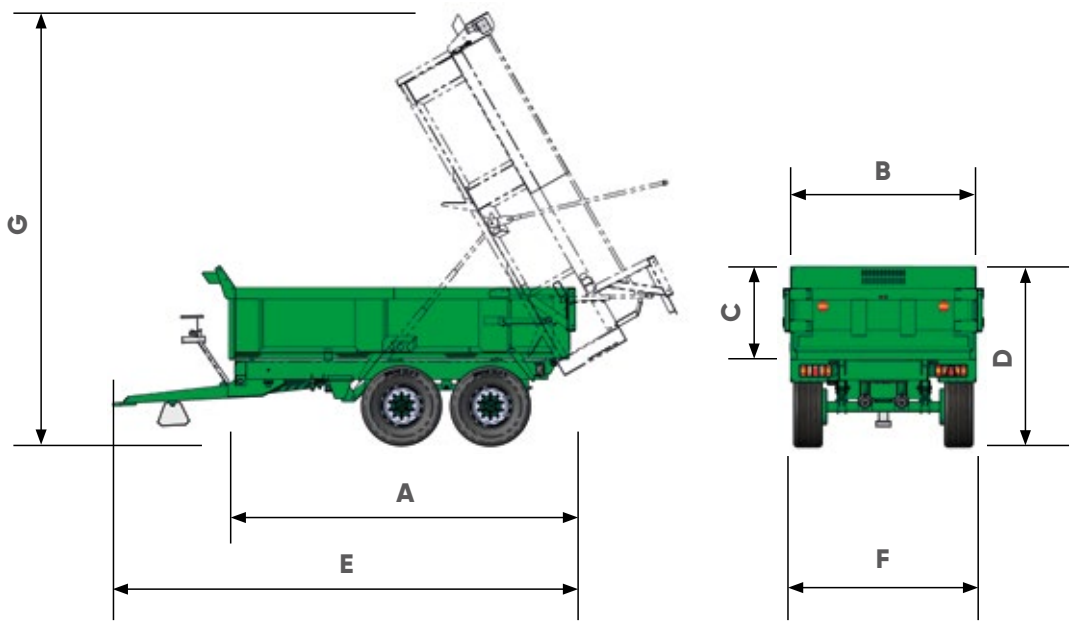
Model			DUMP 8	DUMP 10	DUMP 12	DUMP 14	DUMP 16
Dimensions							
Body length	**A**	**mm**	4630	5430	6030	6030	6630
Body width	**B**	**mm**	2500	2500	2500	2500	2500
Body height	**C**	**mm**	1225	1225	1300	1525	1525
Loading height	**D**	**mm**	2415	2570	2645	2870	2920
Overall length	**E**	**mm**	6070	6750	7360	7360	8000
Tipped height	**F**	**mm**	6710	7390	8000	8130	8740
Body capacity	**G**	**m³**	11.50	13.80	16.50	19.50	21.70
Misc.							
Hydraulic oil		**L**	28.6	37.2	40.0	48.0	60.0
Number of axles					2		
Axle beam		**mm/studs**	2x80/8	2x90/8	2xcom/10		
Brake size			350x90	406x120		420x180	
Brake option			H	H/A			
Tyre size			435/50 R19.5	385/65 R22.5			
Bottom chassis			200x100 RHS	250x150 RHS			300x150 RHS
Top chassis			150x75 RHS	150x100 RHS			

CONTRACT DUMPERS



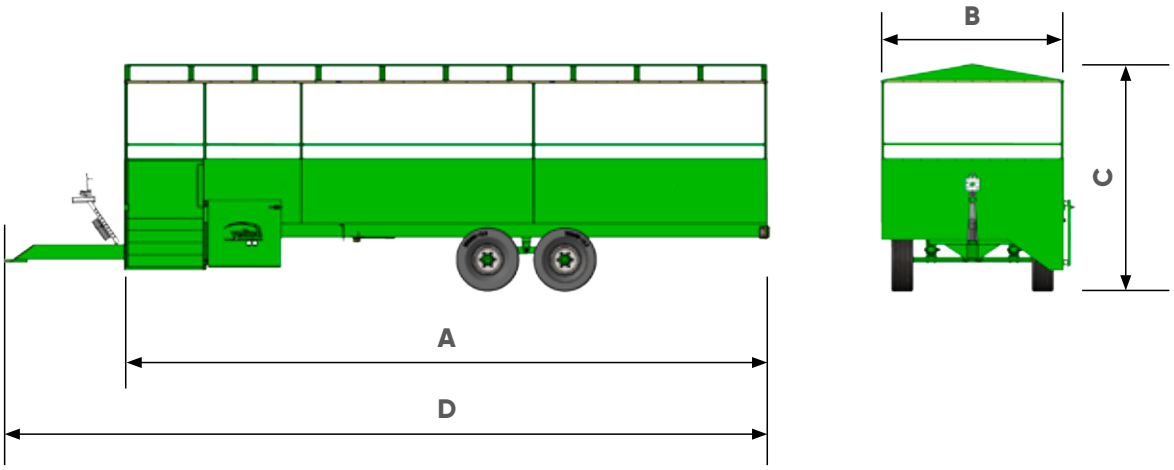
Model			CD 4 T	CD 8	CD 10	CD 12	CD14	CD 17	CD 20	CD 22
Dimensions										
Body length	**A**	**mm**	3250	3445	3650	4050	4660	4960	5460	5960
Body width	**B**	**mm**	2350	2350	2500	2500	2500	2500	2500	2500
Body height	**C**	**mm**	500	700	700	800	900	1000	1100	1100
Loading height	**D**	**mm**	1510	1760	1850	1950	2.100	2200	2350	2350
Overall length	**E**	**mm**	4900	5100	5510	6000	6.100	6420	6950	7450
Tipped height	**F**	**mm**	4450	4700	5310	5900	6.000	6400	6830	7330
Body capacity		**m³**	3.25	4.60	5.30	6.84	8.15	9.98	12.33	13.60
Misc.										
Hydraulic oil		**L**	12.0	24.6	24.6	33.5	33.5	40.0	52.0	60.0
Number of axles			2	2						
Axle beam	**mm/studs**		2x70/6	2x70/6	2x90/8	2xcom/10				
Brake size			300x60	300x60	350x90	406x120		420x180		
Brake option			H			H/A				
Tyre size			400/60 x15.5	12.5/80 x15.3	435/50 R19.5	385/65 R22.5			445/65 R22.5	
Bottom chassis			150x100 RHS	200x100 RHS	200x100 RHS	200x150 RHS		250x150 RHS	300x150 RHS	
Top chassis			100x50 RHS	150x75 RHS	150x75 RHS	150x75 RHS	150x75 RHS	150x100 RHS		

CONTRACT TIPPERS (INCL. NORWEGIAN DUMPER)



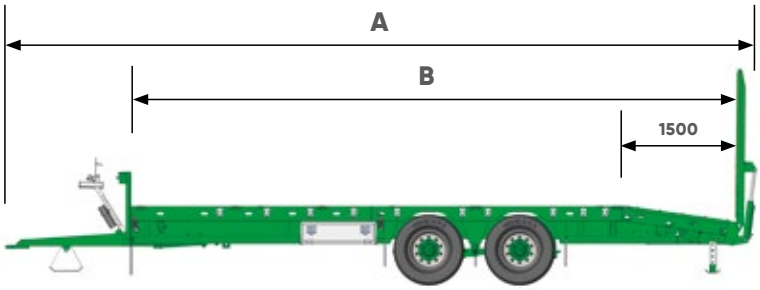
Model			CT 10	CT 12	CT 14	CT 17	CT 20	CT 24	CT 28
Dimensions									
Body length	**A**	**mm**	4000	4500	5000	5500	6000	6500	7000
Body width	**B**	**mm**	2500	2500	2500	2500	2500	2500	2500
Body height	**C**	**mm**	700	750	900	1000	1000	1100	1100
Loading height	**D**	**mm**	1775	2050	2200	2300	2450	2550	2550
Overall length	**E**	**mm**	5550	6050	6550	7050	7550	8050	8550
Overall width	**F**	**mm**	2640	2640	2640	2640	2640	2640	2640
Tipped height	**G**	**mm**	4960	5180	5770	6480	6960	7400	7930
Floor thickness		**mm**	8	8	8	10	10	10	10
Side thickness		**mm**	6	6	6	8	8	8	8
Body capacity		**m³**	6.82	7.90	10.6	12.9	14.1	16.6	18.0
Misc.									
Hydraulic oil		**L**	24.6	40.0	40.0	45.0	53.0	64.0	68.0
Number of axles			2						
Axle beam		**mm/studs**	2x90/8	2xcom/10				3xcom/10	
Brake size			406x120		420x180		420x220	420x220	422x220
Brake option			H/A						
Tyre size			435/50 R19.5	385/65 R22.5		445/65 R22.5			
Bottom chassis			200x100 RHS	250x150 RHS		300x150 RHS			
Top chassis			150x75 RHS		150x100 RHS				

PEOPLE CARRIER



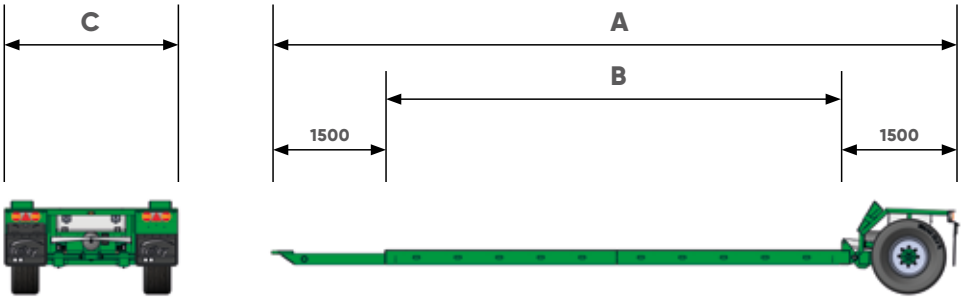
Model			People 23	People 31	People 39	People 47
Dimensions						
Body length	**A**	**mm**	5600	7200	8800	10400
Body width	**B**	**mm**	2500	2500	2500	2500
Overall height	**C**	**mm**	3100	3100	3100	3100
Overall length	**D**	**mm**	7200	8800	10400	12000
Misc.						
Number of axles			2			
Axle beam		**mm/studs**	70/6			
Brake size			300x60			
Brake option			Hyd			
Tyre size			300/70x15			
Bottom chassis			200x100 RHS			

LOW LOADERS



Beavertail

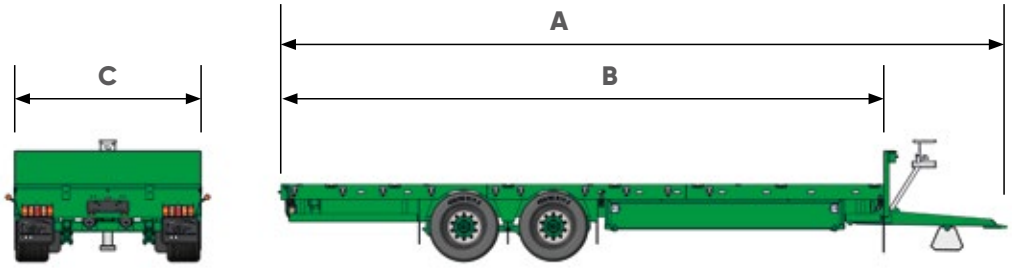
Model	Overall Length A mm	Body length B mm	Body width mm	Number of axles	Axle beam mm/studs	Brake size	Brakes	Tyre size	Chassis
LOW 15 B/T	8600	7000	2500	2	2xcom/10	310x190	Hydraulic Brakes	215x75 Twins	300x150 RHS
	9600	8000	2500						
	10600	9000	2500						
	11600	10,000	2500						
LOW 20 B/T	9600	8000	2500	3	3xcom/10	310x190	Air Brakes	215x75 Twins	300x150 RHS
	10600	9000	2500						
	11600	10,000	2500						
	12600	11,000	2500						
	13600	12,000	2500						
	14600	13,000	2500						



Drop Deck

Model		LOW 8/46	LOW 8/54	LOW 8/60	LOW 8/66	LOW 8/72
Dimensions						
Overall length	**A mm**	7800	8400	9000	9600	10200
Body length	**B mm**	4800	5400	6000	6600	7200
Body width	**C mm**	2500	2500	2500	2500	2500
Misc.						
Number of axles		1				
Axle beam	**mm/studs**	1x90/8				
Brake size		350x90				
Brake option		H				
Tyre size		385/65xR22.5				

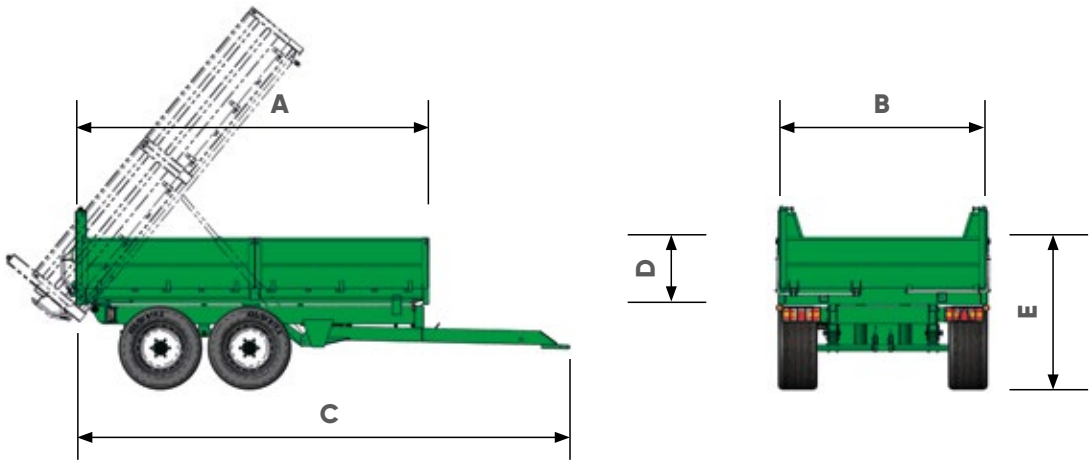
LOW LOADERS



Flat Deck

Model	Overall length A mm	Body length B mm	Body width C mm	Number of axles	Axle beam mm/studs	Brake size	Brake option	Tyre size	Chassis
LOW 15 F/D	8500	7000	2500	2	2xcom/10	310x190	H/A	215x75 Twins	300x150 RHS
	9500	8000	2500						
	10,500	9000	2500						
	11,500	10000	2500						
	12,500	11000	2500						
LOW 20 F/D	9500	8000	2500	3	3xcom/10	310x190	H/A	215x75 Twins	300x150 RHS
	10,500	9000	2500						
	11,500	10,000	2500						
	12,500	11,000	2500						
	13,500	12,000	2500						
	14,500	13,000	2500						

DROPSIDES



Model			DS 2	DS 4	DS 6	DS 8	DS 9	DS 11	DS 12
Dimensions									
Body length	**A**	**mm**	2500	3000	3450	3900	4350	4800	5400
Body width	**B**	**mm**	1500	2200	2200	2350	2350	2500	2500
Overall length	**C**	**mm**	3780	4500	4950	5400	5850	6300	6900
Body depth	**D**	**mm**	450	450	450	525	525	600	600
Overall height	**E**	**mm**	1235	1500	1515	1700	1710	1960	2000
Misc.									
Number of axles			1	1	1	2	2	2	2
Axle beam		**mm/studs**	1x50/5	1x70/6		2x70/6	2x80/8	2x90/8	2xcom/10
Sprung d/bar			N/A	N/A	N/A	N/A	N/A	1100	STD
Tyre size			24x12x12	11.5/80x15.3	12.5/80x15.3		435/50 19.5	385/65 R22.5	

BEFORE OPERATION

The Dealer is required by the manufacturer to undertake certain activities when supplying new trailers. In discharging these obligations the dealer will undertake a full pre-delivery inspection, this will ensure that the trailer delivered is correct to order requirements, fully assembled with all options required, and ready for immediate use. Upon delivery the dealer will also provide you the customer, with comprehensive instruction in the basic principles of operation of the product and of its maintenance in addition to the comprehensive information contained within this manual.

These instructions will cover controls, daily and periodic maintenance and safety precautions. It is the responsibility of the owner to ensure that all persons concerned with the operation of the trailer are present for, or informed of this instruction. It is also the responsibility of all persons concerned with the operation of this trailer to ensure they have read and understood the information contained herein.

Before operation check the following

1. Trailer braking system
   Bailey Trailers can be fitted with either of the following brake systems (this may differ and be dependent on locally or nationally enforced traffic regulations and customer preference.
   – Air brake system (dual-circuit system).
   – Hydraulically operated brake system.
   The towing vehicle brake system must be the same as that of the trailer.
   Trailers to be towed at speeds above 32 km/h (20 mph) are to be equipped with an ABS brake system.
2. Check the brakes before every journey.
3. Check all safety equipment for function and correct position.
4. Thoroughly lubricate the trailer before operation.
5. Check all bolts and nuts are tight.
6. Couple the towing vehicle to the trailer at idle speed only.
7. Before connecting air and hydraulic lines turn off the engine of the towing vehicle and ensure the connections are clean.
8. Check the wheel nuts for tightness (see specification section).
9. Check tyres for correct inflation pressures and correct if necessary (see specification section).
10. If a wheel is changed check the wheel nut torques after 10 hrs of operation, and every 10 hours thereafter until the torque is maintained (see specification section).
11. Wheels must be changed using a jack with sufficient lifting capacity for the weight of the trailer, and the load if required.
12. Never leave the trailer body raised and unattended.
13. Make sure that there are no loose parts on the trailer and the towing vehicle before moving off. Secure or cover parts (including loads) which could fall off during travel.
14. Make sure no persons are in the danger areas before moving off or raising the body. If any person approaches the danger areas turn off the towing vehicles engine immediately and make safe.
15. When connecting the air, electric and hydraulic lines to the towing vehicle, ensure they are fixed in a way which allows their full articulation as the trailer steers.
16. Ensure the air, electric and hydraulic lines cannot be trapped or chaffed by moving parts during operation.

Transportation

Where it is impractical to transport the trailer on its own wheels the trailer may be transported on a suitable commercial vehicle trailer.

There are no specific lash down points provided.

The trailer should be positioned on the deck and secured in position using suitable straps and/or chains around the axles or tyres and the drawbar.

If chaining the axle take care not to damage any of the brake system or ancillary components.

Apply the parking brake and chock the wheels with chocks or wooden blocks.

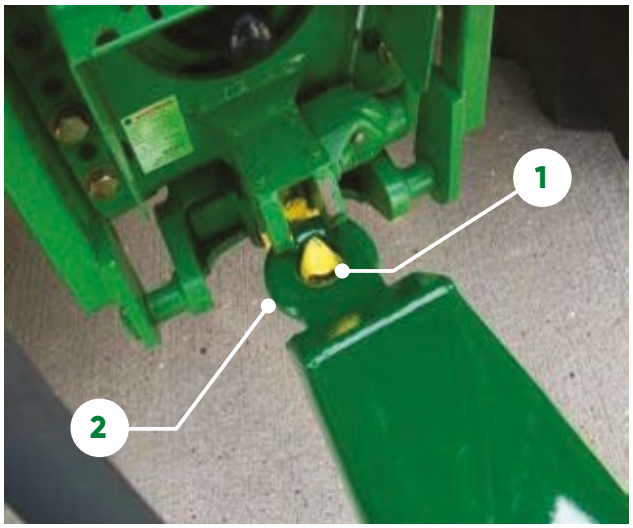
Handling

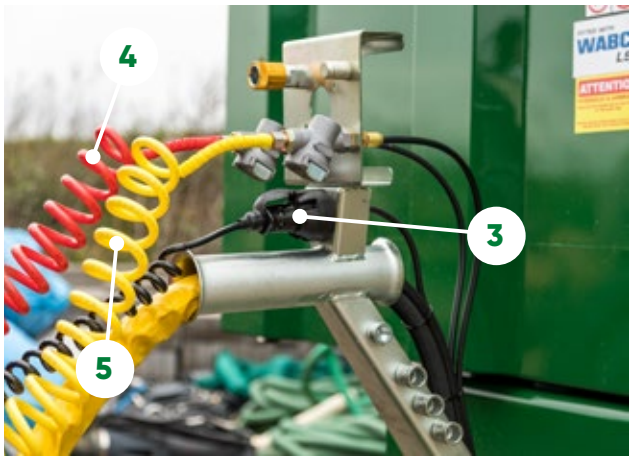
When fitting or removing silage side kits, grain extensions or Bale trailer hay ladders always use suitable lifting equipment.

These components are heavy and awkward to lift easily and should not be attempted alone.

WARNING

Do not lift heavy components (more than 20 Kg) without assistance and suitable lifting equipment.





WARNING

Ensure all personnel are outside of the danger area between the towing vehicle and trailer before reversing be especially vigilant of children.

Check that the trailer is properly and securely attached to the towing vehicle before moving off.

Never park the trailer with the body in the raised position.

Be aware of both upward and downward forces, and the potential for unexpected movement when coupling or decoupling from the towing vehicle.

Coupling to the towing vehicle – hitch

Reverse the towing vehicle until the tow hitch **(1)** is located beneath the eye **(2)**.

Raise the tow hitch **(1)** and lock into the raised position.

Uncoupling to the towing vehicle – hitch

Ensure the tipping body is lowered fully.

Ensure the drawbar is in the tow position.

Lower the trailer onto the drawbar skid.

Decouple all hoses and electrical connections.

Apply the parking brake.

Unhitch the trailer.

Coupling to the towing vehicle – air braking connections

Check the air reservoir drain valve is closed.

Connect seven pin trailer electric connector **(3)** to towing vehicle trailer lighting socket.

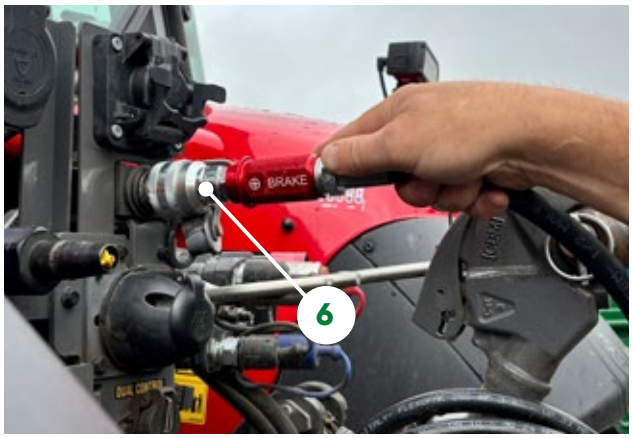
Connect air service line braking connector **(4)** to the relevant connection on the towing vehicle

Connect control line braking connector to **(5)** the relevant connection on the towing vehicle

Ensure the towing vehicle air pressure reading is sufficient before moving off.

NOTE

The trailer will also be equipped with the standard hydraulic brake connections, it is not necessary to connect these when the air service is used.



Coupling to the towing vehicle – hydraulic braking connections

For trailers that are equipped with hydraulic brakes remove the hose from the storage position on the trailer and remove the protective cap .

Connect the hydraulic service line **(6)** to the correct connection on the towing vehicle and release the knurled cover to secure it.

Latch the towing vehicles brake pedals together, the trailer brakes will now apply when the towing vehicle brakes.

NOTE

The trailer will also be equipped with the optional air brake connections, it is not necessary to connect these when the Hydraulic service is used.

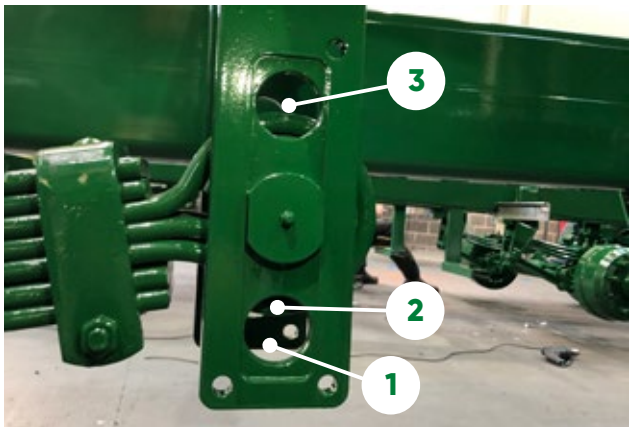
CAUTION

Refer to the towing vehicles operation manual for specific instructions regarding towing.

If the trailer gross weight exceeds 14230 Kg the trailer brakes must always be operated by the towing vehicles footbrake pedal.

ABS Brake Connections

Some trailers are fitted with ABS braking, if applicable connect the ABS system plug to the relevant socket **(7)** on the towing vehicle.



WARNING

When working in the danger area between the trailer and the towing vehicle always ensure that the towing vehicle engine is turned off and the key removed.

Never work beneath any unsupported vehicle.

Release residual pneumatic & hydraulic pressure before connecting or disconnecting air & hydraulic lines.

Adjusting sprung drawbar height

The trailer chassis should run level or with the front of the trailer slightly raised when connected to the towing vehicle. To achieve this certain trailers may be fitted with a sprung drawbar, which can be adjusted.

Remove any load from the trailer, lower the body apply the parking brake and disconnect from the towing vehicle.

Support the front of the trailer chassis on suitable supports and remove all weight from the drawbar. Using a suitable jack under the front of the drawbar, take the load and remove the nut and split pin from pin withdraw the pin.

Using the jack raise or lower the drawbar to the required height.

Insert the pin **(1)** in the lower hole **(2)** to increase the drawbar height, or in the upper hole **(3)** to reduce it. Remove jack and supports and check operation.

Adjustments before towing the trailer

Adjust the drawbar and/or the hitch of the towing vehicle so that when towing the trailer body is slightly raised at the front when unladen, and level when laden.

It is acceptable to adjust the hitch so that the chassis is parallel to the road surface, this however may cause additional wear to the trailer brakes and those of the towing vehicle.

In this condition when laden the rear axle wheels may lock when braking.

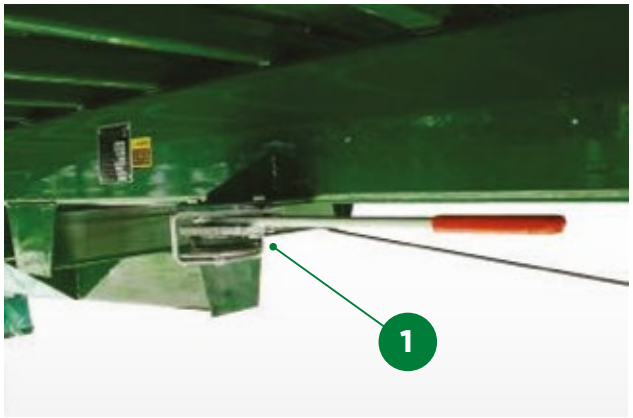
Adjusting the hitch too low causes unnecessary wear to the suspension and brake components especially of the trailers front axle, it can reduce the braking efficiency, and possibly lock the rear axle.

It can also cause additional loading to be placed on the towing vehicle, causing damage to rear axle and brake components.

OPERATION

Poor supervision and a lack of forethought or knowledge when operating trailers often leads to damage to the trailer or more seriously unsafe working practices and danger to operators and bystanders.

NEW White ID plates



Loading the trailer

The manufacturers plate shows the unladen weight of the trailer and its maximum permitted gross weight. The load capacity of the trailer is the gross weight minus the unladen weight.

The maximum gross weight in the UK is 18290 kg.

The gross weight varies by model above 14 tonne payload.

Do not overload the trailer.

Be especially aware when loading and carrying aggregates, stone and other dense materials, and loads with a potential for high moisture content.

Always load by weight not volume.

Moving off

Ensure all hydraulic connections are made and that services are functioning correctly.

Ensure all air connections are made and that the brakes are functioning correctly.

Ensure all electrical connections are made and that all lighting systems and ABS braking (option) are functioning correctly.

When the air braking system is fitted allow air pressure from the towing vehicle to build to the required level.

Release the manual parking brake lever **(1)**.

Ensure the trailer is fully lowered and the tailgate is closed before releasing the brake and moving away.

WARNING

Never exceed the trailers maximum permitted capacity as stated on the manufacturers plate

Never exceed the trailers maximum permitted travel speed.

Ensure the towing vehicle is of a suitable size, weight and power, and complies with construction & use regulations and local road traffic regulations.

Always apply the parking brake before disconnecting the trailer from the towing vehicle.

CAUTION

Dirty quick release couplings can cause increased wear in hydraulic pumps and air compressors. Incorrectly connected couplings can cause failure within the system. Always clean the couplings before connecting them.

Check all around the trailer before moving away, especially in confined areas and when reversing.

Be especially careful when reversing, use a banksman if visibility is limited.

Be especially vigilant of children.

CAUTION

Take care when tipping on gradients.

Avoid tipping on unconsolidated ground.

Be prepared for a change in stability as the centre of mass changes as the load is ejected from the trailer. Slow flowing or sticking loads can apply an upwards force to the drawbar.

It is recommended to use a double acting tailgate when tipping rootcrops.

Never leave the trailer raised when disconnected from the towing vehicle.

WARNING

Before discharging ensure no persons or obstructions are in the tipping zone.

If drawing forward to enable discharge be aware the trailer will be less stable. Take extreme care and lower the tipping body as soon as soon as fully discharged.

Tipping the trailer

Bring the towing vehicle and trailer to a stop.

Always position the towing vehicle and trailer in a straight ahead position wherever possible. Check that there are no obstructions or persons in the tipping area. For trailers with steering axles ensure the wheels are in the straight ahead position

Select the towing vehicles tipping control and raise the trailer body, control the speed to suit the type of material being carried.

If an independently operated tailgate is fitted operate this from the towing vehicle as the body is raised. Slowly drive forward to ensure the loaded material is fully discharged.

Note: the tailgate cannot be raised until the lifting of the body has commenced.

Stop the towing vehicle and fully lower the body and close the tailgate before driving off.

Always lower the trailer body when leaving the trailer.

To eliminate damage to the rear door, keep the full load pressure **off** the rear door when tipping.

Trailers fitted with a grain chute should only be partly tipped when unloading and the grain chute is in operation.

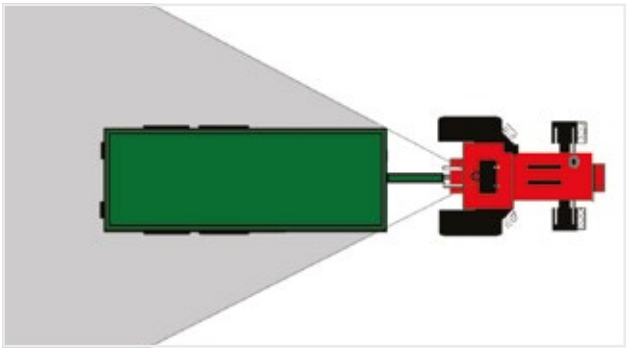
Hydraulic tailgate operation

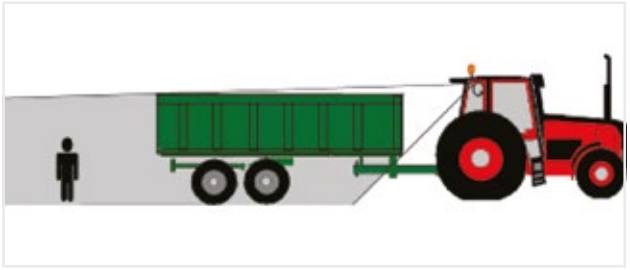
Ensure the tailgate hydraulic connection is made to the towing vehicle. Check that there are no obstructions or persons in the tailgate danger zone before operating the tailgate.

Operate the relevant control to raise the tailgate and to lower it.

Note: all trailers equipped with hydraulic tailgates incorporate a safety system which requires the trailer to commence tipping before the tailgate can be raised.

When lowering the trailer ensure the tailgate is fully closed before the trailer body is fully lowered.





Reversing the trailer

Blind Spots

Appropriately trained and experienced personnel recognise the dangers when reversing, less experienced operators may not.

When reversing, even small trailers can have significant blind spots where visibility is reduced both behind and to the sides of them.

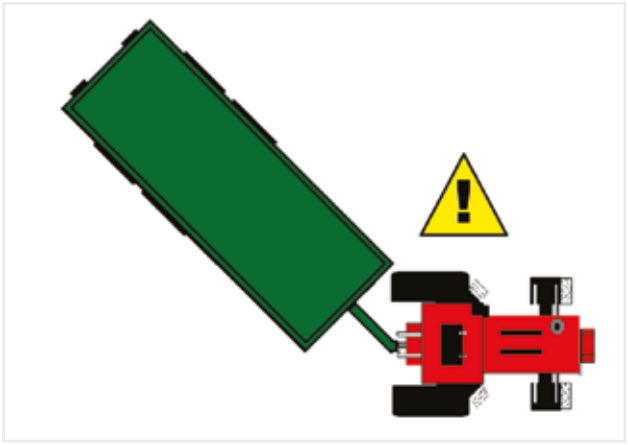
Failure to spot an obstruction can endanger the life of personnel or damage the trailer.

Consider the use of audible reverse warning aids and additional lighting especially in low light conditions.

WARNING

Always check behind when reversing to ensure the area is clear of obstructions and personnel.

If in any doubt employ the services of a banksman to assist you with your manoeuvre.



Jack knife

Avoid jack knifes when reversing as this will inevitably lead to contact between the trailer and the towing vehicle, resulting in damage to both the towing vehicles tyres and the trailer drawbar.

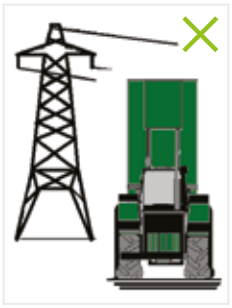
Examples of foreseen misuse

Carrying passengers

Do not allow passengers to be carried on or in the trailer unless it has been specifically manufactured and for this purpose.

Buildings

Ensure you have enough room to tip and discharge the load when operating in or around buildings.
Be particularly careful in doorways and under bridges.

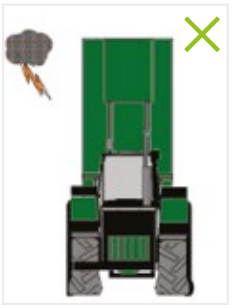


High voltage

Do not tip the trailer within 20 meters of overhead high tension electricity cables.

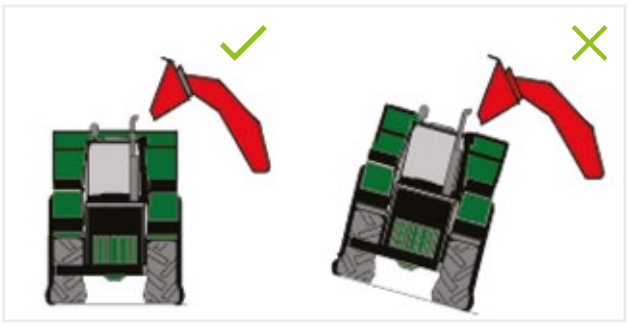
High winds

Be cautious when tipping in high winds and other extreme weather conditions.



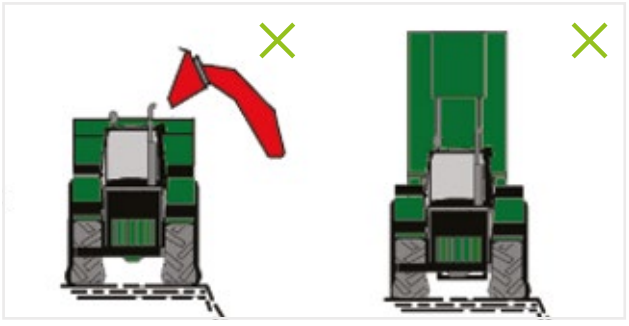
Electrical storms

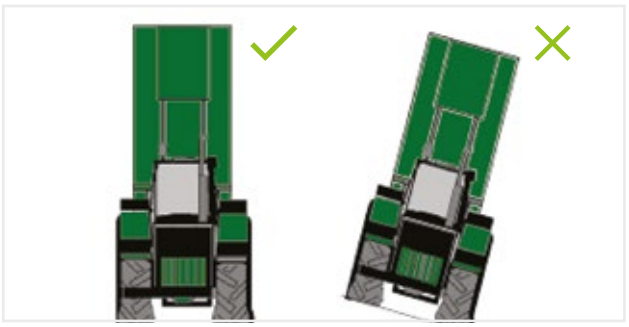
Be cautious when tipping during electrical storms.



Loading

Always load on firm level ground. Avoid loading on slopes especially when traversing.





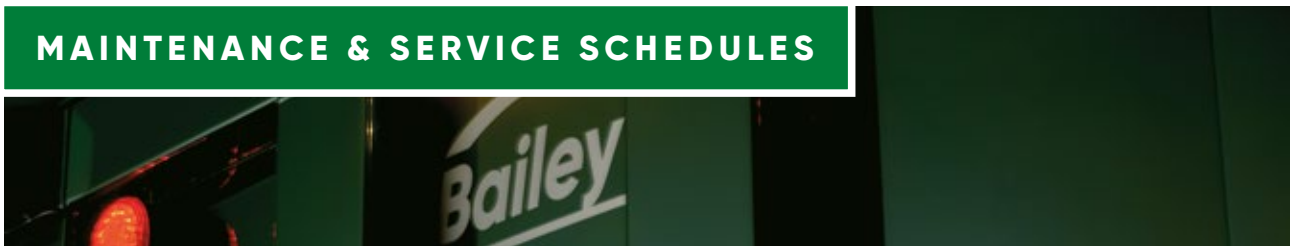
Tipping & discharging

Tip on level ground where practical, avoid tipping on side slopes and be aware of the change in stability as the load discharges.

Made up land

Be careful when loading or tipping on unconsolidated or made up land, or adjacent to ditches, watercourses or buried underground services.

MAINTENANCE & SERVICE SCHEDULES



Correct Installation and regular maintenance will do much to prevent annoying and unnecessary breakdowns.

The service and maintenance schedule must be adhered to ensure the optimum availability and efficiency of the trailer is maintained. Bailey Trailers are designed with the safety of operator in mind. Whilst trailers are provided with a means to support a partially raised tipping body (see Page 17), this is not a recommended means of Maintenance or repair.

The design of the trailer is such that all common Service, Adjustment, Maintenance and Repair operations can be carried out from ground level with the tipping body lowered.

Failure to adhere to these schedules may cause damage to the trailer and possibly endanger the operator and others.

The warranty given for the trailer will become void if the maintenance schedule is not followed.

WARNING

Ensure tyre pressures are correct. Incorrect tyre pressures can cause stability and handling problems for the trailer and towing vehicle.

Ensure all personnel are outside of the danger area between the towing vehicle and trailer before use.

When working in the danger area between the trailer and the towing vehicle always ensure that the towing vehicle engine is turned off and the key removed.

When working in the danger area between the trailer and the towing vehicle always ensure that the hydraulic and pneumatic controls are in neutral and that the control panel switch is off.

Wear the correct personal protective clothing. The brake linings may contain asbestos, a respirator should be worn whilst handling brake components.

WARNING

Service checks and adjustments can be undertaken with the Tipping body in the lowest position. Whilst not recommended, If necessary the supplied body prop can be temporarily deployed to support the body.

CAUTION

Release residual pneumatic & hydraulic pressure before connecting or disconnecting air & hydraulic lines.

Ensure that decals are clearly visible. Replace damaged or missing decals immediately.

Carry out all maintenance at the correct intervals and in accordance with the instructions in this manual.

SERVICE SCHEDULE

■ Perform task
■ Check

		TB Range	Root Special	Beeteaper	Bale & Pallet	Dumper	Dropsides	Tipper	Low Loader	Water Bowser
Every 2 years										
Lubricate hub bearings	Page 50	■	■	■	■	■	■	■	■	■
Laying up protection										
Protect all electrical connections		■	■	■	■	■	■	■	■	■
Clean down trailer		■	■	■	■	■	■	■	■	■
Repaint any areas where paint has been removed		■	■	■	■	■	■	■	■	■
Replace worn or damaged parts		■	■	■	■	■	■	■	■	■
Replace missing or damaged decals		■	■	■	■	■	■	■	■	■
Grease all bright parts		■	■	■	■	■	■	■	■	■
Cover ends of all quick release connectors		■	■	■	■	■	■	■	■	■

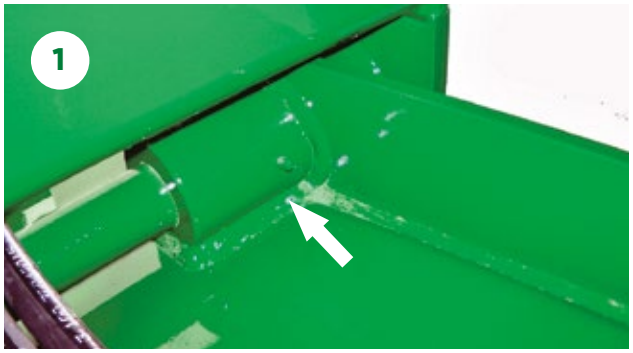
SERVICE SCHEDULE

■ Perform task
■ Check

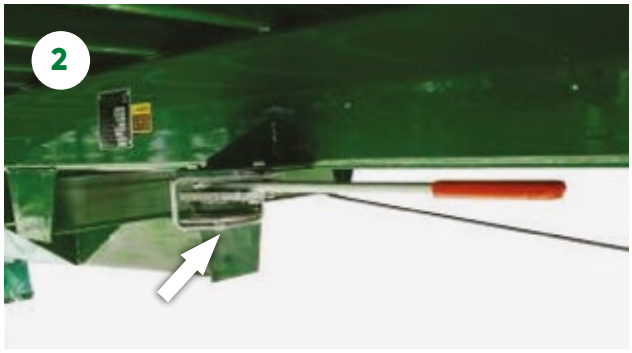
MAINTENANCE TASKS		TB Range	Root Special	Beeteaper	Bale & Pallet	Dumper	Dropsides	Tipper	Low Loader	Water Bowser
Daily										
Inspect for damage due to the load or loading trailer		■	■	■	■	■	■	■	■	■
Check brake operation		■	■	■	■	■	■	■	■	■
Check park brake operation		■	■	■	■	■	■	■	■	■
Grease tipping cylinder pivots	Page 45	■	■	■		■	■	■		
Grease body tipping pivots	Page 45	■	■	■		■	■	■		
Grease tail gate cylinders	Page 45	■	■	■		■		■		
Grease tailgate pivots	Page 45	■	■	■		■		■		
Drain water from air reservoir (if fitted)	Page 48	■	■	■	■	■		■	■	■
Weekly										
Check lights	Page 48	■	■	■	■	■	■	■	■	■
Check wheel nut torque	Page 48	■	■	■	■	■	■	■	■	■
Check for oil leaks		■	■	■	■	■	■	■	■	■
Grease rocking beam pivots (if fitted)	Page 45	■	■	■	■	■	■	■	■	■
Grease sprung drawbar (if fitted)	Page 46	■	■	■	■	■	■	■	■	■
Check side extension bolt security (if fitted)	Page 48	■	■	■				■		
Check hydraulic hose condition	Page 47	■	■	■	■	■	■	■	■	■
Check air line condition (if fitted)	Page 47	■	■	■	■	■	■	■	■	■
Grease brake linkages	Page 45	■	■	■	■	■	■	■	■	■
Check connections to towing vehicle	Page 47	■	■	■	■	■	■	■	■	■
Check towing eye condition	Page 47	■	■	■	■	■	■	■	■	■
Check tyre pressures	Page 48	■	■	■	■	■	■	■	■	■
Check tyre condition	Page 48	■	■	■	■	■	■	■	■	■
Grease all nipples on running gear	Page 45	■	■	■	■	■	■	■	■	■
Inspect the trailer for loose nuts and bolts		■	■	■	■	■	■	■	■	■
Every 3 months										
Check Brake clearance & wear	Page 53	■	■	■	■	■	■	■	■	■
Adjust Brakes	Page 53	■	■	■	■	■	■	■	■	■
Check all screws and locknuts		■	■	■	■	■	■	■	■	■
Every 6 months										
Check the axle hubcaps	Page 50	■	■	■	■	■	■	■	■	■
Check wheel bearing wear	Page 52	■	■	■	■	■	■	■	■	■
Tighten all suspension U-Bolts (if fitted)	Page 51	■	■	■	■	■	■	■	■	■
Tighten all sprung drawbar U-Bolts (if fitted)	Page 51	■	■	■	■	■		■		■
Every year										
Check suspension		■	■	■	■	■	■	■	■	■

Grease points

The image of the partially raised Tipping body is shown for positional clarity. Greasing should be undertaken with the Tipping body in the Lowest position, or by using the **Tipping body support,** see instructions on page 16.

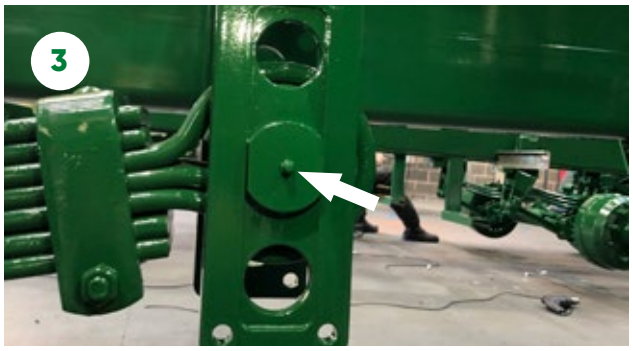


Grease sprung drawbar pivots (where applicable).

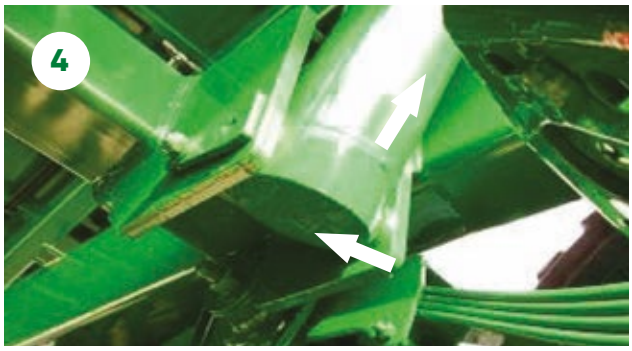


Grease parking brake ratchet (where applicable).

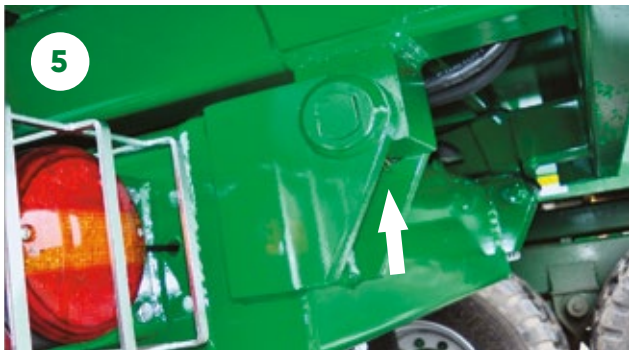
Grease points



Grease the sprung drawbar pin (where applicable).

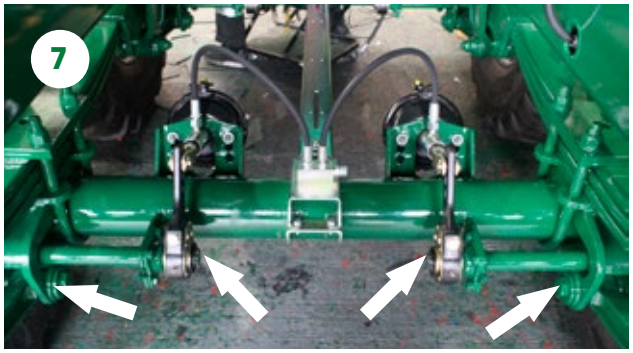


Grease upper and lower tip cylinder pivots.

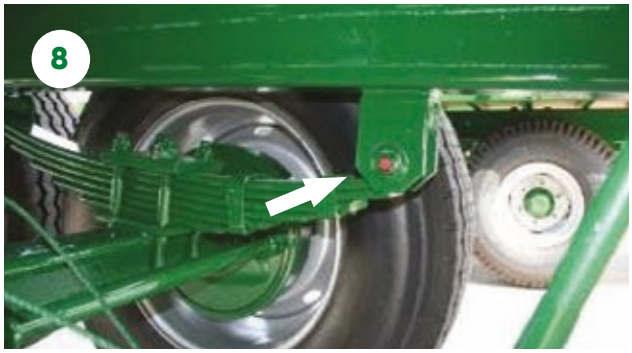


Grease body tipping pivots (2 positions).

Grease tail gate pivots (3 positions).



Grease brake actuators (6 positions each axle).



Grease all suspension mounts. Where tandem springs are fitted there are 3 greasers on each side, one on each pin. Where a rocking beam tandem is fitted there are four nipples on the rear of the tandem shaft.

Service checks

The image of the partially raised Tipping body is shown for positional clarity. Service checks should be undertaken with the Tipping body in the Lowest position, or by using the **Tipping body support,** see instructions on page 16.

Check the condition of the towing eye for signs of wear or damage.

Check the condition of the air and hydraulic connections and hoses.

Check tyre pressure & tyre condition.

Check wheel nut torque.

Check lights & reflectors for correct operation & damage.

Check side extension bolt security.

Drain water from air reservoir (where applicable).

Axles & brakes

This section contains information that must be followed to ensure the correct functioning of the axles and wheel brakes.

If in doubt contact the manufacturer or the manufacturers agent for further information or advice.

CAUTION

Failure to adhere to these instructions may affect the performance of the brakes and axles and could therefore lead to injury.

NOTE

For additional Information refer to the manufacturers documentation.

Tightening wheel nuts

Before use
After refitting
Every 6 months

On wheels that have been replaced or refitted, the nuts can loosen after short periods of operation.

It is therefore necessary to check the tightness of the nuts after the first loaded run, after refitting and again after approx 1000 km (620 miles).

To tighten the nuts, to use a suitable wheel brace, and tighten the progressively and diagonally.

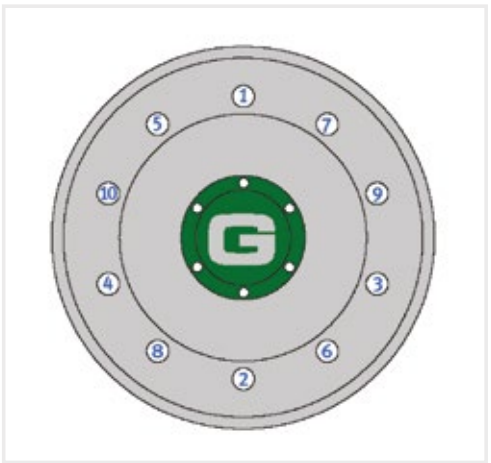
Check the torque using a torque wrench, or if not available use a suitable spring balance and refer to the table below.

DO NOT OVERTIGHTEN

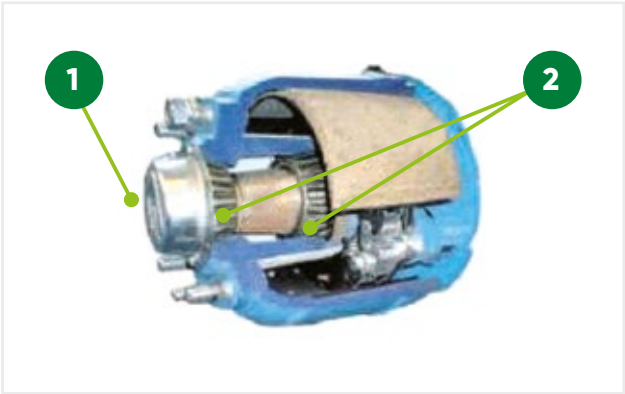
Wheel nuts	Torque Nm
M14 x 1.5	130
M18 x 1.5	270
M20 x 1.5	350
M22 x 1.5	450
M22 x 1.5 Commercial	630

CAUTION

Do not use impact tools to tighten the wheel nuts.



Wheel nut torque sequence.



Greasing hub bearings

Every 6 months
Check hub caps

Missing or damaged hubcaps must be replaced immediately to avoid dirt penetrating into the hub which might result in damage to the bearings.

Check that the hub caps **(1)** are in place and in perfect condition.

For press fit hubcaps, check visually that they are fully home.

For hubcaps attached using screws, fit a new gasket if necessary when the hubcap is removed and retighten the screws regularly.

Every 2 years
Lubricate hub bearings

Apply grease to the bearings in these areas **(2)**.

It is important not to overfill the hub with grease.

I.E.
Hub:- 400 grams
Hub Cap:- 200 grams

CAUTION

It is advisable to check hub caps and wheel bearing play after the first 1000 km (620 miles).

Checking hub bearings

Every 3 months
Check bearing movement

Raise the axle clear of the ground and support on suitable stands or blocks.

Release the parking brake (and main brakes if applied).

Place a suitable long metal bar between the tyre and the ground and apply upwards pressure to raise the wheel.

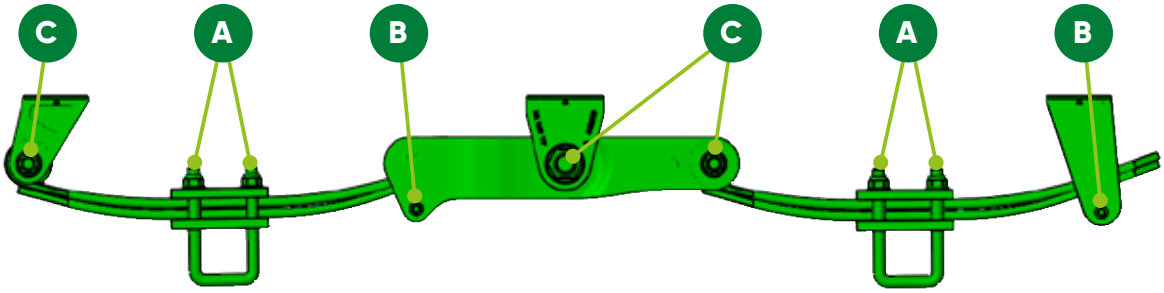
Observe the movement of the axle hub.

Repeat the procedure by placing the bar between the trailer chassis and the tyre to apply side pressure

Observe the movement of the axle hub.

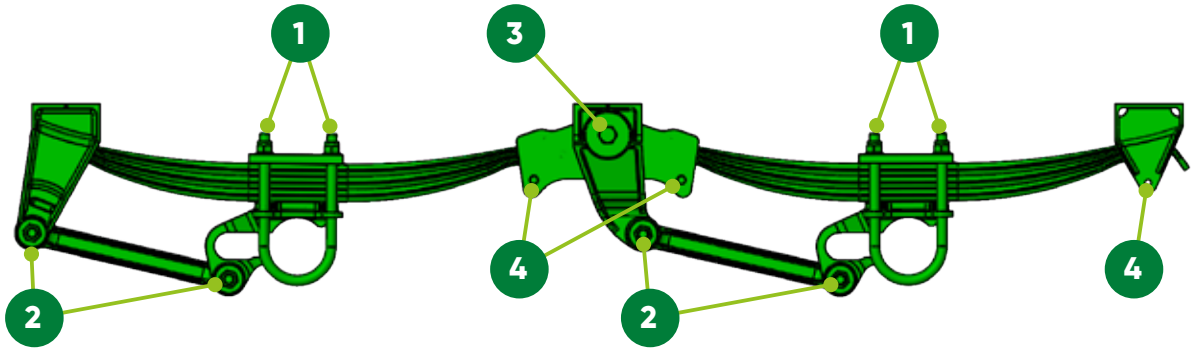
Excessive bearing movement will be noticeable and should be corrected by following the following procedure.

2 leaf 76mm heavy-duty suspension for 70/80/90mm axles - torque settings



(A) Axle U bolts – 300Nm **(B)** Dropout bolts – 80Nm **(C)** Spring bolts – 300Nm

3 leaf 100mm wide spring heavy-duty suspension with 127 round commercial axles - torque settings



(1) Axle U bolts – 550Nm **(2)** Torque arm – 350Nm **(3)** Equaliser shaft bolts – 350Nm **(4)** Dropout bolts – 80Nm

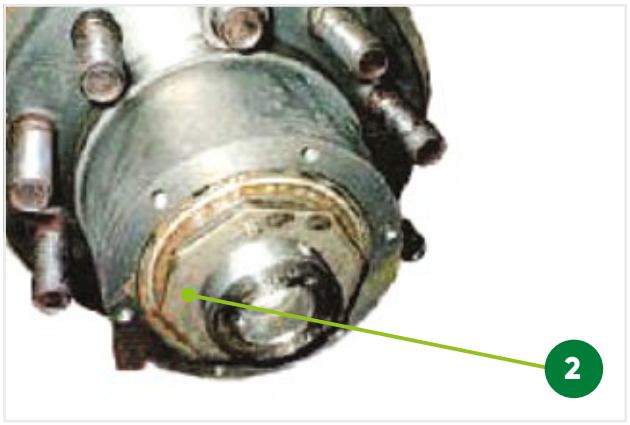
Checking suspension springs & sprung drawbar

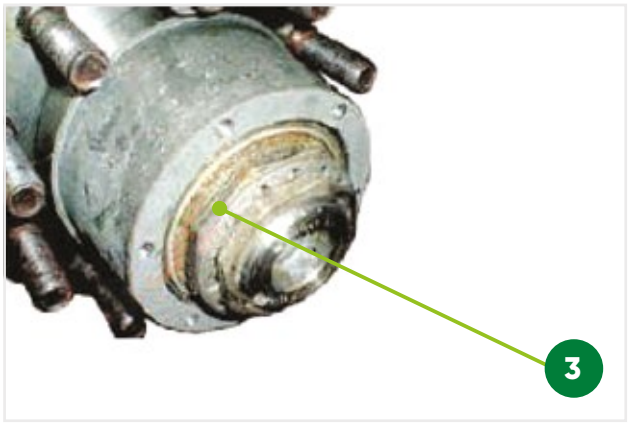
Initially & every 3 months

Suspension and drawbar springs are of a laminated construction and as such have a tendency for 'settlement' or 'bedding in' especially during the period of initial use or when in intensive operation.

Check the suspension hangers and all axle and drawbar 'U' bolts for tightness each day of operation for the first week and then every 3 months thereafter.

Sprung drawbar U bolts torque settings 550Nm





NOTE

For further Information and detailed servicing instructions refer to the manufacturers documentation or to your dealer.

Adjusting hub bearings

Every 6 months
Check end float

Axles are fitted with 2 rows of tapered roller bearings.

To protect normal bearing life, these bearings must not be subjected to pre-load during service.

End float of between 0.05 and 0.15 mm is therefore required.

The correct method for setting end float is as follows:

1. Support the axle on a suitable stand and remove the road wheel. Remove the six screws **(1)** and remove the hub cap.
2. Spin the hub assembly by hand, and torque the adjusting nut **(2)** to 375 Nm.
3. Spin the hub a further 4 revolutions and torque the adjusting nut **(2)** to 375 Nm.
4. Loosen the adjusting nut **(2)** by at least one full revolution.
5. Torque the adjusting nut **(2)** to 25 Nm.
6. Back off the adjusting nut **(2)** 2 to 2.5 flats.
7. Fit the lock washer **(3)** so the dowel pin of the adjusting nut slides into one of the holes of the lock washer. If necessary flip the washer to achieve this alignment.
8. Fit the lock nut and torque it to 375 Nm.
9. The end float must be confirmed to be between 0.05 and 0.15 mm using the dial gauge method described below.
10. Pack the grease cap with grease, replace the gasket and refit the grease cap.

Using a dial gauge to measure bearing end float is described below:

1. Using a magnetic block mounted dial gauge, mount the indicator base on the hub as close to the centre of the spindle as possible.
2. Place the indicator tip against the end of the spindle. It is important that the direction of travel of the indicator tip is perpendicular to the end of the spindle.
3. Grasp the wheel hub at 3 o'clock and 9 o'clock. Pull the hub out while oscillating it to seat the bearings.
4. Set the indicator at zero.
5. Push the wheel hub in while oscillating.
6. Read the bearing end float as the total indicator movement.

Cam operated brakes (two versions).

Brake maintenance & adjustment

Initial checks

The brakes should be tested before using for the first time and after the first laden journey:

- Check the actuator and return spring mountings, check the actuator stroke and return travel and check that the road and parking brakes operate and release correctly.
- Tighten the screws and nuts (covers, fulcrum, etc), check the cotter pins, pins, circlips, etc.
- Check for hydraulic fluid and air leaks.

Adjusting the brakes

Every 3 months

Check and test the brakes before intensive use and every 3 months:

- Check the brake wear and the clearance between the brake linings and the drum visually.
- It is probable that the linings are worn when the actuator travel has increased significantly.
- Check the thickness of the brake linings.

The brake shoes should be replaced as soon as the minimum lining thickness is reached.

Check that the brakes are clean and clean them if necessary.

Brake adjustment for lining wear is made by releasing the lock nut on the screw directly behind each brake actuating arm.

Turn the screw clockwise until the brake is applied, then turn anti-clockwise Two full turns and re-tighten the locknut.

The point at which the brake just applies can be felt by rotating the wheel by hand.

When the brake adjustment is at its full extent the lever can be moved onto the next spline, the screw returned to the start position and the procedure above repeated.

TWO-LINE AIR BRAKING SYSTEM

Operating instructions & test procedures for two-line air systems including ABS

NOTE

Before working on braking systems and components always observe the following precautions: -

a) Stop the engine before working under a vehicle.

b) Always chock the trailer wheels, because depleting the system pressure may cause the vehicle to roll.

c) Keep hands away from actuators and brake levers as they may move as the system pressure changes.

d) Never connect or disconnect an air line containing pressure, it may whip as the air is released.

e) Never remove a component or plug unless you are certain all system pressure has been released.

f) Never exceed maximum working pressures.

g) Never attempt to dismantle a component until you have fully read and understood the recommended procedures.

h) Use only the correct tools and observe all safety precautions pertaining to use of these tools.

IF ALL INSTRUCTIONS ARE FOLLOWED CORRECTLY THE TWO-LINE AIR BRAKING SYSTEM WILL PROVIDE YEARS OF TROUBLE FREE SERVICE.

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WARNING

Thoroughly read and understand this manual before attempting any remedial work, or adjustments to this braking system.

Introduction

Since 1986 trailers used for the sole purpose of Agriculture, Horticulture or Forestry, and travelling below 20 mph have been allowed to have a braking performance of just 25%.

This means that a tandem axled agricultural trailer with 16 tonnes of weight imposed on the road, by its tyres, would need to generate a minimum braking force of 1000 kg per wheel.

However, the same trailer travelling above 20 mph, or not being used for Agriculture, Horticulture or Forestry would be required to have twice the braking capacity, and generate a minimum of 2000 kg braking per wheel.

Trailers travelling at above 20 mph are required to have a two-line air braking system, and meet the prevailing standards for HGV trailers. The tractors will also need to meet the higher braking performances, and other design criteria.

Two-line system – maintenance:

Generally speaking, the trailer two-line air braking system requires little specific maintenance. However, the whole system should be drained regularly to remove any water from the tanks.

Regular inspections should be undertaken, where all of the pipes are visually inspected to ensure that none have become kinked or worn, and all mechanical linkages should be checked, and lubricated as necessary.

The air filters can be checked for contaminants (after disconnecting both of the air Susies), and these can be cleaned/replaced as necessary.

The ABS system, if fitted, is designed to monitor itself for faults. As long as the ABS warning lamp functions correctly and the wheels do not lock, then most of the ABS system is virtually maintenance free. However, after removing the drums/hubs care should be taken to ensure that the ABS sensors are in their correct positions, and that the teeth on the pole-wheels are free from damage and ferrous contamination. The ABS sensors should be greased using high melting point grease, so that they do not seize in their mounting bushes, and they should be pushed in by hand until they are in contact with the pole-wheels.

In order to maintain a safe level of braking, the foundation brakes need to be serviced to the same levels as HGV trailers. Any reduction in the performance of the trailer's foundation brakes can adversely affect the life of the tractor's brakes, and possibly invalidate any warranty claims.

Two troubleshooting pages are included at the end of this document, as well as extra technical detail concerning the RELSV and ABS.

Specialist diagnostic services are available to cover any aspect of the air/ABS system, and help should be sought if any doubt exists about safety critical items.

Two-line trailer air braking systems:

The two-line trailer braking system is based on HGV trailer braking systems which were designed to meet the European Council Directive 71/320/EEC. These systems use one red air line (known as a supply or emergency line) which is permanently pressurized by the tractor when coupled to the trailer, and one yellow line (known as the service or control line) which has a variable pressure. This variable pressure is controlled by the driver, and is determined by the how quickly the driver wishes to slow down, or whether the tractor's handbrake is applied. Also, this is often fully pressurized when the tractor's ignition is switched OFF.

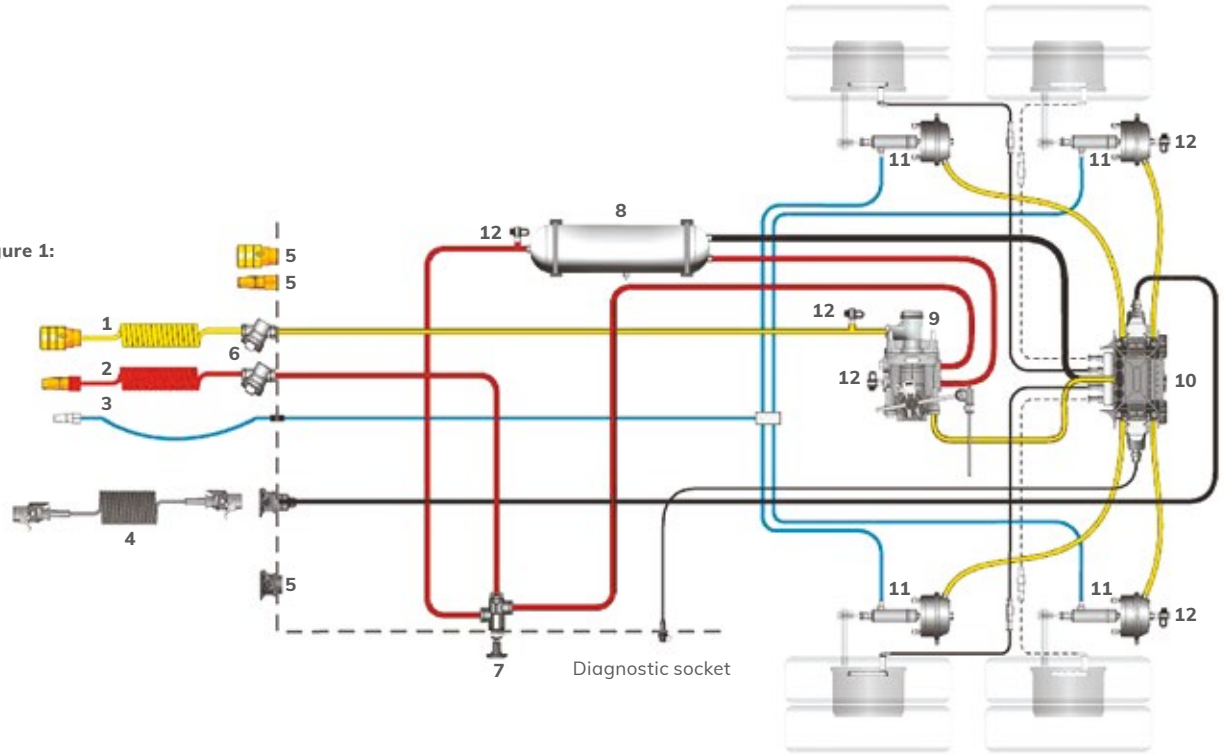
Figure 1 is a typical layout of a tandem-axle trailer, with a combined RELSV and ABS. The RELSV is mounted between the axles, and connects to either a telescopic pole or an angle iron which fits between them. The angle iron system is sometimes supported by rubber bobbings. For a two sensor ABS system the front axle should be ABS sensed, and the layout below also shows extra (optional) ABS sensors connected to the rear axle. These extra ABS sensors should ensure that the rear axle does not lock.

Where no ABS system is fitted, then the RELSV delivers the air directly to the brake chambers from each of its delivery ports. (The brake chambers are also fitted with hydraulic cylinders, which are fed directly from the tractor's hydraulic brakes, when the tractor does not provide trailer air braking).

For tri-axle trailers with ABS, then the centre axle is normally ABS sensed, when using a two ABS sensor system. With a four ABS sensor system, the extra two sensors could be fitted on the front or rear axle, dependent upon trailer design and weight distribution.

With a tri-axle trailer the RELSV is generally fitted above the centre axle and connected directly to it, so no telescopic pole,angle iron or bobbings are required.

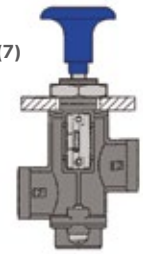
Figure 1:



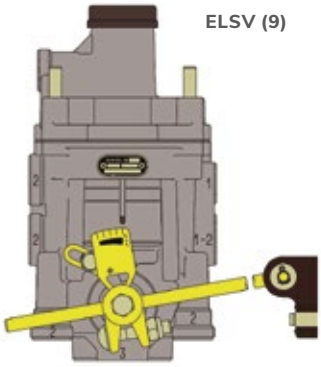
Position number	Description	Position number	Description
1	Yellow line susie	7	Shunt valve
2	Red line susie	8	Air tank
3	Hydraulic brake hose	9	RELSV
4	ABS power susie (5 core)	10	ABS modulator valve + cables
5	Dummy couplings	11	Air + hydraulic brake chambers
6	Filters	12	Pneumatic test points

Filter (6)

Shunt value (7)



ELSV (9)



Air tank (8)

Two-line system – operation:

The air enters the trailer via the red susie **(2)**, and passes through a filter **(6)**. The filter is designed to trap particles of dirt, to stop them entering other valves further down the line. It is not designed to stop water entering the trailer's system, as this function is part of the tractor's braking system when fitted with an air dryer. From time to time it is worthwhile dismantling each filter, and cleaning out any debris that has been caught.

The air then passes through a shunt valve **(7)**, which is mounted on the side of the trailer, and the air pressure pushes out its button. This button can be pushed in to release the trailer's brakes, when a tractor with air braking is not available. The button can be pulled out again, to re-apply the brakes, or it will automatically be reset after the red susie is reconnected to a tractor with air braking.

The air travels into the combined RELSV **(9)** at port 1, before exiting at port 1-2 to feed the air tank **(8)**. The tank is linked back to the shunt valve, and this link is used to 'fool' the RELSV into thinking the red susie has been re-connected, after the shunt button is pushed in.

The tank then charges up with air until it reaches the system pressure set by the tractor. This is normally between 6.5 bar and 8.5 bar, and this pressure is also present at port 1 of the ABS modulator valve **(10)**.

Note: any pipe shown as red in Figure 1 (and the black pipe between the tank and ABS) will be pressurized all of the time the tractor is connected, and charged up. None of these pipes should be removed, for diagnostic or repair purposes, until the tractor has been disconnected from the trailer and all of the air drained from the trailer's air tanks.

Draining is achieved using a drain valve which is found at the bottom of each air tank. Draining should be done periodically to remove any water that has condensed in the air tanks. Failure to drain the tanks will lead to a reduction in the available air capacity of the tanks, affecting the brake performance, and this water may also freeze in the winter, causing other problems.

Two-line system – operation (continued):

During service braking, a control pressure is sent to the trailer down the yellow susie **(1)**. This pressure is determined by how hard the driver presses the brake pedal, and the pressure may be anything up to the maximum pressure in the tractor's system. However, under normal braking (known as check braking) this control pressure is often around 2 bar. The control pressure enters the trailer and passes through the yellow line filter, before reaching the RELSV at port 4.

The RELSV has several functions, one of which is load sensing.

The service pressure may be modified by the RELSV based upon the weight sensed by the valve, as the RELSV is connected to the suspension via a vertical linkage (rod) and its operating arm. With tandem axled trailers it is common to be connected between the two axles by either telescopic pole or an angle iron, in order to give the RELSV an average spring deflection. The angle iron is usually mounted using rubber bobbings which absorb the movement between the axles. With tri-axled trailers there is no need for an angle iron, as the RESLV is generally connected directly to the centre axle.

As weight is removed from the trailer its chassis raises, causing the RELSV's operating arm to lower (rotate clockwise). This has the effect of increasing the ratio between input and output pressures, thus reducing the braking pressures.

This new, modified pressure exits the RELSV at port 2, and signals the ABS modulator valve at its port 4 (just below where the ABS sensors plug in). The ABS modulator then delivers this same pressure to all of the brake chambers, unless a 'wheel locking tendency' is detected. (A full description of ABS function is given later).

Air + Hydraulic Brake Chamber (11)

The brakes are applied in a controlled manner, as the pressure builds up behind a rubber diaphragm housed inside the brake chambers **(11)**, and the output forces act on the slack adjusters (or levers) increasing the torque entering the foundation brakes via the camshafts.

As the driver releases the brakes, the control pressure drops. This results in the air within the brake chambers returning back up to the ABS modulator, where it exhausts to atmosphere. Therefore no pressure should be evident at the brake chambers whilst the service brakes are not being applied. This can be checked using the test points **(12)**, one of which should be found in one of the spare ports in the brake chambers. A test procedure is given later.

Test point (12)

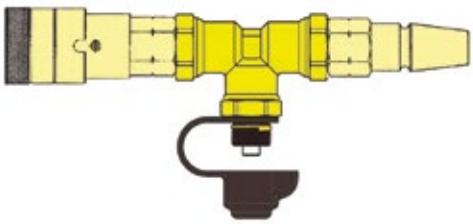
Test points can be added to any spare ports, and they come in two standard port sizes being M16 x 1.5 and 22 x 1.5. They can also be used to drain the air tanks, should no drain valve be fitted.

The two-line air braking system contains an 'emergency' function, which is designed to apply full tank pressure into the brake chambers (irrespective of load condition) should the red susie be removed, or become ruptured. This function is part of the RELSV, where the pressure in the red line and tank are 'compared', and tank pressure is delivered into the brake chambers, via the ABS modulator, should the red line pressure fall below 2.5 bar. This happens automatically when the trailer's red susie is removed during uncoupling. This emergency function is not a substitute for using the trailer's mechanical parking brake, as any air leak would cause the brakes to release, and the trailer would be left without any effective parking brake.

Basic pneumatic checks:

In order to perform some basic air checks, at least two good quality, calibrated air gauges are required, along with their connecting hoses, and often a few extra assorted test points. The trailer should have test points positioned around the system, so that tests can easily be carried out. All test points have the same size connecting thread (M16 x 1.5) where the test hoses attach, and it is useful to have long test hoses so that two gauges can be positioned close together and viewed simultaneously.

Test coupling



If there are no test points in the yellow line leading up to port 4 of the RELSV (port in the top section), then a good alternative is to make up a test coupling c/w a test point to fit between the tractor and trailer's susie. These can have a male coupling at one end, and a female at the other, or suitable palm couplings if these are fitted.

These test couplings are useful to test the pressures coming from the tractor, whilst still connected to the trailer.

Test 1 (charging test):

Disconnect the red susie from the tractor, and drain all of the air from the trailer's air tank(s), and attach one gauge to a test point on one tank (fit test point if necessary – normally M22 x 1.5 threaded).

Fit a second air gauge in the red line (using male/female test coupling as described above), push in the shunt valve button and reconnect the red susie. The button should pop out as the red susie is connected.

Have the two gauges side-by-side and monitor each gauge as the system charges up. You want to see the tank pressure rise in line with the red line (it may be slightly behind), until the tank is fully charged and the tractor unloads (blows off).

If the tank pressure is much lower than the red line pressure when the tractor unloads, then this indicates an internal problem with the RELSV, or the pipe work leading to port 1 of it. This pipe can be tested by disconnecting the red susie, and temporarily removing the pipe from port 1 of the RELSV, and replacing it with a new one.

This new pipe can then be connected to the tractor's red coupling, and the test repeated. If the pressures rise correctly, then examine any filters for blockages, and the original pipe work for kinks.

If the pressures still fail to equalize, then the RELSV has an internal fault. Repair or replace as necessary.

Test 2 (red line/leak test):

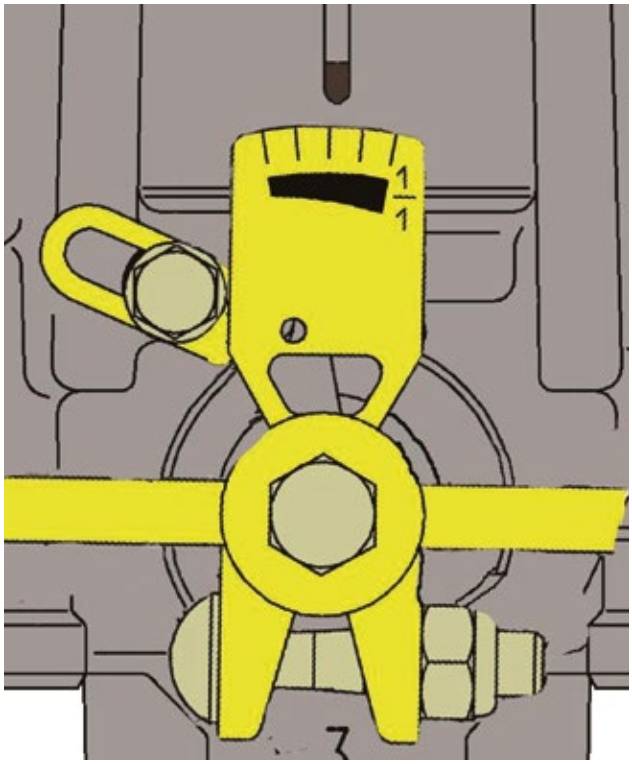
Fully charge the trailer and disconnect the red susie. A 'chuff' of air should be heard as the air exits the open red line. Observe the air gauge connected to the trailer's air tank, and the pressure should drop momentarily, then stabilize.

If the tank pressure continues to drop, then check the open red line for the presence of air pressure (A new thin rubber glove is ideal for this, as it can be attached to the open red susie, and sealed with tape/cable tie and left. If it inflates quickly, this indicates a leaking RELSV).

If no air is seen leaking from the open red susie, this indicates that the leak is downstream of the RELSV, and this is best identified using a soapwater mixture. Pay particular attention to pipe fittings, and note that these do not require to be tightened too much, as their seals will often become damaged by over-tightening.

Finally, if the tank pressures drop very slowly over an extended period, then this is acceptable as long as the leaking is not audible. This is known as 'permissible leakage'.

RELSV decal (unladen):



When the vertical linkage is reattached to the operating arm, it is important that the arm is at the correct angle to give the proper braking pressure for the weight being carried.

A decal is fitted to the arm, which rotates with the arm passing a pointer on the RELSV's casting. This decal shows the approximate setting for the RELSV, but the valve is best set when the trailer is empty, and the linkage adjusted until the correct unladen pressure is given, when a known 'test pressure' is used.

A typical unladen decal position is shown above, but this is only shown for a guide.

The trailer builder should be able to provide this information, if it does not appear on a LSV data plate attached to the chassis.

Full RELSV setting instructions are given on the next two pages.

Test 3 (smooth operation/no residual pressure):

Swap the test coupling to the yellow line, or attach the gauge and test hose to any test point in the yellow line leading up to port 4 of the RELSV.

Attach the other gauge to a test point on any brake chamber. If none are available, then an M16 x 1.5 threaded one can be added to a brake chamber, as most brake chambers have an extra port which has been blanked.

Fully charge the trailer, and keep the red susie connected.

Place the two gauges close together, and monitor them both as the service brakes are slowly and repeatedly applied on and off.

Both pressures should be seen to rise and fall smoothly, with both showing zero bar when the tractor's brakes are released. (Do not worry if the pressure at the brake chamber is lower than that of the yellow line, as we are not yet testing the settings of the RELSV). If the pressure in the yellow line is 'jerky', then so will be the pressure in the brake chamber.

This would indicate a problem with the tractor's brakes, in particular with its trailer control valve. If the yellow line pressure is smooth, but jerky at the brake chamber, then the problem is trailer related, and this is found by moving the gauge from the brake chamber to the output of the RELSV (port 2). The test can be repeated, and if the pressure still is not smooth then this indicates a faulty RELSV. If it was smooth, then the problem is inside the ABS modulator, as it must be giving out a jerky pressure, even though it is signalled with a smooth one.

The same tests can be repeated for looking for residual pressure problems, should both gauges not show zero pressure when the service brakes are released.

Test 3 (output of the RELSV):

The RELSV is connected between the chassis and axles, and senses the way the springs deflect, as increasing weight causes them to flatten. This movement is transferred to the RELSV operating arm via a vertical linkage. This linkage, along with any other components (angle iron, cotton reels etc) should be periodically checked for signs of damage, or becoming loose.

In order to check that the RELSV is functioning correctly, the linkage can be removed from the operating arm, and the service brakes applied. The red susie needs to be connected for this test. An air gauge in the brake chamber will show the output pressure, and this gauge can be observed whilst the operating arm is rotated. As the operating arm is raised the brake chamber pressure should increase until it matches the service line pressure, and decrease as the arm is lowered. This demonstrates that the load sensing function of the RELSV is working.

RELSV Setting Instructions

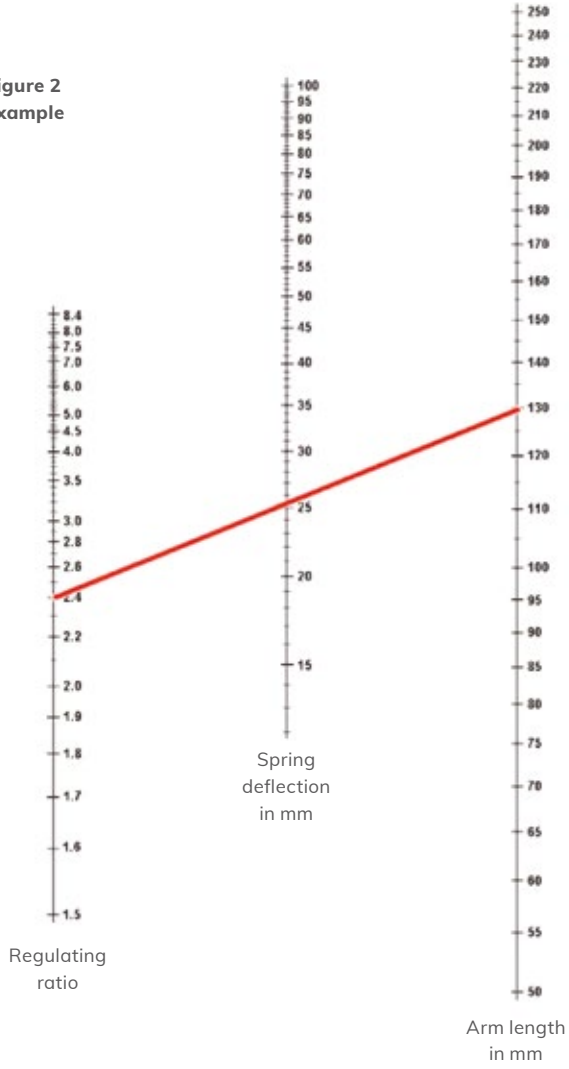
The RELSV is probably the most important part of the trailer's braking system, whether ABS is fitted or not. A poorly set up RELSV can be both dangerous and expensive.

Too little output pressure leads to under braking, and this could result in a jack-knife. Too much pressure can cause the trailer to lock, and 'swing' passed the tractor. Also, too much pressure causes premature and expensive trailer tyre wear.

Periodically it is worthwhile checking the RELSV output pressures, and making sure they match the suspension correctly.

To do this properly you will require two gauges, a tape measure, calculator and a little patience.

Figure 2 example



Step 1:

Have the trailer completely laden (the maximum weight allowed) and stand it on level ground whilst still connected to the tractor. If the RELSV is connected to one axle, then measure the distance between the top of this axle and the underside of the chassis (If the trailer is fitted with a bar between the axles, then you can measure the distance above each axle and halve the total).

Step 2:

Remove the load completely and repeat the same measurements as taken above. The difference between these two measurements is the 'unladen to laden spring deflection'. For this example we shall assume it was 25 mm.

Step 3:

Find out the recommended unladen LSV setting pressure for your trailer. This may be on a data plate, or available from the trailer manufacturer, or J H Milnes.

This is not the pressure present in the trailer's brakes during normal unladen braking, but is a pressure used for setting up the RELSV.

Along with this unladen pressure you should also get its associated 'test pressure', as well as the laden brake pressure. Typically these could be 6.0 bar (Test) 2.5 bar (Unladen) and 6.0 bar (Laden). If you cannot get access to the actual test pressures for your trailer, then the above figures may be close enough.

Step 4:

Calculate the 'regulating ratio'. An acceptable way of doing this is by dividing the test pressure by the unladen pressure. Using the example above, this would be 6.0 divided by 2.5 = **2.4**.

Step 5:

Look at the graph **(Figure 2 left)**, and find the point on the left hand column which relates to the regulating ratio **(2.4)** which you have just calculated. Mark that point.

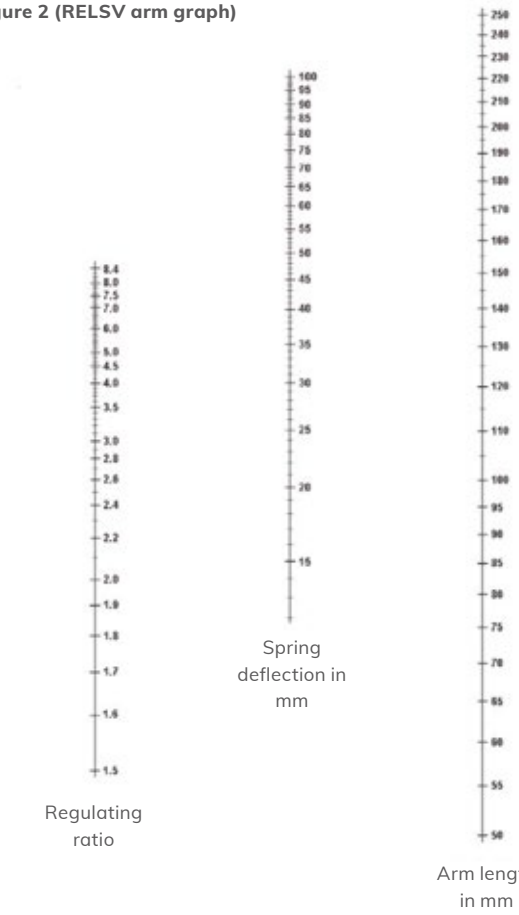
In the central column find the point which relates to your unladen to laden spring deflection, which you measured in Step 2 (25 mm). Mark that point.

Draw a straight line from the point you marked in the left column, through the point in the second column, and extend this line until it crosses the right hand column.

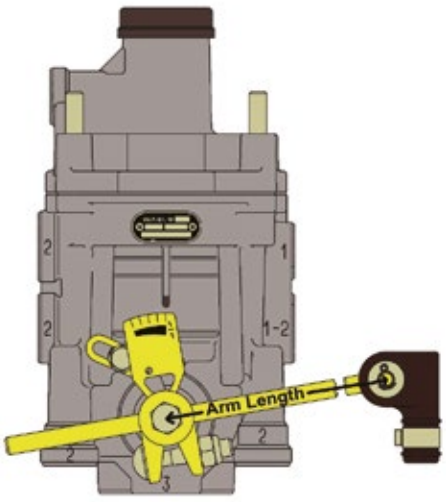
Where it crosses this column read off the measurement, as this is the correct RELSV arm length for this trailer. This length is measured from where the arm connects to the RELSV (centre of the securing bolt head) and the point where the rubber linkage fits on the other end.

Adjust the arm length on the valve accordingly, and tighten the securing bolt.

Figure 2 (RELSV arm graph)



RELSV (arm length and laden decal shown)



Step 6:

Check the unladen setting by applying the test pressure down the yellow line (6.0 bar used in this example), and measure the RELSV output pressure. This can be measured directly at any unused port 2, or on a brake chamber.

If the pressure is correct (2.5 bar in this example), then the valve is now set up.

If the pressure is too low (2.0 bar for example), then the vertical linkage between the RELSV arm and the axle (or bar) is too short.

Conversely, if the output pressure is too high, then the vertical linkage is too long.

Amend the length until the unladen output pressure is correct (tolerance ± 0.2 bar).

Having set the RELSV at its correct unladen setting, and adjusted the arm length to match the true unladen/laden spring deflections, the valve should now automatically adjust to the correct brake pressure settings.

Safe coupling and uncoupling of tractor/trailers with two-line air braking:

The safe operation of the two-line air system relies on the driver correctly connecting the two air lines between the tractor and trailer, as well as any ABS power cable.

When coupling an air braked trailer to a tractor never have just the red line connected. (That is to say, connect the yellow line first when coupling, and remove the red line first when uncoupling).

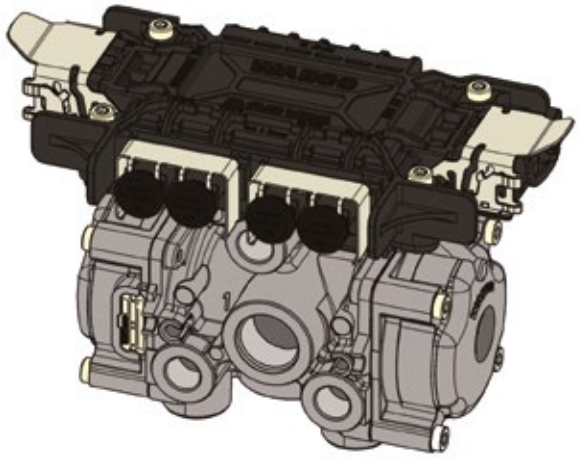
Follow all other health & safety rules and remember it is always good practice to not walk/climb between the tractor and trailer during coupling and uncoupling.

ABS description and operation

The ABS system is designed to stop the wheels from locking, when the trailer is braked and the road surface is slippery. Under normal braking operation the ABS does not affect the braking performance, but merely monitors the changing performance, but merely monitors the changing wheel speeds looking for a 'locking tendency'.

The ABS system consists of an electronic control unit (ECU) and a modulator valve which is hard wired directly onto the ECU.

ABS ECU and modulator valve



Both the ECU and modulator are internally split into two halves, so that one half of the ECU controls one half of the modulator, which in turn controls the braking going to one side of the trailer. The braking going to the other side of the trailer is controlled by the other half of the ECU and modulator.

Two ABS sensors are mounted in the brake assemblies on one axle, and these are in close proximity to toothed 'polewheels', which pass by the ABS sensors, as the wheels rotate. These ABS sensors are connected to the ECU by extension cables, and they are connected so that the nearside sensor controls the braking for the nearside wheels.

Even though a trailer may have four wheels and just two ABS sensors, the unsensed wheels still receive ABS modulated braking. However, unsensed wheels may still lock, as the ECU cannot detect this locking tendency, unless sensors are fitted to all wheels. Because of this, ABS systems are available with two or four ABS sensors.

Trailer ABS systems comes in either 12 volt or 24 volt variants, which cannot be towed by a vehicle with the other voltage. Although they look very similar, the main dedicated power supply socket (known as ISO7638) is different. Once correctly powered, the ECU 'exercises' the ABS modulator valve, and this can be heard as a series of clicks, including some quick exhausting, if the service brakes are applied.

During initial power up, a cab mounted trailer ABS warning lamp should illuminate briefly, before going out. This warning lamp will indicate any ABS related failure to the driver, and if it comes on during driving, the driver should proceed with great caution, and get the system checked out as soon as possible by a trained person, with the correct diagnostic equipment. A simple rule of thumb is that the lamp must come on and go out, and stay out whilst driving. If it stays on until the vehicle is driven, then this is OK as well.

Note: ABS lamp illumination will not cause a failure of the brakes to apply. However, the ABS functions may be impaired to any greater or lesser extent, so wheel locking may be evident which could lead to a loss of stability, and an accident.

The ABS ECU monitors, processes and compares the wheel speeds detected at the wheel sensors, and only acts on this information if it believes there is a chance that one, or more of the sensed wheels are about to lock. At that point the ECU sends a signal to the half of the modulator valve which is connected to that wheel, and this closes the inlet port, stopping further pressure building up in the brake cylinders. If the locking tendency persists, a further signal is also sent to the exhaust port, resulting in air being dumped from the respective brake chambers. The wheels speeds are controlled in this way until the ECU is satisfied that the lock-up has been averted, and then normal braking is resumed.

Basic ABS checks

As mentioned earlier, the cab-mounted warning lamp should illuminate and extinguish once the tractor's ignition has been switched on. If this happens, then no checks are necessary. Should the warning lamp stay on until the vehicle is moving, then this is also OK, and no further checks are required.

However, should the warning lamp fail to illuminate upon ignition, or fail to extinguish when pulling away, or come on again during driving, then a few basic checks may help find the cause. 'Wiggle tests' can be done at any time to see if cables have intermittent breaks.

These are best done with the ignition ON, following the warning lamp going out. By wiggling any cable, check to see if the cab warning lamp illuminates, or flickers, or whether the ABS is heard to exercise again. If the ABS exercises, then you know that it switched OFF momentarily during the wiggle test, indicating a break in the power feed.

Wiggle testing the ABS sensor extension cables, where they connect to the ECU, is also very worthwhile, and these cables can be 'tightened' using a small flat screwdriver to slightly distort the two small female pins found inside the ABS extension cables, having firstly disconnected them from the ECU.

Always make sure that they are correctly reconnected following any removal.

Power and warning lamp checks are best performed using two bare wires attached to a 21 watt bulb, with the voltage to match the ABS system, rather than an LED tester or multimeter.

These checks can be performed in stages, initially at the tractor's ISO 7638 socket, then into an attached ABS susie, and finally in the ISO 7638 power cable after removing it from the ABS ECU.

In this way the various segments of the cabling are checked in turn, which will pinpoint any cable problems. All of the power and ABS warning lamp tests shown below take place within the ISO 7638 power supply.

Test 1 (exercise check):

When the ignition is switched ON, can the trailer be heard to exercise? (This is often four sharp clicks, or click chuff click chuff, if the service brakes are applied). If these four noises are heard, then the ABS is being powered correctly. If OK ignore Test 3 (ABS Power Test).

Test 2 (ABS warning lamp check):

With the ABS susie disconnected from the tractor (ignition ON) the ABS warning lamp should be OFF. (If the ABS warning lamp is ON, the tractor has a wiring problem).

At the tractor socket, connect one wire from the test lamp to pin 5, and the other to pin 4 (see Figure 3 for pin positions). The ABS warning lamp should illuminate, but not the test bulb (If the test bulb illuminates brightly, the tractor has a wiring fault).

If the warning lamp fails to switch ON and OFF as the test lamp is connected and disconnected, then the ABS warning lamp fault is within the tractor wiring.

If the warning lamp operates correctly, repeat the tests into the plug on the ABS susie (Figure 4), having firstly reconnected it to the tractor, and disconnected it from the trailer's ABS socket.

If the lamp is still working correctly, repeat the test into the ISO Power cable where the cable connects to the ABS ECU. **Note:** the pin numbers have changed

Figure 3 (12v ABS socket on tractor)

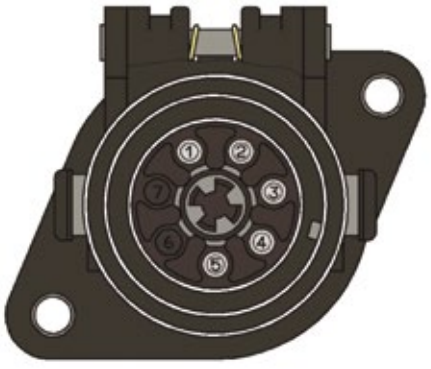


Figure 4 12v ABS plug

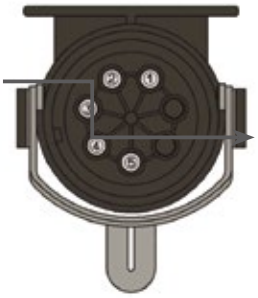


Figure 5 ABS wiring

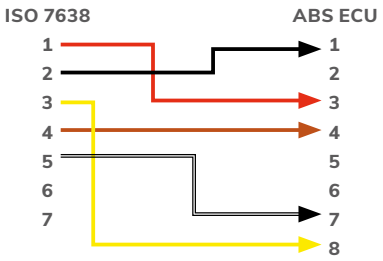


Figure 6 ISO Power cable

Basic ABS checks

If the warning lamp is functioning correctly, then we now know that all of the ABS warning lamp wiring is correct.

Should the ABS warning lamp fails to illuminate now, after reconnecting all of the cables, and switching the ignition ON, then the fault must be inside the ABS ECU.

However, if the ABS warning lamp stays on, then further tests are required.

By cycling the ignition ON (2 seconds) OFF (2 seconds) and ON again, a request is sent to the trailer's ABS ECU to give out a 'blink code'. If the ABS warning lamp starts flashing, we now know that the ECU is functioning correctly, so make a note of the number of flashes, as these can be used to identify the source of the problem.

Test 3 (ABS power test):

Using the 21 watt test lamp, and with the ignition switched ON, check that it illuminates brightly when connected across pins 2 and 3 of the tractor's socket.

If it fails to illuminate then check the fuse (often 5 Amp). Also check that it switches ON/OFF with the ignition ON/OFF.

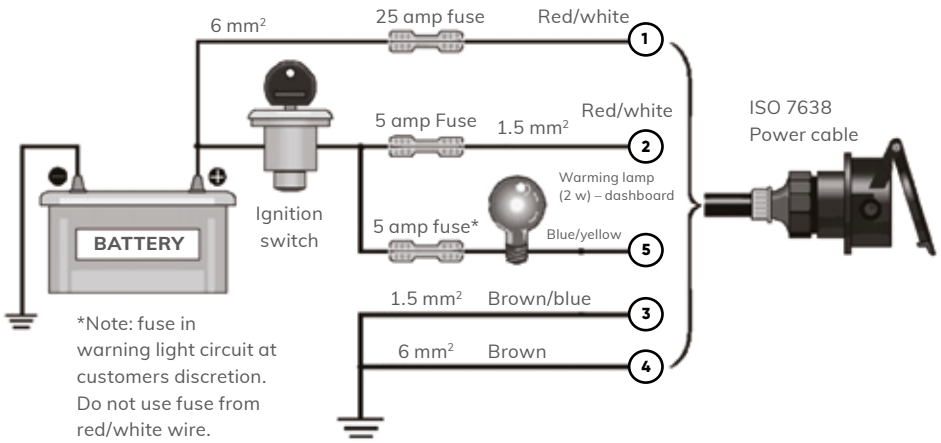
Repeat the test with the test lamp across pins 1 and 4. If the lamp fails to illuminate then check the fuse (often 25 amp). With the test lamp across pins 1 and 4, the lamp may stay illuminated, even after the ignition is switched OFF, and if it does then this is OK as well.

Connect the test lamp across pins 4 and 5. The lamp must not illuminate, but the cab warning lamp should come on.

All of the above tests can be repeated into the ABS 7638 susie, having firstly disconnected it from the trailer's socket, in order to check the susie for damage.

Finally the rest of the ISO 7638 cable can be checked by repeating the tests at the ABS ECU end, remembering that the pin numbers are different, so refer to wiring diagram shown in Figure 5.

Tractor's ABS wiring



Basic blink code errors:

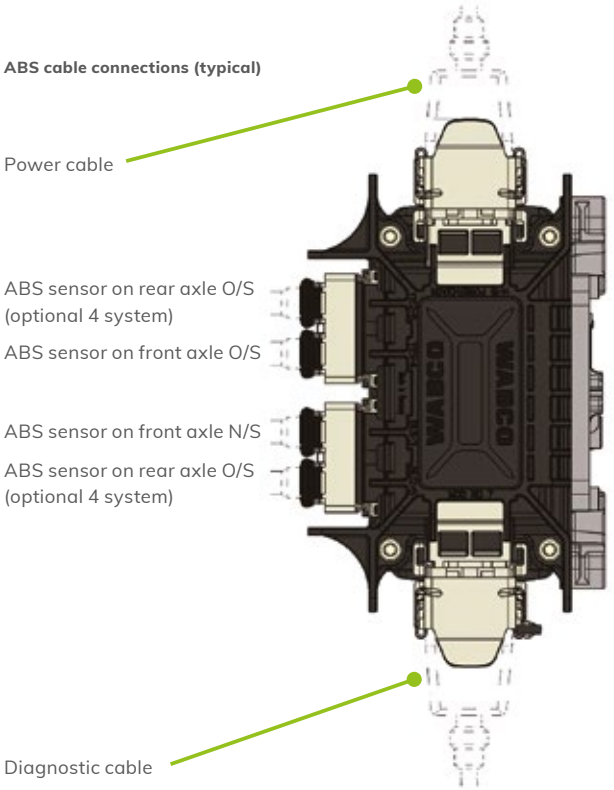
By starting the blink code, any current ABS wiring fault error codes are blinked out by the trailer's ABS warning lamp, which is in the tractor. The error codes are repeated three times.

A table of the error codes is shown below.

With fault codes 3, 4, 5, 6, 7, 14 and 15, these same numbers appear as casting numbers on the ABS ECU, allowing the faults to be traced to a specific connection.

Fault code	Component	Comments
3	ABS Sensor BU1 C	Broken wire – normally nearside of trailer
4	ABS Sensor YE1 D	Broken wire – normally offside of trailer
5	ABS Sensor BU2 E	Broken wire – normally nearside with 4 sensor system
6	ABS Sensor YE2 F	Broken wire – normally offside with 4 sensor system
7	Extra modulator	Broken wire/Solenoid – only on 4S/3M systems
9	Internal modulator	Broken wire – new ABS assembly required
10	Internal modulator	Broken wire – new ABS assembly required
11	Internal modulator	Broken wire – new ABS assembly required
14	Power supply	Check for over/under voltage
15	Internal ECU fault	Replace ABS assembly

ABS cable connections (typical)



Component checking:

As the ABS system consists mainly of three basic components (ECU, Cables and ABS Sensors) the best way to diagnose many faults is by way of substitution.

This is ideal for checking cabling/ABS Sensor wiring problems, when no specialist diagnostic tools are available.

When removing any cable it is vital that the cable is marked, so it can be returned to its original position. It is also imperative to ensure that no unused electrical connections are left open, as water will enter the electronics and cause premature failure.

Water can also enter the electronics via 'repaired cables', where water migrates up the inside of the repaired cable, and corrodes the inside of the ECU.

The cable connections are shown opposite, and only the two central ABS cables are used for a two ABS Sensor system.

If in doubt contact a specialist ABS repairer.

Trouble shooting – pneumatics

Problem	Cause	Solution
Tractor (trailer circuit) low pressure warning buzzer on all of the time	Air leak in system	Disconnect trailer to ascertain whether leak is in the tractor, or trailer
	Compressor or unloader/air dryer problem	Check if compressor is blowing-off at unloader, or air dryer
	Low pressure switch problem	Check connections – repair as necessary check LP switch pressures against those in the air tank (trailer circuit)
Trailer brakes do not release when system fully charged, and the tractor's hand brake is released	Insufficient red line 'flow'	Check self-seal valve to ensure it is lifting sufficiently to allow a high flow of air to the trailer
	Insufficient red line pressure	Check pressure at the tractor's red coupling using calibrated air gauge. Pressure should be between 6.5 Bar and 8.5 Bar
	Pressure still in yellow line	Check tractor's ignition is switched on
		Check cable linkage (if fitted) to tractor's trailer control valve, and adjust/repair as necessary
	RELSV exhaust port blocked	Ensure RELSV exhaust is open
Trailer brakes do not apply during tractor braking	Insufficient yellow line 'flow'	Check lifter valve present in trailer's yellow susie
		Check self-seal valve in tractor's yellow coupling
		Check trailer's yellow air lines for kinks or blockages
	Insufficient pressure in trailer's air tank	Check that air flows unrestricted from port 1-2 of RELSV, when the red susie is connected and pressurized
Insufficient pressure in trailer's air tank	Poor air flow to trailer's air tank	Check for kinked or blocked pipes
		Check that air flows unrestricted from port 1-2 of RELSV, when the red susie is connected and pressurized
Trailer's brakes 'snatching'	RELSV not working smoothly – input and output pressures jerky when compared using air gauges	Repair/replace RELSV and ensure that any replacement is set up correctly
Trailer braking too hard, or too weak	Incorrect LSV setting	Check settings against recommendation
	Incorrect slack-adjuster length	Check length against recommendation
	Incorrect brake chamber size	Check size against recommendation
	LSV linkage damaged	Check linkage and angle iron
Trailer brakes getting too hot	Hand brake partially applied	Check handbrake cables/adjustment
	Residual pressure in brakes	Ensure no air trapped in yellow line
	Hydraulic line also connected	Disconnect hydraulic brake line
Trailer brakes not going into 'emergency', after red line removed	Kinked pipe in line to RELSV	Check all pipes to port 1 of RELSV
	Incorrect red Susie coupling	Check coupling has no self-seal valve
	RELSV exhaust port blocked	Ensure RELSV exhaust is open

Problem	Cause	Solution
ABS warning lamp in tractor cab illuminated when no ABS trailer connected	Earth problem within tractor's ISO 7638 wiring	Check abs socket for touching, loose wires
		Check wiring from ABS socket to cab ABS warning lamp
ABS warning lamp in tractor cab does not illuminate when tractor connected to trailer with ABS fitted	ABS warning lamp bulb blown	Replace bulb
	ABS warning lamp fuse blown	Replace fuse (often 5 amp)
	No ABS Susie connected	Connect ABS Susie to tractor's socket
	Faulty ABS socket	Is pin 5 pushed back into ABS socket?
	Faulty ABS Susie	Replace ABS Susie
	Faulty ABS power cable	Check/replace (see test information)
	Faulty ABS ECU	Replace ABS unit
ABS warning lamp in tractor cab does not extinguish after circa 2 seconds, when connected to trailer with ABS fitted	Power fault	Check for 12 volts across pins 1 & 4 of ABS socket
		Check for 12 volts across pins 2 & 3 of ABS socket
		Check for 12 volts across pins 1 & 8 of ABS power cable, at ABS ECU end
		Check for 12 volts across pins 3 & 4 of ABS power cable, at ABS ECU end
	ABS sensor short/open circuit	Check blinkcode for sensor fault location (see list)
	ECU problem	Check blinkcode for 12 flashes – replace if necessary
	ABS powered for extended time	Tow trailer and check that lamp goes out after circa 7 km/h
ABS warning lamp in cab goes out after circa 2 seconds, but illuminates again whilst driving	ABS sensor air gap	Check ABS sensor installation, and push sensor upto abs polewheel
	Polewheel wobble	Check ABS sensor and polewheel installation, as well as wheel bearing
System does not 'exercise' after powering up (no clicking/chuffing audible)	Power fault	Check for 12 volts across pins 1 & 4 of ABS socket
		Check for 12 volts across pins 2 & 3 of ABS socket
		Check for 12 volts across pins 1 & 8 of ABS power cable, at ABS ECU end
		Check for 12 volts across pins 3 & 4 of ABS power cable, at ABS ECU end
	Faulty ABS ECU	Replace ABS unit
Wheels lock during braking – no ABS warning lamp illuminated	Too much brake pressure	Check RELSV settings
	No ABS sensors fitted to locking wheels	Add extra ABS sensors to locking axle to convert to a 4s/2m system
Wheels lock during braking – ABS warning lamp illuminated	Power fault	See power faults above
	ABS sensor air gap	Check abs installation
	Polewheel wobble	Check polewheel installation

Tyre Size	Pressure in Bar	Pressure in PSI
10.5/80 x 15.3	4.5	65
11.5/80 x 15.3	4.5	65
12.5/80 x 15.3	4.5	65
385/65 R22.5	6.5	94
445/65 R22.5	6.5	94
500/60 R22.5	3.0	44
500/60 R17	3.4	50
550/45 R22.5	4.0	58
710/45 x 22.5	3.2	46
435/55 x 19.5	6.5	94
560/45 R22.5	3.2	46
560/60 R22.5	3.0	44
600/50 R22.5	3.2	46
650/50 R22.5	3.2	46
650/50 R26.5	3.1	43
23/10 x 12	3.2	46
550/60 x 22.5	4.1	60
400/60 x 15.5	4.1	60
215/75 x 17.5 Twins	6.5	94

Tyre pressures

NOTE

Tyre pressures are given as a guide only.

Pressures will vary according to trailer model and load. For example a 560/60 R22.5 fitted to a TB12 will run at different pressure to the same tyre on a TB16.

Laying up & long term storage

- If the trailer is to be out of service for a long period.
- Remove any drain bolts from the body floor.
- Wash the trailer removing and dirt and any remaining load.
- Retouch any damaged paintwork.
- Replace any damaged or worn parts.
- Check all nuts and bolts for tightness.
- Grease all nipples.
- Coat all bright parts with grease or an anti-rust additive.
- Store the trailer under cover away from livestock, chemicals or solvents.

Recommended lubricants

	bp	CALTEX	Castrol	Esso	Mobil		
Grease	Energrease LS/LS2	Marfak All Purpose 2 Multifak EP2	Agricastrol Multi Use Spheerol AP2 Castrol LM	Esso Multi-Purpose Beacon 2	Mobilux 2 Mobigrease MP	Farm Grease Universal Retinax A	Multifak EP2 Totalfarm Multis 2

ADDITIONAL INFORMATION

How to operate tipping trailers

Insert blue + (plus) tipping service **(1)** into + (plus) on the towing vehicle.

Then simply operate the spool on the towing vehicle + (plus) to tip the trailer body and - (minus) to lower the trailer body.

NOTE

Equipment fitted to the towing vehicle may differ from machine to machine and therefore the instructions given are generalised. Refer to the towing vehicles operation manual or seek the advice of your dealer.

Tipping the trailer requires a large amount of oil, it is therefore recommended that auxiliary hydraulics with combined flow are used to increase tipping speed.

WARNING

When working in the danger area between the trailer and the towing vehicle always ensure that the towing vehicle engine is turned off and the key removed.

When working in the danger area between the trailer and the towing vehicle always ensure that the hydraulic and pneumatic controls are in neutral and that the control panel switch is off.

How to operate hydraulic rear door (where applicable)

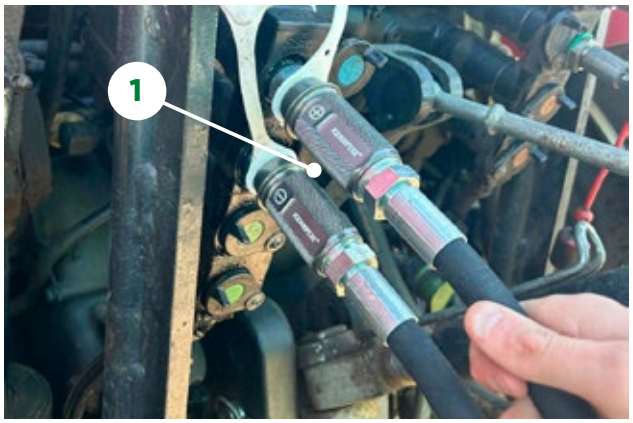
Insert green + (plus) and green - (minus) **(2)** into the corresponding + (plus) and - (minus) on the towing vehicle.

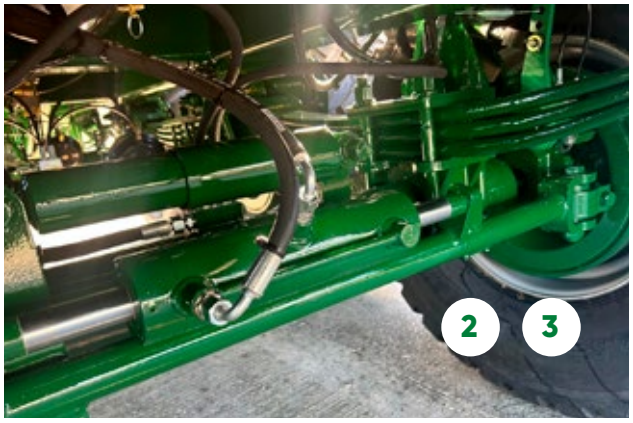
Ensure the trailer body is tipped 25mm (1") to allow the hydraulic door to operate.

To open the door activate the relevant + (plus) on the towing vehicle.

To close the hydraulic door use the relevant - (minus) on the towing vehicle.

Once the door is closed lower the trailer body to the down position.





Steering rear axle

The steering rear axle is a trailing axle. As you turn the trailer the rear axle follows to reduce the turning circle.

To operate the steering axle:

Remove grey grips from the storage position on the swan neck pipe holder.

Using a dual-spool on the tractor, insert the grey plus and minus into the corresponding ports on the tractor rear **(1)**

Then operate the spool in the tractor

Activate the plus lever, this will activate the rear axle, which will now follow **(2)**

Activate the lever, this will lock the rear axle for reversing **(3)**

NOTE

Please note the rear axle needs to be locked for reversing.
If not locked damage to the axle and tyre wear will occur.

Rollover sheet operation

WARNING

Do not operate rollover sheet when the trailer is tipped.

To Open rollover

- Remove the winding handle **(1)** from its storage position beneath the body and insert into the rear of the rollover sheet.
- Slacken all ratchet straps **(2)** and ensure strap is free.
- Check the 'dog lead' **(3)** is attached.
- From the rear or the front of the trailer wind open the sheet with the winding handle.
- When fully open remove the winding handle.
- Using the winding handle flip out the retaining strap **(5)** then fasten to ratchet provided. Put winding handle back into stowage position.

To Close rollover

- Slacken retaining strap.
- Pull 'dog lead' **(4)**.
- Fasten all straps into ratchets and tighten. If trailer has hydraulic tailgate ensure straps are placed between trailer side and arm as shown at **(5)**.
- Secure 'dog lead' into hooks provided.

CAUTION

When sheet is open do not use with retaining strap unfastened as damage will occur.

How to operate Hydraulic Side to Side Rollover Sheet.

- Remove orange and purple grips from storage position on swan neck.
- Insert orange + and – into towing vehicle spool valve into their corresponding + (plus) and - (minus).
- Insert purple grip – into free flow return in towing vehicle, make sure it is active so oil can return or sheet will not work.
- Then simply operate spool in towing vehicle + (plus) to open sheet and – (minus) to close sheet.

How to operate Hydraulic Front to Back Sheet.

- Remove orange grips from storage position.
- Insert orange + (plus) and - (minus) into towing vehicle as per illustration into corresponding + (plus) and - (minus) into towing vehicle.
- Then simply operate spool in towing vehicle + (plus) and – (minus) to close sheet.

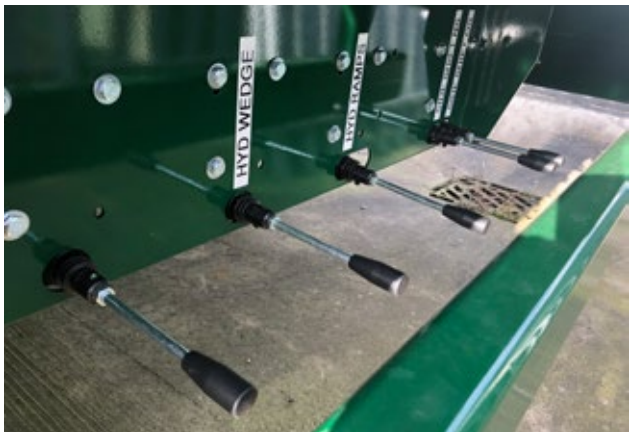
Operating a Beavertail Low Loader

	Description	Notes
1	Strap/tool box	Both sides – if applicable
2	Loading ramps	Hydraulic operation
3	Control valve	Hydraulic loading ramps

CAUTION

When fitting straps use steps or use suitable equipment to reach and position straps.

The trailer deck may become slippery when wet.



CAUTION

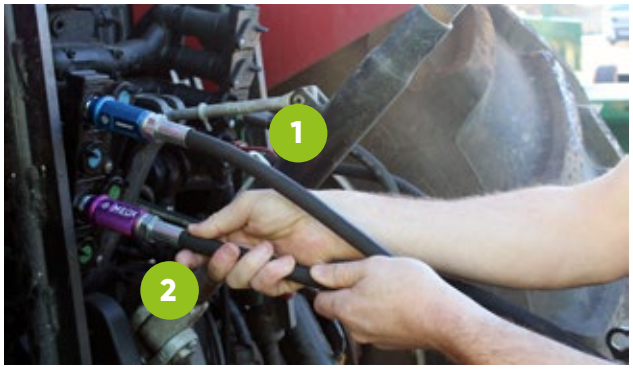
Ensure no one is stood at the rear of the machine when deploying the ramps. Or on the trailer deck when raising the ramps.

Deploying the loading ramps (hydraulic)

- Insert green + (plus) and - (minus) into corresponding + (plus) and - (minus) on the towing vehicle.
- Release the mechanical retainers by removing the clips.
- Locate the operating valve, situated adjacent to the ramp at the rear left side of the trailer.
- Push the lever down to lower the ramps until fully deployed.

Important When loading and unloading the lever must be in the latched down position (float) to prevent damage to the ramp cylinders.

- Raising the loading ramps.
- Push the lever up to raise the ramps.
- When fully raised return the lever to neutral and refit the mechanical retainers and their clips.



Operating a Drop Deck Low Loader

- Connect both tip pipes to the tractor hydraulics but use separate spools.
- For lift rams connect blue + (plus) and for hydraulic lock connect purple + (plus).
- Lift the lift rams **(1)** and you will notice the drop deck lift slightly
- Release the purple hydraulic lock **(2)** with the second spool
- Lower the lift rams **(1)** until the drop deck touches the ground
- Lower the pick-up hitch to lower the front of the drop deck
- Put hydraulic lock **(2)** into float ready for relocating once drop deck is lifted. Reattach pick-up hitch and lift tip rams until you see rear latches drop back into position.
- Once latches have relocated drop lift rams down, then you are ready to move.
- Please ensure all loads are secure before setting off.

If your Dropdeck has a steering axle

- Connect both grey + (plus) and grey – (minus) in the corresponding service on the towing vehicle.
- Connect yellow + (plus) into a separate service on the towing vehicle.
- Activate yellow service to release locking pin and using grey + (plus) and grey – (minus) you steer the back axle left or right respectively.

Important Do not try to steer the rear axle with the trailer in a stationery position or with the locking pin in the fixed position.

- To lock the rear axle put the yellow service to float and by turning the axle left or right the locking pin will locate.

Fuel Bowsers
TYPE APPROVED B2DC12*/ 2007/ 46/ EC

Operation

Towing: hitch the bowser to the towing vehicle, taking care to connect the electrics and engage the red safety lead **(see 1)**.

Powering up: connect the power lead crocodile clips to 12 V battery: red to 'positive' and black to 'negative'.

Delivery: remove fuel nozzle from it's holder **(see 2)** and refuel the tractor or self propelled machine.

The amount of fuel delivered is clearly indicated by the flow meter **(see 2)**. The auto gun will close the fuel supply when filling is completed.

Refilling the bowser: (see 3) the large metallic cap protects the filling point. To its right is the fuel gauge; the red cap is the breather and there is a filter on the outlet tube to its left.

Bailey Fuel Bowsers are fully bunded with a 2000 litre capacity. The rear cabinet is an option for fuel additive storage. They operate on a 12 V battery (not supplied) delivering 85 litres/minute.

Fuel Bowsers: Adblue

The Adblue tank is located in the rear, lockable compartment **(see 4)**.

Powering up: see previous page.

Delivery: remove the fuel nozzle from its stowage point **(see 6)** and refuel the Adblue tank on the tractor or self-propelled machine.

The on-off switch is recessed below the shelf.

Refilling the Bowser's Adblue tank: remove the black plastic cap from the filling point. This is recessed below the shelf **(see 5)**. Replace after filling.

Always return fuel nozzle to its stowage point when not in use.

Operating a Water Bowser

Diesel Pump

- First check the oil level is correct and diesel is topped up as per the operating instruction in the pump manual.
- Select which way you require the liquid to be pumped, i.e., into the tank or out of the tank, or just recirculation, by pulling the yellow levers in the direction shown in the instructions mounted to the inside of the rear door.
- Connect the external hose if required to sprayers / static tanks, for example, using the correct outlet as shown on the instructions mounted to the inside of the rear door.
- Insert the key and start as shown in the pump operations manual and your process will start.
- On completion turn the pump and the relevant taps to stop any further loss of liquid.

Hydraulic pump

- Connect bowser to the towing vehicle and insert the green + (plus) and – (minus) into the corresponding + (plus) and – (minus) on the towing vehicle. Make sure the hydraulic valve in the rear cabinet is in the ‘off’ position, then set the towing vehicle to pump down the green + (plus) line.
- Select which way you require the liquid to be pumped, i.e., into the tank or out of the tank, or just recirculation, by pulling the yellow levers in the direction shown in the instructions mounted to the inside of the rear door.
- Connect the external hose if required to sprayers / static tanks, for example, using the correct outlet as shown on the instructions mounted to the inside of the rear door.
- Turn the pump on by moving the valve lever on the hydraulic pump to the ‘on’ position.
- On completion turn the pump and the relevant taps to stop any further loss of liquid.

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