

NEWTON'S
GENERIC
TIPPING TRAILER
& WALKING
FLOOR SAFETY
GUIDE

ABSTRACT

This is a generic manual to complement your own knowledge, risk assessments and safety manuals. Original Sept 2017 This version 3 Feb 12 2024

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Manual for Semi-Trailers – Tipping Trailers & Moving Floor Trailers

This manual has been written by Andrew Smith of Newton Trailers Limited.

It is for the benefit of all users of Tipping Trailers and Walking Floor Trailers.

I do not mind if others copy or use this material themselves. I do insist that if others do use it for Commercial purposes that they acknowledge that it was Andrew Smith and Newton Trailers Limited work that they are using - and not just hidden in the small print at the back! Without doubt this work can be improved upon and I would appreciate email feedback on how and where this can be done: andrew@newtontrailers.com

Who are Newton Trailers Limited

Newton Trailers Limited are one of Europe's largest dealers in new and used tipping trailers and moving floor trailers.

We provide a sales, hire and parts service from our operating base in Milton Keynes, England.

Why create a manual?

Newton Trailers Limited are passionate about we do. Boring but true. We very much care that people who purchase, rent or own or operate moving floors and tipping trailers are often without instruction or manuals for their equipment.

Some manufacturers produce very good trailer folders which list the components of the trailer but do not link the components together with any useful guidance. Others do an excellent guide but then they own it and will not release it to help people who have bought from their competitors.

We therefore have produced an 'Open Source' manual for you. It is hardly definitive and you might scoff at some of the contents. It is for the guidance for some and necessity for others. It attempts to be a complete work but will continue to evolve online for you to reference as you wish at www.newtontrailers.com

We intend to use it as part of our selling and renting operations. If customers have trailers from us without manufacturers' original instructions they can use this as a help and guide. They can also use our online resources guide for all the manufacturers of trailers and components who are happy to share their knowledge.

Other Assumptions in this Manual

This manual is complimentary to your own knowledge and training.

To drive the equipment in this manual you will have

A valid driving licence for HGV Class 1 for use in the UK & Northern Ireland.

CPC - Certificate of Professional Competence – you will hold a CPC.

O licence – You will be operating within an Operating Licence structure.

PPE – personnel protective equipment is understood and used.

Health & Safety – You will be operating within a structure of best practice generated by your company. This structure will be a learning structure that has identified the hazards in your work. As you work with tipping trailers and walking floor trailers you will have scoped your Health & Safety practice to cope with the risks and hazards arising from your interaction with them.

Risk Assessments – your Health and Safety processes will have led to the generation of Risk Assessments. These Risk Assessments will have broken down the activities of your working day and interaction with your vehicle and trailer into logical steps or activities. As an operator of this equipment you will be familiar with these Risk Assessments. If you have not got a specific Risk Assessment for discharging or loading a tipping trailer or a walking floor then I would suggest you are not working to minimum safety standards in the United Kingdom. A couple of hours work with a fag packet and blunt pencil might just save your life - go on!

Site Operations – all site operations that you visit with your trailer will also have their Health & Safety systems in place to keep their own personnel safe and also you safe as you perform your work within their controlled areas. You must negotiate the interaction of your safety needs with their safety needs. This may require sensible negotiation with the Site Operators representative before you start your loading or unloading procedures.

You must be operating your walking floor trailer or tipping trailer within a maintenance regime that keeps it within road legal standards at all times. This manual must assume that you have a maintenance programme in place to keep all the original supplied equipment to a safe working standard before you start your work shift.

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Hello

Just a quick hello. You will be reading this document for a number of purposes. Either you genuinely seeking insight how to use the equipment you have safely and correctly or you are very bored and dangerous or you are desperately trying to get yourself out of a legal problem that involves an accident with a tipping trailer or walking floor.

For whatever purpose this document is meant to help you correctly use the equipment. There will be many who can find better methods or guides and this manual is by no means complete or definitive - please go and use them if they are better. Feed back to improvement is welcome to andrew@newtontrailers.com

Why do I need a guide?

In 2003 I sat at a dull meeting on tipping trailer stability and learned that there are around 750 tipping trailers and rigid tippers per annum in the UK falling over.

This may have been a complete lie but it did make me sit up and think (the source was a Commercial Motor journalist).

From experience I would say all of the accidents were caused by using the equipment. Wouldn't have happened if they stayed at home. But much is down to using the equipment with payloads that will not come out of it, in the wrong place, with the wrong method and finally with faulty or badly maintained equipment - in that order.

So this guide is aimed at stopping you joining the tally of badly guessed statistics - happy reading.....

DAILY WALKAROUND CHECKS AND FIRST USE INSPECTIONS

(Information taken from Muldoon Trailers Limited with thanks)

This section looks at the first of two essential roadworthiness inspections – the daily walk around check and first-use inspection. It offers best practice advice on setting up a system for reporting faults and looks at defect reports, while clearly stating your legal position.

A responsible person must undertake a daily walk around check before a vehicle is used. As a driver, you may carry out the check before you first drive the vehicle on the road each day.

Assistance may be required at some time during the inspection, for example to see that lights are working. Alternatively, a brake pedal application tool may be used as an effective way of making sure stop lamps are working and that the braking system is free of leaks. In addition, a torch, panel lock key or other equipment may be needed.

A system of reporting and recording faults

The person made responsible by the operator must carry out a minimum of one check in 24 hours. The check should consist of a walk around look over the whole vehicle or combination. On multi-trailer operations a defect check should be made on each trailer being used. The check should cover the external condition, ensuring in particular that the lights, tyres, wheel fixings, bodywork, trailer coupling, load and ancillary equipment are serviceable.

There must be a system of reporting and recording faults that may affect the roadworthiness of the vehicle and having them put right before the vehicle is used.

Daily defect checks are vital, and the results of such checks should be recorded.

It is important that enough time is allowed for the completion of these checks and that staff are encouraged and trained to carry them out thoroughly. Drivers should be made aware that daily defect reporting is one of the critical elements of any effective vehicle roadworthiness system. If you are the user of the vehicle, it is your responsibility to ensure that any hired, leased or borrowed vehicle is in a roadworthy condition and has all the necessary certification when used on the road. Therefore it is essential that you do a daily walk around check (as described in the previous box) before any such vehicle is used. It is your responsibility to be able to provide maintenance records covering the period of use. Furthermore, if a vehicle has been off the road for a period longer than between planned maintenance inspections, it should be given a full safety inspection (see Section 4), prior to being brought back into use. **Drivers' defect reports**

Commented [LB1]: Heading for next paragraph – delete

As the driver, you are responsible for the condition of your vehicle when in use on the road. Drivers must be able to report any defects or symptoms of defects that could prevent the safe operation of the vehicles. In addition to daily checks you must monitor the roadworthiness of your vehicle when being driven and be alert to any indication that the vehicle is developing a fault (e.g. warning lights, exhaust emitting too much smoke, vibrations) or other symptoms. When a vehicle is on site work, you should walk around the vehicle to identify any serious defects. If any defects are found, you must not use the vehicle on the road until it is repaired.

Providing a written report

Any defects found during the daily check, while the vehicle is in use or on its return to base must be the subject of a written report by you or some other person responsible for recording defects. The details recorded should include:

- Vehicle registration or identification mark;
- Date;
- Details of the defects or symptoms; and
- The reporter's name.

It is common practice to use a composite form that also includes a list of the items checked each day. It is advisable that where practicable the system should incorporate 'Nil' reporting when each driver makes out a report sheet – or confirms by another means that a daily check has been carried out and no defects found. Electronic records of reported defects are acceptable and must be available for 15 months along with any record of repair.

Appropriate action

All drivers' defect reports must be given to a responsible person with sufficient authority to ensure that any appropriate action is taken. This might include taking the vehicle out of service. Any report listing defects is part of the vehicle's maintenance record and must be kept, together with details of the remedial action taken, for at least 15 months.

'Nil' defect reports, if they are produced, should be kept for as long as they are useful. Normally this is until the next one is received or until the next scheduled safety inspection is undertaken. 'Nil' defect reports are not required under the conditions of operator licensing. However, they are a useful means of checking that drivers are carrying out their duties in this respect.

If you are an owner-driver, you will probably not have anyone to report defects to, except to your transport manager (if you have one). In these cases, defects can simply be recorded and held for at least 15 months. Examples of a daily check and defect report form are shown in Annexes 3A and 3B (pages 24 and 25). Also see the pull-out diagrams at the end of this Guide showing the core safety inspection items.

Drivers' responsibilities

Drivers must be made aware of their legal responsibilities regarding vehicle condition and the procedures for reporting defects. This can be achieved by writing a letter to each driver, describing defect reporting systems as well as any other duties they are expected to perform. The driver should sign this letter to show in writing that they have received the letter and understand what is required. Drivers share the responsibility for the vehicle's roadworthiness with the operator. Drivers may be prosecuted for the existence of defects found on the vehicles they drive if they are considered partly or wholly responsible for the existence of them. Failure to take these responsibilities seriously could result in the loss of the driver's licence to drive.

Minor repairs by drivers

If you are an operator, you should bear in mind that drivers who are expected to repair minor defects in service, e.g. light bulb replacement, might need basic training.

Example of a driver's daily checklist

- Fuel / Oil / Water levels
- Fuel / Oil / Water leaks
- Excessive engine blower noise or smoke
- Lights – Indicators – Reflectors - Markers
- Brakes and Brake lines
- Battery security (condition)
- Coupling security
- Tyre Pressures
- Tyres and Wheel fixings
- Electrical connections
- Spray Flaps
- Security of body/wings/fittings etc.
- Wipers Washers
- Steering
- Horn
- Mirrors
- Glass
- Security of load

REGULAR OPERATIONAL AND SAFETY INSPECTIONS

Regular safety inspections are essential to an effective roadworthiness maintenance system. Although a part of the overall vehicle maintenance plan, the inspections should ideally be undertaken as a separate, albeit often sequential, operation to routine servicing and repair. This provides the maintenance programme with the flexibility to intensify or otherwise change the frequency of inspections. It also allows the introduction of ad hoc inspections, should they be required, without affecting frequency of servicing and other routine work (e.g. when the operating conditions call

for more regular checks or when first use inspections are required). In addition, freestanding inspection reports can be produced which provide the operator with the means of determining not only the roadworthiness of individual vehicles in service but also the overall effectiveness of their vehicle maintenance system, thus enabling the instigation of any changes that might be necessary.

Being cost effective

Although primarily undertaken in the interest of safe vehicle operations, roadworthiness inspections, together with prompt remedial action, are also cost effective. The early indication of wear, damage or maladjustment may prevent sudden failure of a component – resulting in unscheduled downtime – or prevent wear becoming so advanced that premature replacement becomes necessary. New vehicles entering service that have undergone a recorded pre-delivery inspection will not require a safety inspection provided that it is as comprehensive. Used vehicles, not previously operated, should be given a full safety inspection.

Inspection scope and content

A roadworthiness inspection can be a freestanding inspection of just those items affecting road safety and certain environmental issues. Or it can be part of a more comprehensive inspection that, in addition, takes into account items relating to the vehicle's work performance and economic operation.

We recommend that all power packs or blowing and ancillary equipment are checked and serviced at this stage. Reference should be made to manufacturers' recommended tolerances to ensure that each item covered by the safety inspection is inspected properly and limits of wear and tolerance adhered to.

A roadworthiness safety inspection must include all the items covered by the statutory annual test.

Safety inspection intervals

There are no set rules for inspection intervals but operational needs must not override safety considerations. Safety inspections should, where it is practicable, be programmed to follow a time-based pattern. The frequency at which inspections are undertaken should be determined by assessing the level of mechanical degradation likely to be incurred over a period as a result of the vehicle's usage. This will depend on such factors as:

- The type of vehicle, the nature of its load and the equipment and fittings it carries or supports;
- The type and range of operations on which it is likely to be engaged;
- The type of terrain and the nature of the environment in which it operates or is likely to operate; and
- The distance and speeds at which it travels and the journey times.

Assessing the above factors for each vehicle will, in the majority of cases, enable a time-based programme of inspections to be formulated. Some operations, however, are subject to continuous change, or vehicles can frequently be re-assigned alternative tasks or routes, making the adoption of a strictly time based inspection programme

impracticable. Mileage-based inspection programmes may be more suitable for some operators but will need to be linked to time. The resulting intervals in time between mileage based inspections will need to be consistent with the guidance in the table below.

Industry standards for bulk blowing vehicles would normally see an interval of 6-8 weeks between inspections.

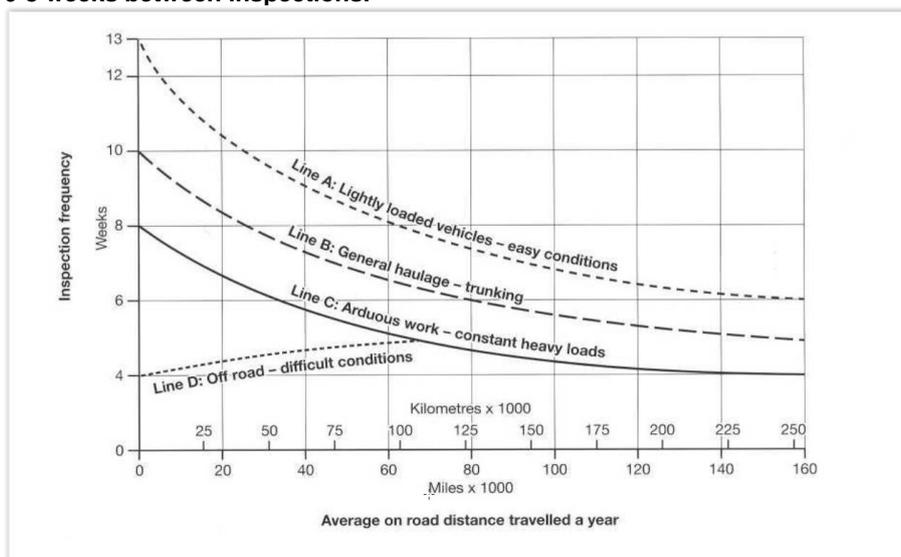


Diagram courtesy of Muldoon Trailers

Adapting your systems

If you are an operator, you are free to tailor these inspections to suit the nature of your operations and vehicle characteristics. You may even deploy more than one system across a fleet, where vehicles and the nature of the work vary. Systems will be judged primarily on their effectiveness in maintaining roadworthiness. It follows therefore that in order to maintain an inspection regime that is sufficiently flexible to accommodate these changing criteria it might be more appropriate to adopt an inspection frequency determined by, for instance, the vehicle's mileage.

Safety Inspection and Repair Facilities

This section covers the facilities needed to undertake safety inspections and the arrangements needed if you do not undertake your own inspections. The same guidance applies to the repair of any defects found during safety checks.

Own safety inspection facilities

If you decide to provide your own safety inspection facilities, you must ensure that they are adequate for the job. Facilities should ideally include:

- Undercover accommodation for the largest vehicle in the fleet. This is required to ensure that safety checks can be conducted satisfactorily in all weathers (depending on fleet size the building may need room for more than one vehicle at a time);
- Tools and equipment appropriate to the size and nature of the fleet; • an adequate under-vehicle inspection facility. Ramps, pits or hoists may not be needed if the vehicles have enough ground clearance for a proper inspection to be made on hard standing;
- Adequate lighting
- Access to brake test equipment (e.g. a roller brake tester, decelerometer)
- Access to headlamp test equipment
- Access to engine exhaust emission test equipment
- Access to steam or pressure under-vehicle washing facilities; and
- A safe working environment.

Other requirements

A diesel engine smoke meter (or a gas analyser, if petrol) should be used to ensure that the level of exhaust smoke is within the legal requirements. Operators should also have access to a brake tester for the purpose of checking braking efficiency. While a decelerometer may be adequate for some vehicles, the use of a roller brake tester is strongly advised. A roller brake test is an important indicator of braking efficiency, although not a substitute for regular and proper maintenance. Roadworthiness inspections can, of course, be included in an operator's overall maintenance plan.

Contracted-out arrangements

If you decide to use a contractor, you are still responsible for the condition of vehicles that are inspected and/or maintained for you by your agents or contractors. Care must be taken to ensure that the facilities used by the agent are adequate and that the staff are competent. The list of facilities (on page 16) can be used to check a contractor. You should also ascertain that the agent/contractor is in possession of an inspection manual and has suitable inspection sheets.

Drawing up a contract

It is essential to have a written contract that sets out precise details of vehicles covered and frequency and type of check, along with a repair policy.

Contract limitations

Even when a maintenance contract exists between you (the operator) and an agent, you remain legally responsible for the condition of the vehicle, the authorization of any report work undertaken and the retention of records. You need to be satisfied at all times that the level of maintenance agreed matches the demands placed upon vehicles and that the standards achieved by the contractor are kept at a sufficiently high level. You should therefore talk regularly with the contractor to ensure that they are familiar with the operational needs of the vehicles they are required to inspect and repair. This knowledge is important if the contractor is to be called upon to advise on a particular course of action – particularly when your technical know-how is limited. Even when you get on well with a contractor, you should have a system for regularly monitoring the quality of work done. Obtaining first time pass rate annual test data from the contractor is one way of checking that their performance is satisfactory, but this should be supplemented by other checks. Any sign of unreliability, incompetence

or other shortcomings causing a reduction in the standards achieved should receive prompt attention. Here again a good working relationship can help, but if problems persist you might well consider a change of contractor.

Visiting agents

As an operator, you may employ a visiting agent to undertake safety inspections, repairs and routine maintenance. However, you should ensure that the agent is qualified to work on the type of vehicles you operate and that adequate facilities and tools are provided. As is the case for contracted-out maintenance, you are responsible for vehicle condition and upkeep of records.

Roadside safety inspections

Only emergency repairs may be done at the roadside. Routine maintenance, including safety inspections and repairs, may not be carried out on the public highway.

Planning a safety inspection programme

Safety inspections must be planned in advance. Vehicles that are subject to a statutory annual test may have their year's programme planned around the anticipated test date to avoid duplication of work associated with the test, such as cleaning and major servicing.

A simple method of drawing up a programme is to use a year planner or flow chart. An example can be found in Annex 7 (page 34). Computer-based systems are equally acceptable, and the numerous electronic vehicle maintenance record management and storage systems available will often incorporate an electronic planning feature. The information, which should be kept in the simplest form possible and displayed prominently, will serve as a reminder of programmed inspections or of any changes that have been necessary. All vehicles subject to programmed attention should be included. Ideally planners or charts should be used to set safety inspection dates at least six months in advance. Vehicles' annual test dates should be included, as should servicing and other ancillary equipment testing or calibration dates, e.g. tachygraphy, lifting equipment, etc.

The planner should be updated regularly by indicating the progress of the programme and recording any extra work carried out. Vehicles that have been taken off the operator's licence or other vehicles temporarily off-road should have their period of non-use identified, and a note should be made when vehicles have been disposed of. The planner or chart may be used to record other items in the vehicle maintenance programme, such as servicing, unscheduled work and refurbishing. Each activity should be clearly identified.

Monitoring

This section examines why the importance of continuous reviewing and monitoring of the quality of safety inspections is essential for all systems for maintaining a vehicle's roadworthiness. Continuous reviewing and monitoring of the quality of the systems in place is essential to ensure that they are sufficiently comprehensive to do the job. One method of monitoring is to invite a technically competent third party periodically to re-inspect or undertake a safety inspection irrespective of whether inspections are done in-house or are contracted out. The content of completed inspection reports can also

be analysed. Checks should reveal any incomplete records and may also show patterns of faults. If many faults are reported regularly this could indicate that:

- There are not enough safety inspections;
- Daily walk around inspections are not being completed correctly; or
- Defects are not being corrected promptly or effectively.

If no defects or few defects are reported regularly, safety inspection intervals may be too short or the quality of the inspection may not be good enough. Effective monitoring will enable you, the operator, to adjust the intervals between safety inspections to suit the operation of vehicles. In this respect there is considerable flexibility provided within the framework of this guide.

Annual test results

Attention should also be paid to annual test results and the issue of prohibitions and inspection notices. Regular monitoring of all available information will enable you to check the effectiveness of your system in keeping your vehicles roadworthy. The frequency or scope of safety inspections may need to be adjusted to ensure that the system maintains the roadworthiness of all vehicles operated. Monitoring must continue whether or not changes are made to the inspection programme.

British standards (If applicable)

British Standard BS EN ISO 9000 is a standard for quality management systems. If you are an operator who has been awarded this standard, you must observe systems of working set out in a quality manual. Such a manual would contain details of the organisation of the business, responsibilities of staff and methods of operation. Those businesses aiming for BS EN ISO 9000 accreditation would need to consider the training, documentation recording, planning, standards and monitoring aspects of their organisation.

Tipping Trailers

What is a tipping trailer? It is a device for transporting and delivering bulk materials safely. In the UK as of 2024, this is currently possible up to 44 tonnes gross weight on 6 axles. A tractor unit is 8.5 tonnes. The trailer is between 5 and 10 tonnes. The payload is between 23 and 31 tonnes. A tipping trailer uses the action of gravity (Force = mass x acceleration) to discharge the payload from the tipping trailer box. The tipping cylinder raises the box high into the air at one end (or side) until the angle of the floor becomes sufficient for the load to overcome the forces of friction and slide out of the box. A normal tip angle for a trailer in the UK & Ireland is between 39 and 45 degrees. European products often use higher tip angles up to 50 degrees.

I would like someone more learned to contribute here but this is my version of the current situation:

At the time of new supply the trailer must conform to its' Homologation document. This is required previously under the EU regulation and since Brexit the DVSA has followed this requirement but is currently developing new systems of registration and conformity. These regulations are mainly aimed at the trailer in the on-road driving

condition and address amongst other items – braking effort, lighting and visibility, under-run protection and side-protection etc; weights and masses.

It does not address static tipping or tipping capabilities.

When in the static off-road tipping operation the trailer is now potentially part of the Machinery Directive and the CE approvals are the main source of conformity. My best endeavours indicate that the Manufacture assembles each of the items – such as Under Run protection or Lighting System which each have their sub assembly CE registration. Which regulation applies to the trailer as a complete working whole is less clear. Throughout the European Tipping sector the large manufacturers conduct their own in-house assessments of the tipping capabilities and state the capability on their product guides. Mostly empirical testing – trial and error has led them to believe that their products after several hundred an in some cases thousands of trailer that they have a 'good product' that is 'fit for purpose'. More locally back in the day in the smaller UK market the Society of Engineers SOE and IRTE produced a '**Guideline**' for Safe Construction of a Tipping Trailer in 2003. This is in my opinion a controversial document and possibly very flawed. It requires an honesty basis the Manufacturer to perform an audited and recorded PHYSICAL tilt test of the base trailer type that the Manufacturer will supply. The set of constraints under which it is tested are not how the trailer will be used. How distant a version of the original tested trailer that is permitted to use the Class A and Class B standard is also and remains controversial. Many UK manufacturers play fast and loose with their claims – publishing that their trailers meet this standard on ALL their variants. These should be questioned and the Manufacturer produce the valid date and time of the PHYSICAL test and the design and chassis number it relates to. We should be aware that of about 2018 the last Tilt Test Table at Chobham closed. There is the possibility that zero of more recent Manufacturer claims relate to relevant or up to date data. Auditing is often inexact – the trailers not freighted with realistic loads – say lead plates to reduce the Center of Gravity on test etc.

[What products can be tipped in a tipping trailer?](#)

Logically only free flowing bulk materials.

If the load sticks to itself and to the 4 walls and floor of the trailer then the action of tipping it to the normal 40 to 45 degrees of angle may not be sufficient for the load to move under the force of gravity. This defeats the purpose of the tipping trailer. Simply do not tip products that will not slide out at these angles. There is a full appendix at the back of this manual that may guide you.

However you do not need to reinvent the wheel. There are very few 'new to mankind products' - Haribo might be one - to carry in a tipping trailer. It has all been done before. Ask someone in the trade or with experience whether the product you are about to put in the trailer will be capable of being tipped. It is your responsibility to do this before using the product. Most manufacturers provide their own 'Product Sales Literature' in which they will specify the intended use for the trailer that you have purchased or are

using. Logically this should be the 'Superior Guide' that you should use. It is our experience that these guides are very brief or non-specific and not actually that much use. However this is that specific manufacturers opportunity to communicate to you and you should use it.

Bulk products may vary greatly in their ability to be tipped. You must decide before you put it into the trailer whether it can be tipped. Dry peat behaves differently to wet for example. Soil may be free moving or sticky and clayey. Products that vary greatly can be difficult – one persons 'green waste' somehow has six foot concrete fence posts in it. It can only be your good judgement that keeps you safe in this regard.

There are alternative products to using a tipping under gravity – horizontal discharge trailers – ejectors and moving floors.

[Who makes tipping trailers and moving floors?](#)

The tipping trailer and moving floor industry throughout Europe is a small scale manufacturing community.

Traditionally it started with chassis builders and then the coach builder. What I mean by this is that the chassis were often made by one manufacturer and supplied to another manufacturer who put a bespoke body on to it.

Often different trailers shared a common chassis source but had very different bodies from very different company's plonked on the top. The chassis lends itself to be made by bigger more organised manufacturers. The body is very labour intensive as they are often fully hand welded. It is possible to make a tipper body as well in a cow shed almost as well as in a modern factory. This does still happen.

What does that mean for you?

Often the chassis is a reliable mass produced machine. Often the body is a unique one off – sometimes unrepeatable product. We see medium size manufacturers produce 'identical' trailers which are far from identical – even built side by side for the same customer. Even materials used in the body construction might vary in thickness and quality from one trailer to the next – they used the piece of metal closest to the door. Body lengths vary dramatically. Catwalks descend on one side on one trailer and then the opposite side on another. It might disappoint the reader to hear this but I have witnessed it too often. This can make it more difficult to 'use' the trailer. This also makes writing a universal guide even for a single product more difficult. It therefore becomes even more difficult to write a guide for more products and more manufacturers.

Some trailer manufacturers are very small indeed – 30 a year. They do not write an operations manual or a guide to the use of their trailer. Sometimes they assemble a small group of information – on sub-components – the floor, the axle etc. in an attempt to help their customer. They do not however put an overall product guide together. More surprising, some of the bigger manufacturers also do not produce a guide. They might have beautiful factories and techniques but do not see the requirement to instruct the user how to safely use their product.

This guide tries to assist in these deficiencies.

Who is in danger?

The operator is most often the driver of the trailer.

They are the person(s) primarily at risk. There are of course secondary people who will be at risk of you operating the trailer near them – in the danger zone.

The DANGER ZONE

The best policy is not to move the trailer when there is anyone within a body length and one half of the trailer. Let's say an envelope of 18 meters in a full circle of the trailer. Edbro advise one trailer length. See annex.

Tipping a trailer is like felling a tree. The tree will fall under the action of gravity often in a direction that is quite unexpected. It will fall with at least its full length onto the ground and create an area of scatter even further than that. A tipping trailer undergoing catastrophic failure will do the same.

The best way to make sure that no one is hurt is to make certain before and during tipping that no person or anything valuable or that you care about (my one exception to this rule is possibly MPs) is within this danger zone.

It is called a danger zone because you or someone else is in DANGER if they are inside that zone. It is only your good judgment that will delineate the danger zone. It is your responsibility to think, plan and observe before during and after every tip or use of your trailer. Explaining to the judge in a court of law that you 'assumed' someone had thought about it for you is a pretty lame excuse and you will embarrass yourself if you try it.

All the risk assessments in the world will not keep you or others safe if they are inside this DANGER ZONE and a catastrophe occurs. And they do.

It may be required to create a physical loading/unloading area for your tipping trailer on the ground, clearly defined into which unauthorised personnel cannot enter.

How to use correctly a tipping trailer or walking floor?

The usual is required.

You must be of sane mind. Alert. Without drugs or the effects of drugs or alcohol in your body before operation. Wear sensible protective clothing or PPE. Correct footwear - hard toe cap and good stout tread is best. Ties and too much tweed are not a good idea.

Able bodied is possible a requirement. Operating a tipping trailer or floor involves entering and exiting a catwalk or body of a trailer - pulling over sheet systems. Adjusting badly distributed loads. Physical wellbeing is really quite important.

Be aware of external hazards - site conditions - weather etc. High winds will snap sheets and cause trailers to be side blown when tipping. Snow will build up on the top of a trailer and create hazards tipping or using the sheet systems.

Thunderstorms should be avoided unless you want a 70's perm.

Most of this seems common sense but that is hard to find - especially when stood in a court of law.

Vehicle Identification and Valid MOT

Every trailer will have a vehicle chassis plate and must display a valid MOT. Check.

Your O licence will indicate the inspection regime that you are committed to for your equipment – such as 6 weekly inspections in a workshop. Whether you own the trailer, rent the trailer or pretty much any other way – you are responsible for the maintenance and safe working order of your trailer. Make no assumption – ensure that the trailer is within the safe maintenance inspection regime that you are committed to. This will be checked by any enforcement authority after an incident or accident. It will keep you safe as an operator.

Equipment levels and specification

The laws are constantly changing with regard to safety equipment on a tipping trailer and walking floor. Historically some exemptions have been in force for end tipping trailers, refuse vehicles, forest products and off road applications. These were listed in secondary law under 'Construction and Use' exemptions. Some of these exemptions are being removed by local regulations – London Authority now require under run and side impact protection for example or by Whole Vehicle Type Approval of new trailers at the time of new supply.

Regional differences also with regard to permitted weights and equipment levels such as fire extinguishers, wheel chocks, spare wheels etc. also exist if you travel within Europe.

Height restrictions

Historically the UK & Northern Ireland has worked on the basis of he who bends it mends it – or gets fined heavily. There is no height restrictions other than the need to not hit anything. Local height restrictions will be on a case by case basis – Bridge heights etc. will be indicated just as you get there. In most of Europe a strict 4.00 meter height rule is in force and strictly applied. There is no legal requirement to have the height of the trailer marked on it. It is best practice to understand what the size of your trailer is before you use it.

Walking floors can be very tall 4600mm is quite common. This will start interacting with site access, workshop bays and bridges. If you have a tall trailer understand its total height and keep a notice in the vehicle in plain sight as a reminder.

Tipping trailers are taller when tipped! Understand the total tipped height of your trailer including ancillary equipment such as sheet systems and catwalks.

Coupling:

You should be proficient in the use of your tractor unit and Risk Assessments.

Is the trailer you are coupling fit for the road and safe to couple to? Do your usual work shift checks of the trailer before coupling: tyres inflated, tyres safe, wheel nuts, lights etc.

More specific to this equipment: IS the trailer LOADED?

It is not best practice to leave a bulk trailer loaded and unsupported. But it can occur. In my opinion a trailer of 36 tonnes standing is potentially unstable or at the point of instability. Approaching a laden trailer should always be a cautious affair. A tipping trailer or floor is clearly not a curtainsider with 2 tonnes of teabags on board.

It is all very well when a trailer is brand new but an unknown 20 year old trailer is a different beast. Best practice would be to leave a trestle underneath the full width of the coupling plate or a support dolly. How stable is the ground under the landing legs. Do the landing legs have compensating feet? Even as you walk around an uncoupled LOADED bulk trailer you should treat it as a hazard to be managed. Is the door safely locked? Will the ground give way as you approach? Are the landing legs - well - on their last legs? Do be cautious and realise you are entering the danger zone.

Do make sure that the trailer parking brake is ON or applied. It is a known hazard that people can leave a trailer with the shunt valve in or the parking brake not engaged. The trailer will slide or move as you engage the Tractor Unit fifth wheel.

King Pin

Check for the correct position. For damage and security of the bolts. Do not couple if not in good order.

Fifth Wheel Position

Check that the coupling distance from the King Pin of the trailer to the front of trailer is sufficient to couple to. Deep fifth wheels on walking floors leave 2.05 meters for the swing radius. It is possible to send the trailer through the rear of your cab - T- Shirts are sold in their hundreds. An additional problem is that some Tractor Units have sited their hydraulic oil tanks behind the cab level with the trailer. This uses up the space behind the cab needed to fit the trailer. A silly mistake but very common.

Fixed fifth wheels have the obvious problem of being located only in the wise position for their original use. Then someone buys it and comes to collect a floor or a tipping trailer - CLANG. It is a big job moving a fixed fifth wheel with often specialist components to move them.

Make sure your fifth wheel is in good condition and checked. Make sure it is greased well. Again this is 36 tonnes of trailer. Please check carefully as you can actually bind up this articulation point with rust and iron filings and damage the king pin or fifth wheel.

Coupling Height

Be aware of the coupling height. Carefully reverse the tractor unit in a straight line to the front trailer. Go in low then stop in front of the trailer. Apply the tractor unit parking brake, stop the engine and remove the keys. Get out of the cab and adjust the air suspension of the tractor to engage the rubbing plate of the trailer. Then reverse on as normal. Many times we see drivers under shoot the pin. Or the reverse - slam the lead on ramps into the front of the trailer. The trailer is not designed to take this hit. It might roll the trailer back of its landing legs - the trailer brakes might not be on and you have created the world's largest toboggan. Pretty much you can tell how good the driver is by the degree of caution and respect he gives to coupling up. Take your time.

Do make sure that the fifth wheel jaws has fully clamped shut around the trailer king pin. Try and move forward gently with the trailer parking brake applied to check successful coupling and do put the safety pin on the jaws of the clamp.

Apply the tractor unit parking brake, stop the engine and remove the keys.

Suzies and couplings

Pressurised air systems and couplings: avoid any direct contact with pressurised and exhausting air and ensure that the correct PPE is in place for the operation. Coupling and uncoupling is often best done with gloves on. Beware of blown dust and debris as an eye hazard.

Connect the service air line (yellow).

Connect the trailers electrical lines to the sockets of the trailer. Include the ISO7638 line. See annex.

ABS has been normal since 1993 and EBS since 2000. The trailer brakes are activated by the controls in the tractor unit. This uses the tractor unit's air system to connect to the trailers air system.

Connect the emergency airline (red) and watch for any unexpected movement of the trailer. If the trailer moves, immediately disconnect the emergency (red) airline and check again that the parking brake of the trailer is correctly applied.

If your unit is reporting a trailer fault it is often NOT the trailer. It is often the Suzie cable. Your EBS and computer cannot 'see' this connection and it is a common failure point. Check by swapping suzie for a borrowed one or coupling up with another unit. Obviously let the trailer fill with air. Wait for the Tractor and Trailer electronics to talk to each other.

Check trailer swing clearance to ensure that the tractor can articulate and not hit lights or lead on ramps and kit behind the cab.

Landing legs

Fuel consumption is much improved by lifting the landing legs. Obvious but sometimes overlooked. Do use the low gear and high gear on the landing legs. It might be a pain but these landing legs will keep you or someone else safe. Damaged legs must be

replaced. Also check how the legs are attached to a chassis. Again 36 tonnes is always going to challenge this position on the trailer. The legs may be new but the bracket and bolts holding them on may be rotten. Be careful.

Watch out for backlash from the winding handle. Only use low gear to raise or drop the trailer. Never leave in neutral position.

Aluminium type landing legs. These are becoming more common as weight saving has become more important. With the trailer suspension in the ride position and the handbrake pull out the pin on each leg and gently guide (do not drop) to the ground surface position. Replace pin in the lowest setting. Make certain that both legs are set to the identical hole position to avoid distortion.

Fit the number plates.

Lighting

Check lights before moving off.

Check the brakes. Allow system to pressurise, check tractor unit instruments. Look for correct EBS function. Try the Service foot brake.

Disc brakes might bind on. Drum brakes might stick on. Rock the trailer do not drag it 200 meters and flat spot the tyres. This does give you the right to laugh at the driver next to you who has just done it. You tend to find that if the driver owns the trailer this does not happen. If you pay for the tyres it does change how cavalier the knight of the road is.

Uncoupling

(The coupling procedure is essentially reversed)

Only attempt to park where there is room to operate safely between the rear of the tractor and the front of the semi-trailer.

Park the tractor trailer combination in a straight line.

Apply the tractor unit parking brake, stop the engine and remove the keys

Apply the trailer parking brake

Remove and stow the trailer number plate and lower the landing legs. You must appraise that the ground is level and the landing legs are evenly placed horizontally and the ground is hardened so as not to let the landing legs sink into the surface.

Disconnect all of the air and electrical services and stow safely

Remove the security clip and pull the release handle to disengage the 5th wheel jaws

Slow draw the tractor unit away from the trailer. Adjust the suspension if required to prevent the tractor unit reacting to the release from the trailer and lifting the lead on rams into the front of the trailer chassis. It is a possible danger to hook the leading

edge of the lead on ramps into the front cross members of a tipping trailer chassis or walking floor chassis/body and damage the trailer or tractor.

Apply the tractor unit parking brake, stop the engine and remove the keys

Before leaving the trailer, walk around and check that it is in a safe condition

Parking Brake

The trailer does have a tendency to stay where it is if you have left the brakes on. It is possible for the Shunt brake to be partially engaged ditto the park brake. So do check the controls. Also be aware that the ride height of the trailer may have been set incorrectly. Check this as 36 tonnes gives a bumpy ride with no air in the air suspension. It also can cause trailer axle and suspension failure.

Manual park brakes have been superseded by Park Valves. On disconnection of the Red Emergency air line the brakes are automatically applied. The trailer brakes can be applied when coupled to the tractor unit prior to uncoupling from the tractor unit by pulling the Park Valve control button. The valve will need resetting before travelling. Do not use the 'Shunt valve' trailer brake release valve.

Shunt Valve or Trailer Brake Release Valve

Do not use unless instructed in its use.

Trailer Height Ride Height & Controls

These are either manually controlled or automatically controlled.

If fitted to the trailer they allow the trailer air suspension height to be manually adjusted – raise or lower.

Do not operate when uncoupled. Always check the suspension is correctly reset to the running (RIDE) position before travel.

Ensure that the truck and trailer run level on their suspensions and a combination. Most UK 44 tonne trailers have been designed with a coupling height range of 1150 to 1300mm. Some trailers have been designed to run outside of this range and may therefore be incompatible with your truck. It is your responsibility to ensure that the combination is level and safe.

Callipers

It is worth leaning over each tyre in turn and manually moving the calliper back and forth. If it cannot be moved it may be seized. This can be controlled daily. Prior to first journey, after 150 km after first 1500 km and thereafter every regular inspection routine check the disc for wear and defect.

Never allow pad lining thicknesses to fall below manufacturers recommended levels.

Refer to the axle/brake manufacturers recommended maintenance regime. Available online at www.newtontrailers.com also refer to greater details in this annex.

Axles

Axles of floors and tipping trailers up a lane in Wales get a lot of hammer. They can crack through the suspension arm and through the axle tube. A quick visual check at this point can quickly pick up failure. It is VERY common in these trailers so don't be flippant about this.

Refer to the axle manufacturers recommended maintenance regime. Available online at www.newtontrailers.com

Air suspension

Check shock absorbers for leaks and degradation. Clean air springs and check bottom of the bags and plate for damage. Periodically check torque settings and ride height. Refer to the axle manufacturers recommended maintenance regime. Available online at www.newtontrailers.com

Wheels

Torque wheel nuts daily. Fit with tell-tale wheel nut indicators if possible. Torque settings are usually on a label on the chassis. If not ask. Ignorance is not an excuse.

Check wheels for damage, cracks or bad seating onto the hub.

Tyres

Tipping Trailers and Walking Floor tyres are being worked as hard as could be. When tipping you are potentially loading 18 tonnes through the rear most tyre. Most tyres are rated at 9 tonnes so this is no joke. It is therefore not just about tyre depth and damage. You must assess whether your trailers tyres are good for the job.



Picture: Tipping Trailers & Walking Floors can experience increased tyre wear Milton Keynes 2007

Look for: Obvious signs of under inflation; wear on the crown and shoulders; bulges; foreign objects in the tread pattern; leakage at the valve; correct inflation pressure.

Tyres - off-road operations & landfill operation: - forestry - country roads and farm tracks are the norm for tipping trailers and walking floors. Even during the daily work shift the conditions of your tyres may have changed from safe to unsafe. We have seen landfill trailers get through 6 of their 6 new tyres in 9 weeks!! This is clearly not fair wear and tear. They will then exit the landfill and be doing 50 mph past my wife and kids coming the other way. Do check your tyres if you have been off road during your day or work shift. It could save your or their lives. You may have checked them in the morning and be illegal by elevenses.

[Tyre Pressures](#)

Tyre pressure is particularly critical in tipping operations. Potentially very large loadings are going to be placed on the rear most axles of the six axle combination as the body is tipped and the load moves down the body. Although they are static when tipping, underinflated tyres will introduce a list to the chassis and body during tipping that may promote failure of the trailer completely. Never tip with unchecked or underinflated tyres.

Dangerous substances

Most trailers are free of dangerous or noxious substances when supplied. Be aware of asbestos hazard in friction materials and brake linings and wear the correct PPE and take the appropriate precautions when servicing.

Hydraulic oil & greases– moving floors and tipping trailers both use hydraulic oil. Prolonged and sustained contact can cause skin irritation. Avoid contact with eyes.

Hydraulic oil may become very hot in use. Be aware of this.

Loose bulk products may introduce eye hazards. Wear eye protection when this is a risk.

Carriage of dangerous substances. This will be under your specific risk assessments. Ensure that the trailer is correctly labelled and the emergency mark.

Vehicle Warnings

Obey and observe all information on labels, stickers and plates on the trailer.



Example of a typical safety plate on a Knapen Walking Floor trailer

Number Plate

Attach number plate to trailer.

Body Checks

The chassis is normally well looked after because of the VOSA inspections and 6 weekly inspections. But the bodies are not. Tipping trailers and floors are very much

'coach built' hand built items. Some are still built by talented men in the cowsheds of the Forest of Dean. They are not all robot constructed. Each trailer is a unique individual. Even 10 'identical trailers' bought in one batch may have different components and design. Sometimes 2 men built trailer A and 2 different men built trailer B in the next pen. Even the grade and thickness of metal may be different according to what Ted or Bill picked up and welded together that day. So what you assume you know about one trailer may be wrong for trailer B. Ladder positions and equipment levels. Door safety locks on one - none on the next. So this is why tipping trailer and floor users need to be cleverer than their curtain sided colleague. Indeed they have to be 'special'.

[Is the body attached to the chassis?](#)

The body of a tipping trailer is attached to the chassis in the four corners. Check these corners are attached before use. Disappointment could occur when the body detaches from the chassis when tipping.

Check the bolts on the load cells are torqued and safe. Check that the rear tipping hinge turns and is well greased. We have seen these seize up and fracture. We have seen load cells fractured completely through - with the trailer still in regular use. These may be ignored or not looked for by the main dealer monkey during your 6 weekly sprint inspection - they always look after the engine bit - the trailer doesn't have the engine - which brings me to an amusing story about traffic police and looking for the engine number on a trailer but that could go on for a bit....

Check the base of the tipping cylinder. Check the trunnions and tipping bosses for excessive play. Often these areas get disguised and packed out with grease. Even a couple of mm of play can be critical at the base of the cylinder when fully tipped. The effect is magnified like sitting on the end of a long see saw. A few mm sudden movement may make the body at the top move one meter. Crash tinkle. If excessive play is detected these parts will need to be replaced with original equipment quality replacement parts.

Check the cylinder for excessive grease oil running down. It may be that a seal has failed. A trickle of oil is an indicator of a potential problem. It is our experience that replacing a cylinder is more cost effective than resealing. Lots of T shirts for failing to reseal an old cylinder - very frustrating.

Cylinder hydraulic coupling - I recommend large SCREW type couplings. Quick fits are cheap and quick but.... The large screw type creates faster flow rates than quick fits. Also if you have a failure of pipes or cylinder you can UNSCREW a SCREW type and get the trailer down again. Try that with a quick fit. Back to the Artillery anecdote - then send in the least important member of your troop do the job. The quick fit cannot be made to come off unless you can push 175 bar with your fingers. If you can congratulations and you are probably an alien. If you cannot then call out a construction crane and lift your trailer body down again.

[Body Cracking](#)

Carrying 30 tonnes of loose materials can be wearing and distressing to a body - look at Alex Salmond. Cross members can fracture, floor and side walls wear thin, door

hinges loosen or fracture, top rails crack, and front headboards rupture. Then loading shovels damage and smash items. These things rarely get checked during a VOSA service inspection. They are yours to do. Once again remember some of these trailers were made in a garden shed in Mansfield. They were not tested to destruction and proven to be good designs. Even if they were good brand new out of the box twenty years of use may have taken its toll. So make sure that the body is checked regularly for damage and wear. We have seen floor sheets worn paper thin. The front half of the trailer tipped but the rear bit stayed on the chassis - it happens. Make sure it does not happen to you. Equipment supplied with the trailer should stay on the trailer - your own modification may be a bad idea. To avoid arguments use Original Equipment Manufacture spare parts. This also supports warranty claims.

Look for the 20 or 30 floor bearers. Replace body rubbers and shock absorbers as soon as they are lost. They are part of the safety of the body. Look for cracking around the tipping cylinder. Make sure the bosses move and are lubricated. Check the side walls are attached at the base not fractured.

Doors



Picture: Door possibilities will vary with trailer type

Rear Door

Plenty to say here. The majority of rear doors on tipping trailers are manual top swinging tailgates. This means they hang from 2 or more pivot points at the top and flap like a cat flap - open and closed. Normally they open under their own weight as

the trailer tips into the air and close as the body comes down. Most have a simple locking bar with locking tabs along the base to clamp them shut and extra twist locks to ensure a tight fit and prevent the load forcing its way out of the seal to the back posts. Although the exact configuration will vary between manufacturers and designs they all work the same way.

Before loading the door needs to be inspected to ensure that it is safe to use. Often the top hinges are cracked off or nearly off. Make sure that they are good and strong. It is possible for the door to break away in use. Often there is a pin or bolt holding the door in the hinge at the top. This is often deliberately a sacrificial weak spot. If the door is forced into the ground or the pile of product when tipping this weak bolt will be broken and the door will come off the trailer. It prevents greater damage to the trailer or even forcing the trailer over when tipping. Check that there is a bolt and that it is in good order.

Check that the manual locking bar is free moving and is lubricated. Check that it is tight when closed. Check that there are no stones or product that will 'put a foot in the door' and stop it closing or cause only partial closing. This is especially a problem in automatic or remote locking doors. The driver or operator can be unaware that the door is only partially shut. Check that the twist locks are welded correctly, well lubricated and fall away naturally when loosened. Door failures can happen when a twist lock binds on one side and not on the other - the door then twists.

The driver/operator/loader must check whether the trailer is loaded before operating the door. An indicator is the tyres look loaded or tapping the body and the sound is dead and the door is taught - not like a bell.

IF you do not know what the product is or whether the trailer is loaded the driver must always assume the worst case. That there is a liquid free moving load in the trailer and the door is under great pressure. If the door is released the door will be pushed open - like in the TITANIC - and water will come sweeping down the corridor knocking you into the arms of Kate Winslett. Only a slightly better outcome is that human waste, turkey guts and cows innards will sweep out, fill your boots, the door will knock your teeth and break your jaw and you will be swept onward 20 meters to finally come to rest under 2 tonnes of offal. A pretty standard night out in Luton but to be avoided if possible. It did happen at a well-known renderers and there were some very big fines to be paid.



Picture: More liquid loads will put pressure on the doors. Stand clear of the fan shaped danger zone

Doors under pressure from the load will jump open. It happens on sugar beet, or offal, or human faeces or oil seed rape or scrap metal.

Barn Doors

Barn doors can be single piece, 50:50 Split or 70:30. The principal is the same. There is usually a lot of sequential locking bars to be undone. The pressure is still the same and the danger is from being knocked backwards by the door or by the load. Many jaws are broken releasing doors on scrap metal. Many fines are handed out. There is a danger zone in a fan shape behind the trailer. It is particularly acute within one and one half door lengths of the rear of the trailer. Expect the unexpected. Always be stood outside the line of the body of the trailer when releasing the door. If the final catch or release mechanism is under tension be very cautious. Perhaps consider not releasing the door by hand. Getting a safe distance may mean and releasing the catch with a long pole.

Automatic Doors

The industry has moved on to variants of safety door - with automatic mechanism. These are common on European fabricated trailers and almost universal on walking floor trailers. They usually involve the release by hand of twist locks and other door locks before allowing the remote release of an air or hydraulic door catch. However they should be treated in the same way as a manual door. Do not trust the automatic mechanism and do not enter into the danger zone around the rear door - again a fan shape pattern around the rear of the trailer about 1.5 x the length of the door.

Very fluid loads

Very free moving loads such as brewer's grains or heavy loads such as scrap should always have a risk assessment written for their discharge. There are too many procedural requirements to cover in this synopsis. You would be reading for ever to cover all the possibilities. Certainly these types of load must involve reliable remote opening door mechanisms such as the Turner Auto gate which we sell and recommend. Again never stand or operate within the rear fan shaped danger zone.

Hoppers, Discharge Grills, Incinerators etc.

Once again the possibilities to find an interesting end to your life are too bountiful to cover here. You should be operating under your own thought-through risk assessment and a site operator's assessment to cover these hazards. Small hopper walls are dangerous as they may involve falling over the wall and under the load.

Tipping Through a Grain Hatch.

This should be treated as a high risk but it does go on. Basically a site operator has put together an inadequate intake with too small a capacity. The trailer is therefore required to choke its discharge to a simple slide hatch in the middle of a ruddy great door. The principal danger is tipping the trailer with the main door closed. With no exit but the small grain hatch there is the possibility of 30 tonnes of fluid load being held back by the door of the trailer. Although this has been done successfully for many years the logic of this is pretty bad. The driver is behind the door putting a sock on or controlling the flow of the door with massive pressures on the door. We should be requesting that this practice is stopped and that mills and site operations catch up with this bad practice. Make sure the door and its fastenings are in very good order before operating through a grain hatch.

Side impact bars

Side impact bars or cyclist protection is required on all new tipping trailers. It can legally be removed under construction and use regulations. Some regional authorities will require it for entry into their controlled zones - e.g. London.

Rear under run bars

Rear under run bars are required by law on all new tipping trailers and walking floors at the time of original supply. It can legally be removed under construction and use regulations. Some regional authorities will require it for entry into their controlled zones e.g. London. They are tremendously effective and should be left on if possible. Sometimes they can impede tipping at all fashioned sites that have hopper walls. These sites should be reported to VOSA who take a very active note in persuading these sites to amend their bad practice. Fold up style rear and retractable under runs are common and effective in Europe for road laying applications etc. Ask your trailer manufacturer to supply in this format.

Commented [LB2]: Add in Titan Aggregate automatic rear under run

Catwalks or Platforms & Working at Height



The use of ladders, catwalk or front platform should fall under your Working at Height 2005 Regulations and then under your specific risk assessments and then under your site operations risk assessments. There is a Fruehauf Statement in the Annex here.

I have looked at 10 or so manufacturers books and they all avoid any specific instructions on how to use the on board ladders, door props, catwalks, sheet systems and roof systems. Why is that – I guess fools rush in where angels fear to tread.....? I am guessing by creating specific useful instructions they could be entering into a

liability. Please therefore treat the next section as helpful guidance and not in a court of law against me – I am just trying my best to plug the gap left by others.

Consider whether you can achieve the work you would do on the ladder or catwalk by other means: cameras facing into the body and automatic sheeting systems are slowly making catwalks and platforms less necessary.

Always wear the correct PPE: good strong shoes, good grips on the shoes – best rubber based – a heel might help stop on the tread of the ladder better; gloves, goggles if dust risk, hard hat if required as part of your site operations routines; ear defenders perhaps; appropriate work clothing – not flappy or loose.

Do not climb if you have a fear of climbing or you feel giddy climbing or working at height.

Always ensure that the truck and trailer are in a 'safe zone' – or designated area where you will not be disturbed or interrupted by traffic or loading shovels.

Engine is switched off. Trailer brake on. Level ground. Body on chassis safely. Unloaded.

You and you alone are in control of your equipment – remote sheet controls, door controls, body controls, walking floor controls etc. It would be unpleasant for the sheet to start operating with you holding the sheet.

Environmental conditions: Correct environmental conditions. Work in good well lit area; low wind speeds, dry weather, frost, ice & snow free tread plate/ hand holds.

Clean: Clean degreased equipment. Degreased ladders, tread plates, hand holds.

All ladders, handholds, platforms or weight bearing elements must be in good order. No rungs or elements missing. No rivets or joints missing. All bolts and welds in good order. No bad repairs. All safety elements of original supply must be present and used. Try and ensure good grip on the rungs of the ladder. Make sure they are dry and degreased. It is only your grip that will hold you on the ladder. No grip no hold!

Work from the near side or UK passenger side: i.e. away from traffic. Do not step down into traffic: see safe zones earlier.

If your Risk Assessment requires you to use secondary safety devices; harnesses, fall restraints, safety lines then use them. This is outside the scope of most original equipment supply and not covered here.

Understand the capability of your ladder or catwalk. Assume a maximum of one person for all catwalks. Assume no greater than 125 kgs total weight on a catwalk including personnel and equipment. Same assumption for ladder use.

Catwalk Climb

Always access the base of the catwalk from a safe access point.

If uncoupled you will need to access the catwalk ladder from the ground with your own supplied method. This should be a safe correctly scaled system such as a step ladder.

NEVER try and Tarzan your way up using just your arms. Never jump from the ladder or catwalk to the ground.

If coupled – the most common point of entry onto the catwalk is the tractor unit gantry. Access onto the tractor unit gantry is not covered here and is part of your tractor unit risk assessments.

Plan before you climb. Understand the operation you are about to perform on the catwalk. Think what you will do up on the catwalk and how it will be achieved safely.

The ladder up to the catwalk must be fully locked out and safe before climbing if it is a hinged or retractable or removable version. The ladder should only be used for access to the catwalk and never for working off and performing other operations - cleaning windows etc.

Use a three point climb technique. E.g. 2 feet and one hand fixed; one hand moving. Never jump or miss rungs.

Always face forward towards the body of the trailer with the balls of the feet on the ladder. NEVER climb backwards with the heels on the ladder.

Once on the catwalk stop and assess your position. Think and plan your next move.

Close off any safety chains or ladder closing systems supplied on the catwalk. This will help prevent falls from this open area of handrail.

Assess if it is safe to continue your plan of work.

Be aware if the platform is big enough to carry out your planned work. Many catwalks are constraining to a very large person. If there is not sufficient room to do your planned work come back down. DO NOT continue to work if you are not free to move and turn easily on the catwalk.

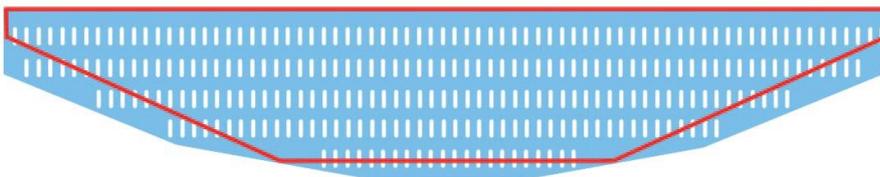


Diagram: if the catwalk area given to work on is constrained: plan your movements

Understand the guardrail position relative to your leg and body height. Do not use the handrail or guard rail for stability or body support. Once on the tread plate you should maintain your balance using both feet remaining on the tread plate at all times. Do not raise your feet above this area. Do not attempt to climb further than this zone. Do not

attempt to place feet on the handrails, grab handles etc. You may become unstable and fall. Never try to enter the body of the trailer from the catwalk.

[Climbing Back Down](#)

Think, plan and then act.

Always face forward towards the body of the trailer with the balls of the feet on the ladder. NEVER climb backwards with the heels on the ladder.

Reverse the climbing technique. 3 point climbing. The first rung off the base of the catwalk sets you up for the descent. Ensure that you have a good grip with your hands as you place your leg downwards for the first rung. Get your balance and stability and continue with the 3 point climbing technique.

Make sure that you have both feet in a safe and stable position on your tractor unit or step ladder before transferring your grip to the next apparatus.

[Ladders and Trailer Access Systems](#)

Read the previous section first and take note.

Ladders onto the trailer should not be used. Single ladder and rungs carved/formed into the body are unsafe and should be removed from the trailer if present. DO NOT USE as means of access up the side or front of the body?

Only ladders and platforms and their safety guides provided by the original trailer manufacturer should be used to access your trailer. Replace only with original parts.

Some trailers are supplied with pull out fixed ladders at the rear door. Others are supplied with simple ladders stowed elsewhere on the trailer.

All the safe working caveats from the previous section should apply.

[Accessing the Interior of the trailer from the rear.](#)

All the safe working caveats from the previous section should apply.

The opening and closing of the rear doors section should be applied. Make sure that the door or doors are safely secured. Make sure that all door controls are in your control – remote locking or wireless controls for example. Make sure doors are safely propped before entering the swing zone of the door.

Only enter an empty clean trailer where safe to do so. Covered amply elsewhere in this guide.

Make certain you are on firm level ground.

Place ladder on the ground. Make certain that if the ladder has lugs, guides, loops etc. to connect with reciprocal lugs, pins etc. on the trailer body that it does so and is secure and safe before climbing.



Picture: Rear door safety prop in place, rear door ladder attached with hooks over locking bar

Make certain that the ladder touches the ground evenly and equally and does not wobble or move. Ensure that the angle of attack is a safe one as you have been taught or learned from your own risk assessment. The angle is important. Too steep and you will become unstable. Too shallow and you will become unstable. Normally the ladder supplied will be the correct height to access the interior of the body. Typically on a tipping trailer this is 1.400 meters or thereabouts and 1.200 meters on a walking floor. The ladders will be either supplied to fit or if loose slightly taller than the height to be attained.

Test the ladder for security before climbing. Place a portion of your body weight onto the ladder and ensure that it remains stable and comfortable. DO not climb if the ladder is swinging, penetrating and disappearing into soft or unstable ground, pitching or reacting to your weight.

Plan and Think your next Moves.

Look for the offered hand holds around the doors. Most walking floors have hinge cut-outs on the door body/hinge door frame. Make sure that you are confident of their position and how you will achieve your 3 point climbing technique. Tipping trailers often re – use the door feramenture to give hand holds on the door frame.

Always climb facing forward onto the ladder. Never descend a ladder facing outwards on your heels.

Loose ladders can be a hazard. If you do not climb evenly the ladder may slide to one side along the base of the floor of the trailer. Do not climb if unstable. It is best not to use a ladder more than 80 cm longer when correctly angled than the height of your climb into the rear of the trailer. As you get to the top of the ladder there is a temptation to lean onto the excess height above the floor of the trailer. This may allow you to pivot the ladder suddenly forward making you unstable.

Once you have attained the safe base of the rear of the trailer move away from the open door hazard.

You are now working at height. The HSE record that many accidents occur in the load space of vehicles trailers. As you work the operator becomes less focused on the open door hazard. Always maintain your awareness of the edge of the body of the trailer.

Using a ladder in the body interior. This is unsafe practice for a trailer operator and should not be done.

If you are tempted to move sheet support arches and swinging posts inside the trailer box then use the shepherds crook or poles supplied do not climb in the interior.

Do not climb or clamber over the load inside the trailer. DO NOT use ladders to do so.

Climbing out of the body

All of the previously discussed climbing and access information applies.

Think and plan your move ahead of your descent.

Check and ensure that the ladder has not shifted or moved since you entered the trailer.

The initial rearwards transfer of your weight from the flat deck of the trailer to the first lower rung of the ladder is important. Transfer your weight in a controlled and stable manner until your weight is stable on the ladder before releasing your first hand hold.

Then 3 point climb descend until both feet are on the ground. Make sure you are stable before releasing your hands from the ladder.

NEVER carry items up the ladder. You need your limbs free to 3 point climb. Do not carry items on your back – ruck sac etc. – these will destabilise your body as you go up or down.

DO NOT be tempted to jump from the body of a tipping trailer or moving floor to the ground – tempting but leave it to the birds. Many have tried but even this relatively low height can lead to a hard fall.

Roof Systems and Cover Systems

Always check the cover sheet is complete and undamaged in all its components before every use. Damaged components can create dangers.

Very many variants and specifications of roof system exist. Ideally you should be trained and up to speed in how the one you have works. Certainly you should be operating under a specific RISK ASSESSMENT for this one. Ask or be shown or read the specific manual on this.

The manuals that I have seen are usually rubbish.

Roof systems cover the load to prevent load existing or to prevent water damage to the product carried.

The most common is the Dawbarn Roll over Sheet System. The problem with all manual systems is that they can invite the operator into climbing up the ladder onto the front gantry or catwalk to operate the system. This involves working at height with all its glories.

Normally the sheet system is pulled back over to cover the load using a strap from the ground. This strap is thrown across from one side of the trailer to the other. This requires the operator to haul on a thin strap with sufficient force to make the wound up sheet roll over the front and rear domes of the trailer. This can take considerable force.

Pull back strap. This should be a strain rated strap and replaced when frayed or worn through or dirty. It should be looked at before EVERY USE as should the way it locates onto the sheet side pole. We sell a lot of these items they are cheap.

The operator should be aware of his surroundings and conditions when pulling the strap. It is very difficult in high winds that may pull the sheet like a sail away from the trailer. Do not use in high winds or consider your position in the wind. Seek sheltered conditions before using. Although high winds are good for sheet and pole sales...

Beware of footing and trip hazards. The sheet can suddenly give and the operator fall backwards, up steps, down holes, over sheep etc. Make sure you are physically able to pull such a sheet. The sheet strap can snap if it is of inferior quality leading to the operator hitting the ground with force. Broken legs are possible from bad use.

Detach and stow the pullback strap before moving off.

The industry is moving towards automatic sheet systems to avoid such possibilities.

The sheet should be secured to the side of the trailer with ratchet straps and ratchets. They must be pulled tort to avoid sheet flapping and sheet loss as the trailer moves forward in the airstream. Always operate the trailer on the roads with the sheet covering the trailer. NEVER drive with the sheet open. The possibility of sheet loss is too high.

Always ensure that the sheet stops on the side of the trailer are up. There are usually 3 of these or more on longer trailers. They stop the sheet when open from falling off the side of the trailer. They are vulnerable to damage when driving - bushes and trees etc. Often they have a depressible and self-righting design. Always check they are sound before each use of the sheet - which may be several times a day.

It is not recommended to tip with the sheet covering the load as the sheet may get sucked down by the vacuum generated. To counter this there are usually vents in the

front and rear of the trailer. If insufficiently scaled these can be insufficient to cope with the plunger effect of the load discharging suddenly. Best to avoid this by opening the sheet prior to launch.

The manual sheet is normally rolled from the back of the trailer with a long sheet pole supplied or from the front on the catwalk using a short T-handle. The rear operation is a technique sport that can beat golf for its trickery. But it is the safest way of operating the sheet mechanism as the operator remains on the ground.

The front T-handle is easier but involves working at height. This should come under your own generated Risk Assessment. It involves climbing onto the tractor unit behind the cab. This has its own concomitant hazards - slips trips and falls. The ladder for the catwalk is best on the UK passenger side away from traffic. Best practice climbing the catwalk is hard to describe. See the sections earlier for a review.

Make sure you have arrived onto the platform and have two feet firmly on the tread plate of the platform before operations begin. Insert the T handle into the side pole or the centre pole pocket depending on sheet design. Then THINK. You will be required to turn the T handle to roll the sheet back. Plan your operation and where you will position your body on the catwalk relative to any hazards such as the entrance to the catwalk.

Turn the handle in short part turns. Do not unbalance yourself whilst rotating the sheet system. Stop occasionally and plan your next section of sheet turning.

If you require the T handle to pass your body when you are on the catwalk be cautious. Best practice is to remove the handle from the sheet pole. Move your body into a new stable position the other side of the sheet pole. Re position the T handle into the sheet pole socket and resume your turning action. If you require to work close to the catwalk/ ladder opening then plan your feet positions and body positions carefully. Maintain your balance and make small partial turns of the sheet system until the sheet is fully open. Stow the T handle before descending.

Descend the catwalk as per the instructions in the previous section.

[Automatic Sheet Systems](#)

These are ground rolled manual variants of the above systems or net systems. These operate a similar sheet system but are better for the operator as they remain on the ground during the operation.

Do not use an automatic sheet system when within 2 meters of the trailer. There is the possibility of entrapment in the moving mechanisms.

Do not use an automatic sheet system with anyone else within 5 meters of the trailer and also within your direct control. **THEY ARE IN YOUR DANGER ZONE.**

Do not use an automatic sheet system with anyone on the catwalk or in the trailer.

If the trailer is equipped with a remote distance control or wireless control make sure that you are trained in its use. If a third party has control of the remote controller you are not in control of the sheet system!! Do not enter the danger zone. For example

leaving the remote control in the cab with your dog bouncing around whilst you climb the catwalk. Bad idea - and I can reassure you that you will be the second person to have done it.

Follow the full maintenance procedures for the sheet system you operate. Ignorance of this maintenance procedure is no defence. They are working operating items and need to be controlled correctly. We have operating manuals on our website for download www.newtontrailers.com

Sheet Supports

Sheets need to be supported over the void of the body by straps, poles or arches and domes. These items must be in good repair. They are often the targets of bucket loaders and even the load themselves. Their condition should be frequently appraised during the working day. DO NOT USE the trailer if damaged.

Sheet supports of all kinds are available to purchase online at www.newtontrailers.com

Sheets are vulnerable to weather events. Very heavy rain, winds, ice or snow may affect their performance.

Cleaning/Degreasing

Off road and bulk operations involve dirt mud grease etc. Please regularly control your trailer for dirt and grease. Grease on a ladder - dirt in control systems. These may affect the performance of the trailer.

Rear Door Props and Access to Trailer Body

Many trailers have access to the body controlled via the rear doors of the trailer.

Older trailers may have access systems into the trailer via the front headboard. THIS METHOD is no longer recommended and should not be used. Ideally steps should be removed.

Rear access should be made only when safe to do so and when following the site operators risk assessment.

For example a person might be entering a trailer body as a loader tries to load the trailer. There is room for both but usually one comes off worse than the other.

Only access the trailer where safe to do so. Only access using safe methods of entry. Stable ladders etc. Some trailer are provided with steps on board. Check these for defects and use in the correct approved manner.

Often the door will be required to be propped safely out of the way and secured. Barn doors are often secured with chains or levers to the side of the trailer. Beware of wind hazards with barn doors.

Top hanging tailgates are a potential trap hazard to the operator. Make sure the door is safely propped before entering between the door and the body of the trailer. Many manufacturers supply an on-board prop. Make certain you are aware of its safe operation before use.

Often a trailer can be partially tipped to let the door swing open by the required amount. The door prop can be positioned safely and then the trailer returned to the horizontal. The door is now safely propped.

Consider whether the products carried are compatible with your safety. Do not enter a trailer which has been carrying hazardous material without the correct Risk Assessments.

Trailers carrying wastes may contain hazards from previous loads - sharp objects, needles, batteries, nappies etc. Do not enter the trailer unless you are instructed to do so under a properly conceived risk assessment program.

Front Access Doors

Walking Floor trailers are often equipped with a front access door. This is a better access area to the trailer than via the rear door.

Before entering a floor the information listed above should be read.

Weighing Systems

UK trailers are legally permitted to run as high as 44 tonnes gross weight and 46T in Ireland. That is made up of the tractor and the trailer and the payload.

8 tonne tractor

5 to 10 tonne trailer

23 to 31 tonne payload.

Legally the trailer is allowed

8 tonnes per axle

King pin weight 8 to 15 tonnes

The kingpin weight is variable in the UK. Typically a trailer will put 12 tonnes downward mass through the pin. This is then distributed through the 3 tractor unit axles.

Running to legal weight is the responsibility of the operator and no one else. There is no finger that can be pointed elsewhere and pretty much no mitigation in a court of law. The 8 tonne per axle is strictly enforced. There is no allowance for over axle weight.

Mr Prescott – may he rest in peace – decided in his wisdom when he was responsible for the weight increase to 44 tonnes to allow a trailer to carry 5.5 tonnes per meter distance from the centre of the king pin to the centre of the last axle – apparently the UK has uniquely fragile bridges and this is the only way that is acceptable – just the rest of Europe and the World who has got it wrong then John. This is why it is given

the rule name – the Bridge Formula. It is a foul and dangerous rule for so many reasons – from safe tipping to safe driving where do you start.....but it is the law.

Therefore only a trailer of 8.000 or greater can carry the 44 tonne payloads. Shorter than this and you are running illegal. A number of imported and very sensibly made European trailers exist and are running with illegal length at 44 tonne. Beware when purchasing. Often they are set up for the European norm of 9 tonne rear axles so be doubly aware of what you are using or purchasing.

Check your chassis plate for details and also check your tape measure for length before using the trailer.

Trailers can be weighed on a Public or Private weighbridge to obtain accurate weights.

On Board Weighing Systems

Most if not all UK tipping trailers come equipped with on board weighing ability. It is guide only. If you are caught illegally weighted you will not be able to say the weigher was inaccurate.

Theoretically the set of 4 load cells can create results within 200 kgs of actual. However there are many reasons why they may not be producing this result on your trailer.

Aside: Accuracy and Precision. You can be precisely wrong. Learnt that in the Artillery too. You can hit the wrong target with great precision – just ask the Americans.

Weighing systems are like artillery – you can be wrong. The basis for all of the load cell bridge systems on trailers is similar or the same.

The chassis acts as the kitchen scales and the body the mixing bowl. One load cell in each corner between hinge bar bracket and body and one on each corner of the tipping cylinder.

Of course the body must be raised free of the chassis before the load cells give

The load cell is a chunk of metal that can bend in a controlled and repeatable manner. An electronic 'stretch' gauge is glued to the bridge and sends out an electronic signal according to how much the large chunk has been bent downwards. So as you load the trailer with your product the load cells bend and each reports its data to a central indicator head that translates the value into a weight for you – Simple – what could go wrong.

Well the average life of a load cell is between zero and 8 years. Mean time to failure is typically 4 years. You have 4 of these on a trailer. So they do go wrong – a lot. Unfortunately they do not just go out like a light – they can get cranky. For example a cell might send out a lower than correct signal through some of its range and then come good at 10 tonnes. Problem shooting an intermittent fault is difficult. Just look at the guides and remember to purchase your load cell for half the price from www.newtontrailers.com the load cell manufacturers are largely all pedalling the same bike – despite claims to the contrary – but have similar failure rates – but very different prices for the cells. A fantastic load cell might be £120.00 or £370.00 with the only

difference the 1 penny sticker a Sri Lankan has put on it. So be aware and do your research before spending the money. Whoever comes out to fix your weigher is usually as impartial as a rabid Scotsman. They are out to diss the load cell on the trailer as total rubbish and to sell you one on their van which is super doopa. It is probably the identical load cell but with their sticker but now you know. You can always ask us for an honest opinion.

Inclinometers

Inclinometers can be fitted to assist with tipping trailer safety whilst loading and unloading. They are available in different forms. Built into the main weighing head on the chassis or separate items on the chassis and/or on the body or calculated via the differences in weight outputs being received by the 4 load cell positions.

My preferred weigher is a 4 load cell position output that can inform the driver via siren on the chassis and or on the handheld/app/dashboard that the trailer is not being uniformly loaded – total mass, front to back mass; and also side to side mass. For example if the loading shovel has loaded aggregate fully against one side of the trailer only, the trailer might even tip over on level ground when the body is raised to full height. An inclinometer would alarm the operator when the body is being loaded and in a safe position. The operator would then be able to adjust or reposition the load. It would also sound when only raised to a low and safer level of say 40 cm when tipping and then the operator could stop the tipping operation. Such 'Smart' inclinometers are starting to become available in 2023 and may make a significant safety contribution.

However the settings on Inclinometers can be operator set and varied. It is my strong opinion that Inclinometers be set to raise the alarm at very low inclinations of the chassis – say 1 degree only. Small increments in **chassis tilt** lead to stronger progression of the **body lean** than might be predicted. Some operators set the inclination to higher angles – often influenced by the SOE Guidelines without understanding the Guidelines used higher inclinations to **TEST** under controlled conditions not to be used in **OPERATIONAL USE**. A trailer with a 4 degree chassis tilt may well be an **early** indication of a mis-loaded body which will fall over when fully tipped. Better to be cautious and put the body back down and investigate both the body interior loading and also the ground conditions before deciding to tip.

What to watch out for with weighers?

Read the instruction book. We have plenty online to download at www.newtontrailers.com if you really cannot get to sleep.

Do not trust the weigher as accurate. It is your licence after all. You can trust the weights shown by your weigher with a public weighbridge every so often to gain confidence.

Do not power wash a load cell. It has an electronic stick on piece the size of a stick of a postage stamp underneath it. Steam plus water plus electronics = you do the math.

Make sure the load cell bolts are always torqued – weekly is best. They do attach the body to the chassis!!!

Make sure no debris dirt etc. is under or over the cell. It could defeat the bridge effect you are needing to allow the chunk of metal to bend. Therefore incorrect weights will be reported.

Do not load the body with the body raised. The trailer was not designed to take impact or loading with the body raised. Best practice is to test weigh as you get close to the total load putting the body down between each test.

Do not stretch a load cell bridge. The load cell does not like being stretched by impact or near tip overs.

Do not play with the indicator. Once it is working leave it alone. Playful hands have a habit of breaking electronics. 'It was like that before I got here' is the usual excuse. You mean you fiddled and broke it.

Watch out for chaffing and breakage. The cable from each of the load cells is insulated and easily chaffed or worn as it enters holes in the chassis etc. Mice like chewing them for some reason. This causes the conductivity to be lost and a return to earth via the chassis. Most cells are replaced because of cable damage.

PLEASE DO BE CAUTIOUS WITH WEIGHING EQUIPMENT. TO THE BEST OF OUR KNOWLEDGE YOU CANNOT USE YOUR WEIGHING EQUIPMENT TO DEFEND YOU IN A COURT OF LAW WITH REGARD TO LEGAL WEIGHTS.

Driving

Perform all checks previously listed.

Driving is the bit that is over to you really. You should only drive on the public highway if permitted to do so with a valid and correct driving licence, tachometer, cpc, O licence risk assessment, drivers hours country and western music playing etc.

44 tonnes. Be aware that a tipping trailer or moving floor will be freighted to 44 tonnes gross weight. If you are not used to this type of work feel your way into driving a tipping trailer. The centre of gravity can be high and therefore this may affect handling. They should not be thrown into corners or roundabouts.

RSS Roll Stability Systems. Many trailers are now fitted with programs that assist the handling of the trailer. They can feel like the trailer is tugging. This means you are going to fast or braking very heavily. Slow down and be gentler. This is very noticeable on bulk transport as you are always speeding up or slowing down very large masses. If you are using 500 hp and lots of heat to speed it up then you will be doing the same to slow it down – the clue is that the brakes are glowing white in the night. Slow down.

Roundabouts can trip you over. Many bulk trailers go over on roundabouts – go slow.

High side winds can take sheet systems off. Make sure your sheet or net system is secure.

Be careful of your doors. When stopping for a break people may play with the trailer controls. The doors are vulnerable to the curious thief. They may have opened them or loosened them.

Loading

Loading on a site should be part of your own risk assessment interacting logically with the site operator or loaders risk assessments.

PPE should be worn.

Never load uncoupled.

Banksman

I do not like banksman. I take the view that no one can get hurt if no one is there. It is often the banksman who gets hurt. One to think about.

Ground conditions

Tipping Trailers should only be used on hardened, flat surfaces. Flat level ground. Make sure the ground is so before loading or unloading.

Loading on the Queens Highway may be temporary obstruction and appropriate warnings will need to be in place.

Communication with the loader

Communication with the loader is vital. The loader should be in constant understanding or awareness of the driver/operator. Accidents occur when the loader is loading the trailer unaware of the presence of the driver. If in doubt stay in the cab and do not move until told to do so.



Picture courtesy of Knapen: Good communication with the loader: if in doubt stay in the cab

Never enter the body in an area where loading is possible. Too many people have become part of the payload. It is very common.

Make certain that the sheet is fully open.

Make certain that any sheet system components that need to be stowed or removed are out of the way before loading begins.

Make certain that the rear doors and any other doors – side doors or front are closed.

Make certain that the body is resting fully on the chassis.

Make certain that all vehicle safety checks have been performed before this work shift or operation.

Make certain that the product loaded **is a free flowing material** suitable to be tipped. Check that it will not be a product that will change during your carriage – i.e. will it set solid, harden, settle etc.

Make sure that the load is evenly distributed in the body of the trailer. Do not allow product to be loaded in an unbalanced format. This means front to back evenness or side to side evenness. Some loading shovels will tip preferentially to one side of the trailer. You cannot rely on the load flowing and redistributing itself whilst driving before you tip. Almost all trailers will become unstable when driving or tipping if their centre of gravity is compromised by bad loading.

You can check by asking the loader, supervising through CCTV, supervising from a safe vantage point – gantry etc. or internal body cameras or when safe to do so from your catwalk or platform.

Ensure that no part of the load is above the height of the top rail of the trailer.

Ensure that no product is resting on the top rails or around the rear door or under run and lights. Product that is resting in these areas may dislodge whilst travelling down the road. Unsafe loads are YOUR responsibility and well enforced by the police.

It is your responsibility to make sure you have a safe load before moving off.

Never exceed the maximum permitted weight for your trailer. See chassis plate for details.

Sheet up the load. Do so in an approved and safe manner.

Never climb onto a loaded trailer and walk on the load to rebalance the load.

Never climb onto the sheet or net system to correct problems.

Most tall trailers have pick sticks or shepherd crooks to pull or pick at sheet straps that have snagged whilst working on the ground. **DO NOT WORK AT HEIGHT.**

Unloading - Tipping the Tipping Trailer

Perform all the required vehicle and trailer checks discussed previously before tipping.

Operate under your own risk assessment or that of the site operator.

Make sure that the truck and the trailer are in full alignment. Do not tip with the tractor unit at an angle to the trailer.

Never tip uncoupled.

Never work on an unpropped body.

Check the ground that you will tip on. It should be hardened, stable and perfectly flat. There is much discussion on the stability of tipping trailers. Most of it poor. Make sure each of your axles and tyres is level on the flat ground. One tyre down a hole is de stabilising.

If you have a safe and inspected/controlled truck and trailer tipping a correct product capable of free flow on prepared level ground you will be operating to best practice.

Do not tip in bad weather conditions, high or gusty wind speeds.

Ensure that the DANGER ZONE discussed earlier is clear of all risks.



Picture: Unloading – there is a danger zone at the rear of the trailer?

Do not tip alongside other rigid tippers or tipping trailers or floors. They will be in your DANGER ZONE and you will be in theirs. YOU will be in danger of their trailer toppling onto you or your trailer. We have a £350,000.00 T shirt for this one and that was just the legal fees – never got to court but solicitor now drives a Porsche. DO NOT DO IT!

Decide whether to dump the air from your suspension or not. I believe air dumped is the best practice. Use the dump valve fitted to your trailer. If not fitted then you cannot dump the air.

Ensure that there are no bridges or height restrictions before you start to tip. Know the height of your trailer when fully tipped. Assume you need 14 meters total height unless you know otherwise.

Never tip or attempt to tip under overhead electrical cables. Commercial 'wire watchers' are available to help you detect overhead cables.

Never start to lift the body of your trailer with the door closed.

Open the door in the safe and best practice method described earlier.

Engage PTO of the tractor unit. Do not raise the engine revs when tipping.

Never leave the PTO controls whilst tipping.

THINK

Start to tip.

Be constantly observing the progress of your tip either eyes on from beside the cab or using your mirrors. Listen for the inclinometer alarm if fitted. Cease tipping if there is an alarm event.

Be aware if no product is flowing. This could be dangerous. It might indicate that the door is not correctly opened or that the load is not free-flowing or suitable for tipping.

Tip in a slow and continuous motion. Do not jerk the controls to create body rocking.

When the product starts to flow be aware of any changes in body position. If the body is moving unsafely out of alignment with the chassis cease tipping and lower the body immediately.

DO NOT EVER MOVE the trailer with the body in the raised or partially raised positions. The tipping cylinder wall is two or three millimetres thick and does not have sufficient strength to take on side forces/momentum or whiplash forces. Operators are tempted to encourage loads to move by moving the trailer and braking hard. This will dislodge and move the load but the trailer was never designed to take these forces. The cylinder will snap and down will come the trailer on top of the DANGER ZONE. It is a very common and very serious mistake. Rigid drivers do it all the time and rigid tippers fall over all the time. **DO NOT DO IT** or copy them.

Be aware that a trailer can be in danger of the internal forces generated by an unevenly discharging load. Sheering forces in the load create rocking of the body.

Never let the tail door dig into the load or the ground when tipping.

Once fully tipped lower the body to the chassis fully until the body is resting firmly on the rubber body pads.

If possible and safe to do so check that the load is fully discharged.

Perform all safety checks in a location that has been designated on the site to do so.

Check tyres for site damage.

Check door closure for product lodged or stopping door closing correctly

Check that the sheet or roof system is safe and correctly stowed.

Check that the suspension height is reset to road travel mode. This may require you to manually change the levelling valve or dump valve on the trailer. Some trailers will have automatic reset of this via their EBS system.

Move off when safe to do so.

Walking Floors

All the elements discussed so far and applicable to tipping trailer use and safety are relevant to walking floor operation.

The payload for a moving floor is similar to a tipping trailer.

At 44 tonnes in the UK the approximate weights are:

8 tonne tractor unit

6 to 10 tonne trailer

23 to 29 tonne payload dependent on tractor unit

It is your responsibility to understand your combination of weights and not to overload.

We will discuss floor specific safety elements in this section.

What is a walking floor trailer?

It is a trailer used to carry free flowing bulk products and palletised products and discharge using on board horizontal discharge – i.e. it does not tip up. It is easiest understood using videos – see our website www.newtontrailers.com for video demonstrations.

It is difficult to describe how differential friction can be used to grip and discharge a load. It is the Old Italian waiter trick. The waiter pulls the table cloth with the tea pot and cups on it slowly towards him. The whole lot moves towards him. He tugs quickly and swiftly and the table cloth is pulled away leaving all the items safely in the same position on the table and the table cloth in his hands. That is how a floor works. FRICTION.

Floors can be used to both load and unload horizontally. They can be loaded from hoppers and from conveyors over the sides. They can be dock loaded from the rear. They can have side doors to be fork lift loaded from the rear or the sides. They are the ultimate transformers.

Typical products; sugar beet carrots, cereals, wastes, paper, coal, scrap, waste electricals cars etc.

However there are different floors for different products. Indeed there are 100s of floor and body combinations. DO check that the product you wish to move is compatible with the type of floor plank and body that you have. For details see our website www.newtontrailers.com – frequently asked tedious questions section.

Safety checks

This is covered earlier. Tyres, lights, chassis components, etc.

Most moving floors have barn doors. Most have remote controlled safety doors.

Commented [LB3]: Lead in for how to use remotes (Titan remotes, cargo floor wireless remote)

Moving Floors Barn Doors

Read the manual for the trailer that you are operating. Have a risk assessment for this operation.

There is a danger zone around the rear doors of a moving floor identical to that of a tipping trailer. Bulk materials may pressurise the rear doors and several tonnes of material could burst out.

Before approaching the trailer understand whether it is loaded or unloaded. Tap the trailer and listen to see if it is full or empty. Assess the tyres to see if they are under load or not. Always assume that it is loaded.

The danger zone is 1.5 times the height of the door. Do not enter this danger zone. Do not discharge with any other person or thing of value in this danger zone.

There is an additional danger with moving floors and rear doors. It is possible to walk the material against the rear doors and burst the closed doors. In the words of the great Michael Caine – 'I only told you to blow the bloody doors off!' Do not walk or cause the floor operation to move the product with the body and doors sealed. This most often occurs if there has been maintenance carried out on the floor mechanism with a load in the trailer (not recommended). Be aware that the doors may therefore be under some tension and may spring open violently. IF you observe any such tension – difficult manual door locks that feel taut then leave the doors alone. It may be necessary to walk the load forward in the trailer one cycle – say 5 cm to relieve any pressure on the door before opening.

Almost all moving floors are finally released to open with a remotely operated bottom door catch. Ensure that this is operating correctly before every work shift and use. Ensure that the lock has moved through its full range of movement to open and to close. Be aware that partial closure of the mechanism may be insufficient to close the door safely and successfully. The mechanism then may be defeated by the door pressure. It is your responsibility to check this each work shift.

Hydraulic Rear Doors

These were common and now less so. Powered doors usually use hydraulic cylinders mounted within the rear door posts to lift the doors. The doors will weigh at least 500 kgs. Always assume that this door will come crashing down. Stay out of the danger zone. This is a fan shaped area at the rear of the door 1.5 times the height of the door. Say 6 meters from the rear sides and rear of the trailer.

Never enter near a raised door unless trained to do so. Always make certain that the door is propped. Always assume that the hydraulic pipes to the door cylinders are about to burst and the door will descend very fast. It may trap your finger nail or perhaps worse. You will swear a bit – if they can find the bit that swears.

Before every work shift or use inspect the door and hinges for cracks and deformity. Do not use if defective. Take to a repair shop.

Ensure that all door locking mechanisms are correct before use as the previous instructions for barn doors.

Ensure that the door header bar is not cracked or deformed and is attached to the sides of the trailer.

Check body for cracking. Check along the full length of the body to ensure that the body is not cracking away from the floor.

Check body top front corners for cracks. Repair and correct before use.

Check front catwalk and platform as per the tipping trailer section.

Chassis checks as previously described for tipping trailers.

Check the moving floor mechanism underneath the trailer for leaks around drive mechanism. Check the safety manuals of the floor mechanism. This is most likely either a Cargo Floor mechanism or less commonly a Keith Walking Floor mechanism. Both manuals are downloadable at www.newtontrailers.com they should be incorporated into your own Risk Assessments and Site operation assessments.

Most floors are operated electrically. These electrics power and control valves that in turn open and close hydraulic valves. A floor is a very simple tool with hydraulic oil flowing at high speed and high pressure around a circuit. The controls open and close these circuits. These high flows and pressures can present a risk to you if the equipment is not correctly maintained in accordance with its operator's manuals. These can be found at www.newtontrailers.com resources page.

Please ensure that you understand the specific floor operation before you use it. Ask for specific training from us before use, or from your employer. Never use without training or instruction.

Secondary danger zone. Floors have a secondary danger zone underneath the trailer. The drive mechanism is unguarded underneath the trailer. There is danger of entrapment and crush injuries. Do not enter this area unless trained and qualified to do so.

Check that there are no people inside the trailer or in the two danger zones and test the electric or manual controls for correct operation before use. Check that the floor will move forward load; move backwards unload; stop; and all emergency stops, are working.

Periodically check the filters on the trailer and replace every six months. Check that the oil is not degraded on the tractor unit and is replaced periodically. In our experience this is not done sufficiently or often enough by operators. We remind you that you should do so here.

Third danger zone. There is a third danger zone in the body caused by the moving floor. Beware of trap hazard at the rear of the floor of the trailer and at the front of the trailer. Stay away from these areas when the floor is in operation.

Check the front of the trailer floor planks above the fifth wheel for debris and build-up of waste materials. Material can build up here like a rats nest and can stop the floor from moving; compress and break the planks; compress and push out the front headboard of the trailer. It can also become a fire hazard. Clean out regularly.

Check the rear floor plank condition of the trailer. Floor planks should operate with tolerances that do not trap fingers etc. If poorly maintained and components such as end caps are broken away then trap hazard is raised. Do not use without all original fittings in place. Keep body away from this when moving.

Ensure that the top rail is clean and free of debris. Check that the moving internal headboard is free moving from the front of the trailer to the back. Always stow moving headboard to the front of the trailer.

Sheet components are basically the same as tipping trailers with the problem of additional height. Sheet components often have the double role of holding the sheet up to prevent it sagging into the trailer and also mechanically supporting the side walls.

A walking floor is basically a big box like a shoe box. Mechanically it is a very big task to ask a shoe box to hold 28 tonnes of payload. The side walls are tall and thin. It is very easy to mechanically overload the capability of the side walls – rip or burst them and the same for the doors and headboard. The manufacturers have calculated the strength and life of the trailer based on all the components being well maintained and kept in place. The overhead sheet supports are the weak link in a moving floor. They are necessary to hold the trailer together but they are vulnerable to impact and removal by loading equipment and the product carried. They must be regularly inspected and replaced when damaged or removed. Failure to do so will cause failure of the box.

Top rail impacts. Walking floors are physically tall – mostly between 4 and 5 meters total height. Great care is required when loading the trailer to prevent physical damage by the loading method – a 15 tonne bucket for example – eating the top rail. Mechanically the top rail is providing much of the strength to the box and therefore damage must be avoided.

[Moving Internal Headboard](#)

The moving headboard must be operated only after the appropriate training and whilst under your risk assessment and or site risk assessment.



Picture Knapen: Moving headboard undergoing maintenance

Entering the body of the trailer to operate the moving headboard manually requires the checks discussed earlier on the use of tipping trailers.

Door opening

Ladder access to the rear of the trailer.

Some walking floor trailers are equipped with a moving internal headboard, a clean sweep or a plough system. Clean sweeps and plough systems will have a full instruction manual on their use. They are procedurally very important to follow in every detail and these specific procedures followed to ensure your safety.

The moving floor system may leave residue product on the base of the trailer. A moving headboard solves this problem by 'sweeping' like a plunger the length of the trailer to clean out the floor residue. It moves passively using friction and the weight of material resting on a small mat attached to the travelling headboard. The headboard is suspended on both top rails using travelling runners or chariots or rollers. To review this look at our video on www.newtontrailers.com

It is important to maintain the headboard, chariots and top rails to keep the functionality of the moving headboard. Checks are as follows:

Ensure that the top rails allow unfettered travel of the chariot along it. Do so by mechanically cleaning out the top rail channel at least once a week.

Check the function of the chariots. Replace as required – typically every 6 months. Available on our parts website www.newtontrailers.com

Check the security of the headboard attachment to the chariot. The headboard weighs 200 kgs and will hurt if it lands on you. Ensure that there are no cracks or defects in its attachment.

Check the mat at the base of the headboard. This will wear out and will need replacement.

Check the stop bolts/ mechanism that stops the chariot from popping out of its channel at the rear of the trailer. Maintain and replace as necessary.

Check the stowage of the moving headboard at the front of the trailer and that the mat can be secured back to the headboard when the headboard is not in use.

Be aware that the moving headboard if not stowed at the front of the trailer can move along an empty trailer during travel. This means that when you arrive at your destination the headboard is at the rear doors. This is not a danger to you when you open the door but the headboard will be at the wrong end of the trailer for loading the product. The product will then be loaded with the headboard blocking the exit.

Clean Sweeps and Ploughs

These are a variant on the internal moving headboard but they are usually powered to return to the front of the trailer after use. Personally I do not like them and think they are bad news but horses for courses.

The moving headboard must be operated only after the appropriate training and whilst under your risk assessment and or site risk assessment.

The instructions for the passive internal moving headboard apply here and should be followed.

The return mechanism will be individual to the trailer manufacturer and plough or sweep fabricator. Please follow their guidance carefully.

Ensuring that the plough or sweep is fully retracted to the front of the trailer before loading is very important. Be aware of the moving components and the trap hazard of the return strap mechanism. Ensure that all components are correct before every work shift and every use.

Loading a Walking Floor

This is the same as for a tipping trailer.

Never load uncoupled.

Other elements peculiar to a floor may include.

Ensure that the moving headboard plough or clean sweep is at the front of the trailer.

Make sure the rear door, front access door and side doors are closed correctly and safe.

Make certain that the sheet supports are in their correct and loaded position.

Make certain that there is no one inside the trailer before loading.

Make certain that there is no one in the Danger Zone around the trailer. The Danger Zone is a circle around the trailer of about 5 meters all around. Stay out of this area when loading. Maintain good communications with loading team.



Picture: Loading a moving floor on site. Be aware of the danger zone

Load trailer evenly and stay within legal permitted weight for your combination. Redistribute the weight if necessary before travel.

Ensure that load is not resting on the top rail after loading.

Sheet up or cover up the trailer as per the instructions in the tipping trailer section.

Travel when safe to do so.

Loading with pallets and other products.

It is possible to load a vast range of products on a moving floor. It is beyond the scope of this document to cover all products. You must maintain your own risk assessment for such operations or that of the site operator you are at.

DO use the floor mechanisms instruction guides. Copies can be downloaded at our site www.newtontrailers.com for both Cargo and Keith Mechanism

Pallets can be walked onto a trailer.

Most trailers will take dock loading similar to a box van or a curtain sider. This should fall within your own risk assessment.

If using the floor mechanism to load it is best to stay clear of the danger zone and use the remote control to operate the loading mechanism. Always ensure that you are able to operate the emergency stop on the remote or on the trailer during operation.



Picture courtesy of Knapen: Remote control floor, doors, roof. Make sure you are the one in control

Do stop the load when it has reached the front of the trailer. Good judgment and awareness are required. You can count the known number of pallets and use calculation and then caution. Listen for the arrival of the pallets at the front and then stop. DO not continue to walk the pallets or any other load once it has arrived at the front of the trailer. It will damage the front kick plate or the headboard to move 29 tonnes of product against it!!

Do ensure that the load is secure inside the body and cannot move or fall during transit. Make sure that load cannot move suddenly causing risk of wall/ door puncture or penetration. Make sure the load cannot move suddenly in transit to cause over turn of the trailer during braking, acceleration, downhill, uphill or cornering.

MOST modern floors are tested to withstand load forces when on the road but older floors pre 2007 will not have been.

Some floors have load securing positions inside the trailer. They will be rated to known capabilities. It is your responsibility to secure your load internally and safely.

Discharging a Walking Floor

This operation should be performed by a trained operator, performing within their own risk assessments and site operation instructions.

Please read the floor mechanism instruction manuals before use. These are available at our website to read or to download www.newtontrailers.com. I have also listed the Cargo Floor manual in the annex. If in any doubt do not operate the trailer. Ignorance is not bliss or an excuse.

The items listed in the tipping trailers unloading section should be fully applied to the discharge of a moving floor – the danger zones etc.

The floor mechanism is the operators to control. It normally has a direction control – load/ unload

A stop/start control.

An emergency stop control. Normally a red 'hit' or 'slam' button.

These controls are either fixed onto the chassis or on a wired remote control or on a wireless remote control. They can be duplicated on the trailer and the remote.

Make sure that it is clear that only a SINGLE operator is in control of the trailer mechanism.

This operator must be able to operate the EMERGENCY STOP button at all times. The trailer should not be left running whilst you go get a cup of tea for example. That would be stupid..... But you would not believe how many times that occurs. Do not be that person.

The speed of load or unload cannot be altered by the controls. The speed that the floor cycles at is controlled by the flow of oil around the circuit – this throttle or rate of discharge is set by the tractor unit – partially by the pump and PTO ratios and partially by the engine revolutions. I.e. high revs increase oil flow increases the number of cycles per minute that the trailer loads/ or unloads at.

Standard floors potentially move at about 12 complete cycles per minute. The payload therefore travels 12 cycles per minute on the discharge cycle. The bed length of each cycle is typically 25 cm. Therefore the load discharges at 12 x 25 cm per minute = 3 meters per minute.

IF the trailer is 13.6 meters long it will take 13.6 meters divided by 3 = 4.5 minutes to discharge.

With careful monitoring you will be able to perform your own calculation on how long/fast your own floor tractor unit and trailer combination takes to discharge. Experience shows the fastest floors take 4 minutes the slowest 12 minutes.

The product type and its internal properties – friction and cohesion will vary the rate of discharge. If the bulk material moves freely as a coherent block then fast discharge. If the bulk material bridges or clings to the sides of the trailer 12 minutes.

The operator can monitor/observe from a safe position the flow of materials passing out of the trailer. The operator can stop/start the flow to allow the product to clear from behind the doors.

The floor controls can be over ridden on the valve settings. This should not be done. The trailer should never be set to discharge as soon as the PTO is engaged. This is very bad practice but often observed on waste and landfill trailers and discharge only trailers.

ALWAYS make sure the doors are open BEFORE starting the floor mechanism. You will walk the doors off if they are closed.

Refer to door opening protocols listed earlier for tipping trailers and to your owner's manuals or risk assessments.

ALWAYS make sure that the trailer and tractor unit have the brakes fully applied. The unloading process will push the trailer and truck forwards.

The load needs somewhere to go:

Always discharge on level ground. The floor cannot discharge up a slope.

At some point during discharge the load needs somewhere outside to go to. There is potential for a block of material to form behind the trailer and stay where it is. This will push the truck and trailer forward. Eventually an equilibrium will be reached where the block of material behind the trailer builds to a point where the force of the load remaining inside can no longer push material out of the trailer. If necessary stop the discharge. The load may need to be walked back on to the trailer a couple of cycles to take the pressure off the heap of discharged material at the rear of the trailer.



Picture: A load needs somewhere to go

Some site operators allow the floor to be discharged with the driver in cab and the trailer moving forward at the rate the product discharges. This allows a block of material to form the same length and size as the trailer. This requires specific training of the operator and appropriate risk assessments.

Remember to stop the floor mechanism using the emergency stop at the end of discharge. This stops the power running to the solenoid valves and prevents 'burn out' of these valves. These solenoid valves are available at www.newtontrailers.com for sale. It also removes the possibility of walking the floor either unload or load if the PTO is engaged by accident.

Landfill operation: all bets are off. Landfill is an area of operations to which floors bring a lot of benefits over tipping trailers. However the nature of landfill is that they should not be entered into by an untrained operator of this equipment. Site protocols and risk assessments must be followed. It is beyond the scope of this guide to help you on a landfill – it is perhaps beyond the range of any guide! Hopefully land fill operations will eventually be banned by Health and Safety for the terrible operation that it clearly is!

Tyres must be checked after all discharge operations – especially landfill

All normal trailer checks must be performed as previously described. Doors safely closed, materials cleared from around the door and lights, sheeting or net systems closed.

Remember to uncover the rear lights with the hinged light protection system if the trailer has one.

Check light function – especially rear light protection as this may have become damaged during discharge.

Light Protection

Many walking floor trailers are equipped with hinged rear light protection. If you have this use it. There is normally an alloy flat sheet that can be released and pinned in place over the lights to protect them from the product as it falls back towards the under run bar of the trailer.

Emergencies

Follow your risk assessment and site operator's instructions in full.

Notify emergency services if there is spilling or discharge load.

Report all incidents if there is damage to vehicle; injury to person; spillage of any product.

PPE Personnel Protective Equipment

Appropriate protective clothing should be available and worn when necessary.

This will include

Boots – capped

Goggles

Gloves

Hard hat

Trousers/overalls

High visibility vest, jacket, and sometimes trousers.

Further Information

Source materials:

The online community is awash with good reading material on safety on tipping trailers and moving floors. Mostly any guide will be good for any trailer. But when you get to the legal side of why your hand is missing you will be best to look at the specific guide for trailer/mechanism at the time you collected it/rented it etc.

www.newtontrailers.com has most/all the guides, manuals, spare parts etc. THE AUTHORITY in my opinion but I might be a bit biased/obsessive/sad. We do keep a number of manufacturer specific guides online as we want to put your safety ahead of our sales. We beg the understanding of our competition in this regard not to sue us for putting their safety manuals online.

www.knapen-trailers.eu/safety has a continuously evolving online manual. Available on our website www.newtontrailers.com as a pdf download.

www.stas.be has guides for STAS tipping trailers and moving floors – they are excellent as I co-wrote them. They have pictures too which helps the hard of hearing.

www.cargofloor.nl for Cargo Floor mechanisms, safety manuals, operators guides, spare parts – basic but limited mainly to the mechanism. Has videos.

www.keithwalkingfloor.com for Cargo Floor mechanisms, safety manuals, operators guides, spare parts – basic but limited mainly to the mechanism. Has videos.

www.edbro.co.uk tipping trailer cylinder and tipping trailer usage. A good basic tipping guide. Also repeated on our website: www.newtontrailers.com on the resource page. Also found at the end of the document. With great thanks to Edbro

www.hyva.co.uk tipping trailer cylinder and tipping trailer usage

www.vishay.com tipping trailer weighing operations and guides. Some overlap with safety.

www.muldoontrailers.com excellent safety and instruction guide for blowing trailers. Also available on www.newtontrailers.com

<http://www.sdctrailers.com/uploads/documents/tippers.pdf>

Annex

Lift Axle Controls

Modern trailers normally lift and drop the lift axle (if fitted) automatically. Many are fitted with low speed over ride functions to allow traction assist. Rear lift axles are sometimes fitted to shorten the wheel base and allow faster turn in at low speeds. They reset at approximately 15 kph.

Common Floor Problems

Prior to starting a thorough fault investigation (see §7.2 and §7.3) it is advisable to first run through the most common causes which are listed below:

- Have the emergency stops been pulled out?
- Is the oil reservoir full?
- Does the pump reach the required oil volume at 240 bar?
- Has the system been connected in the correct manner?
- Is the pressure relief valve set to 210 bar?
- Is the PTO system switched on?
- Have the quick-couplings been fully and correctly connected?
- Is on/off valve switched on?
- Is there sufficient voltage for electrical operation?

- Have the tractor lights been switched on?

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Problem Solving

THE BODY STOPS ON THE WAY UP

Lower the body as slowly as possible. Then make sure:

- The body is not overloaded or badly distributed
- The oil in the tank is up to dipstick level (refer page 16).

THE BODY WILL NOT STAY UP WITH THE TIPPER LEVER IN 'HOLD'

Put the tipper lever back in 'raise' and lift the body. Then:

- rev the engine until the relief (overload) valve blows, i.e. until you hear a high pitched noise coming from the tipper valve (page 3)
- keep the engine revs going for five seconds
- put the tipper lever in 'hold'.

If the body still will not stay up, lower the body.

EXCESSIVE NOISE

- check the oil level
- check pipes for kinks and leaks.

Correct Use

This hoist is designed to be assembled into a tipping vehicle for the movement of bulk commodities. This manual is intended as a general guide for safe tipping but more specific safety guidance should be supplied by the bodybuilder depending on the nature of the equipment. The bodybuilder can also advise on the maximum load capacity of the equipment, bearing in mind the hoist capability and road traffic regulations.

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Identification

The hoist is identified by a serial number plate on the inlet feed port (see opposite).

The serial number and model code should be quoted in all correspondence.

The date of manufacture is quoted as a week number/year.

Serial numbers for Edbro PTO and pumps are stamped on the casing or on a separate plate.

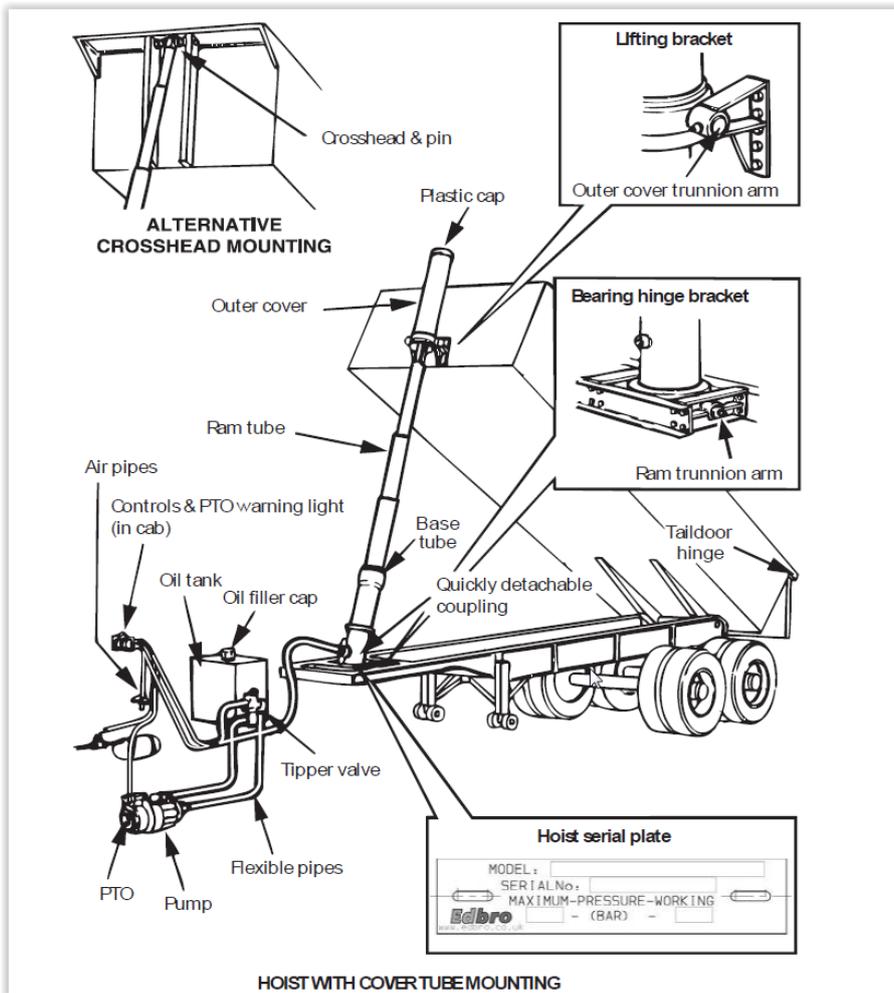
Familiarisation

Before using this equipment, familiarise yourself with the key features opposite. The position of the hydraulic parts may vary depending on specification.

Before putting into service, confirm that the equipment is in good working order.

Check:

- Hoses and fittings for abrasion and leaks
- check security of hoist and hinge mountings
- check oil level
- check, where applicable, that quickly detachable couplings are tight
- check PTO warning light is working.



Edbro Diagram

Safety

Tipping is always hazardous and sometimes dangerous. Vehicles can be overturned by sticking loads, poor ground conditions, high cross winds or bad practices such as tipping on a side slope. So:

- do not tip until you have read and understood this manual
- remember the hoist (tipping gear) is designed to lift; it is not a stabiliser
- If the vehicle overturns, any damage to the hoist is the RESULT and not the CAUSE of the turnover
- avoid accidents by following the safety code on pages 6 and 7
- It is the responsibility of the operator to ensure that drivers are suitably trained in the use of this equipment.

Operating Pressure

Normally this hoist must only be operated up to a maximum rated pressure shown on the identification plate. Normally this is 175 bar, but it may lower if there is a technical limitation applied. Alternatively it may be possible to use the cylinder at a higher pressure if this is specifically agreed with the bodybuilder. In such cases, the bodybuilder will be responsible for displaying the maximum pressure.

The hoist works best if the vehicle is fitted with matching Edbro hydraulics (PTO, pump, valves, oil tank, pipes and controls).

If the vehicle has Edbro hydraulics, NEVER TRY TO ALTER THE PRESSURE SETTING OF THE RELIEF (OVERLOAD) VALVE. The valve is pre-set at the factory. If the tractor has non-Edbro hydraulics make sure they include a pressure relief (overload) valve which is:

- Capable of accepting the maximum flow from the pump
- set correctly for this application

This is very important. The lack of a correct pressure relief (overload) valve can be VERY DANGEROUS.

Safety Code

ALWAYS

- keep the tyres at the correct pressure
- spread the load evenly in the body
- For articulated units, make sure the trailer is coupled and in line with the motive unit
- make sure the danger area is clear of people and obstructions (refer opposite)
- During tipping, stay in the cab at the controls; if danger signs develop (for example, if the body starts to lean to one side or the load sticks) immediately lower the body
- prevent the discharging load from piling up and fouling on the tail door by driving forward VERY SLOWLY BY NO MORE THAN A METRE AT A TIME
- Just before loading, move the control lever to lower to ensure that no oil is trapped in the cylinder and the full load rests on the chassis.

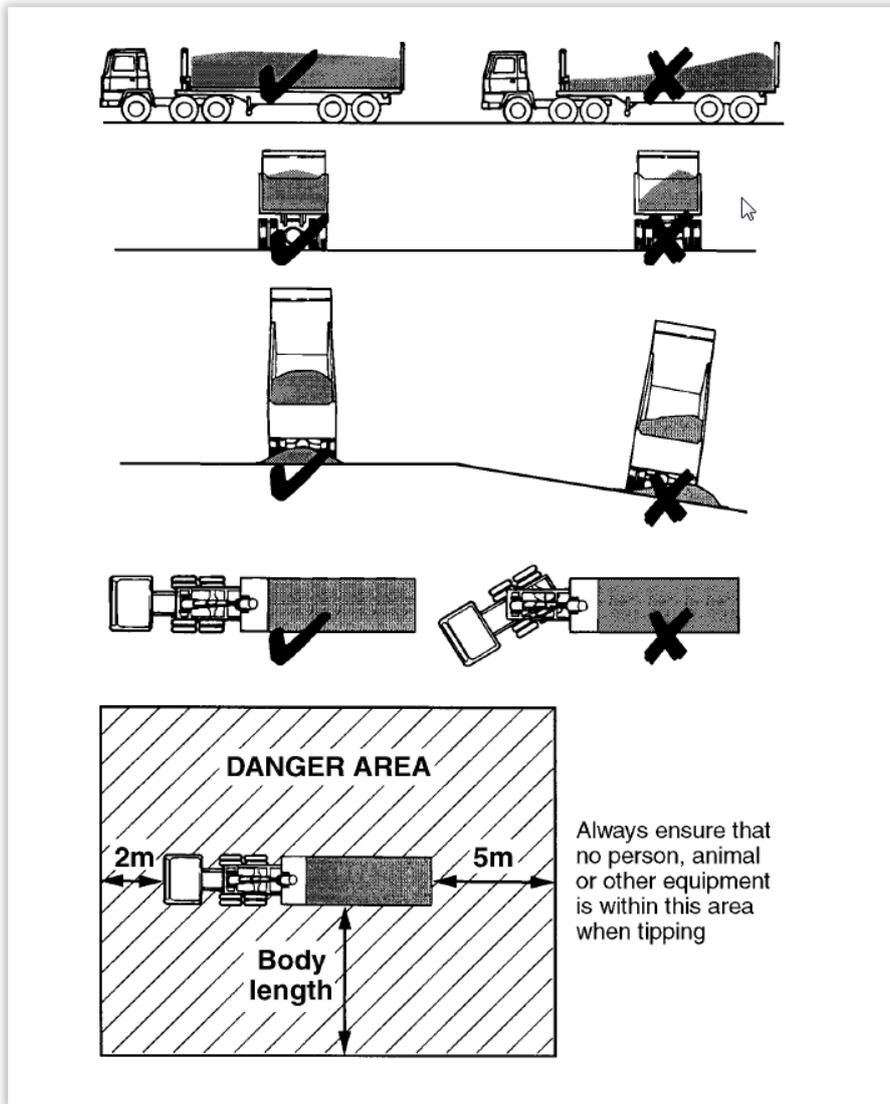
EXTRA CAUTION

Be particularly careful in frosty weather. Frost can cause wet loads to stick

NEVER

- overload
- alter the pressure setting of the relief (overload) valve
- put the tipper lever in 'tip' unless you are actually tipping
- tip an uncoupled trailer
- Tip in high winds

- Tip on a side slope
- Tip with the body within 5 metres of overhead power lines
- shake the load free
- drive off with the body up or the PTO engaged. This could damage the equipment
- leave the body up overnight
- leave the tractor with the ignition key in
- go under a raised LOADED body
- go under a raised EMPTY body (unless it is propped)
- uncouple the trailer unless the body is down and the PTO is 'out'
- Steam clean the exposed cylinder tubes, this will cause corrosion
- Climb on the equipment by any means other than that provided by the bodybuilder.



Edbro Diagram

Controls

Your Edbro hoist works best if the vehicle is fitted with matching Edbro hydraulics (PTO, pump, valves, oil tank, pipes and controls). The PTO and tipper controls are combined in one unit and work off the vehicle's air system (fig. a). The PTO control switch is fitted with a PTO engaged warning light. The tipper control is a lever with four safety features:

- A spring-loaded device stops it from being accidentally moved into 'raise' or 'lower'

- a spring return to 'hold' from 'raise' position, known as a dead man's handle function, ensures the driver keeps his hand on the tipper control **all the time** the body is being raised

- When the lever is moved from 'hold' towards 'lower', the PTO is

- *automatically disengaged; this internal mechanical feature prevents PTO, pump or gearbox damage if you forget to disengage the PTO before driving off

- Controlled lowering (feathering) regulates speed of descent for loaded or part-loaded bodies. This type of control is recommended for conformity with European standards. Other controls are available but, if used, the bodybuilder will need to ensure that all Essential Safety Requirements are covered by other means. For example, separate controls are available (fig. b).

- *Alternative combined controls **without** automatic PTO disengagement feature (for spreading or static discharge applications) are available.



Fig. a. Combined PTO & tipper air controls



Fig. b. Separate tipper air control

Edbro Diagram

How to Lift Body

Make sure the handbrake is on, the gear lever is in neutral, the tipper lever is in 'hold' and the PTO switch is 'out'.

Then:

- If fitted, lower the rear stabiliser legs
- unlock the tail door or grain hatch (taking care to stand clear)

- return to the cab, start the engine and make sure the air pressure is at the level recommended by the manufacturer
 - remain in the cab until the tipping operation is complete
 - depress the clutch* and wait 4 seconds (8 seconds for a gearbox with a rear mounted PTO)
 - press the safety latch and switch the PTO 'in' (the warning light will come on)
 - release the clutch
 - make sure no-one is within the danger area (see page 7)
 - move the tipper lever to 'raise' and hold in position. Releasing pressure on the lever will stop the body lifting
 - raise the body SMOOTHLY by varying the engine revs but NEVER EXCEED 1500RPM
 - prevent the discharging load from piling up and fouling the tail door by driving forward VERY SLOWLY BY NO MORE THAN A METRE AT A TIME
 - When the body gets to the tipping angle you want, release the tipper lever to 'hold'
 - If you need to spread the load, release the handbrake and drive forward VERY SLOWLY.
- * If you have an automatic gearbox, the PTO operation will be different. Refer to the PTO installer for specific instructions.

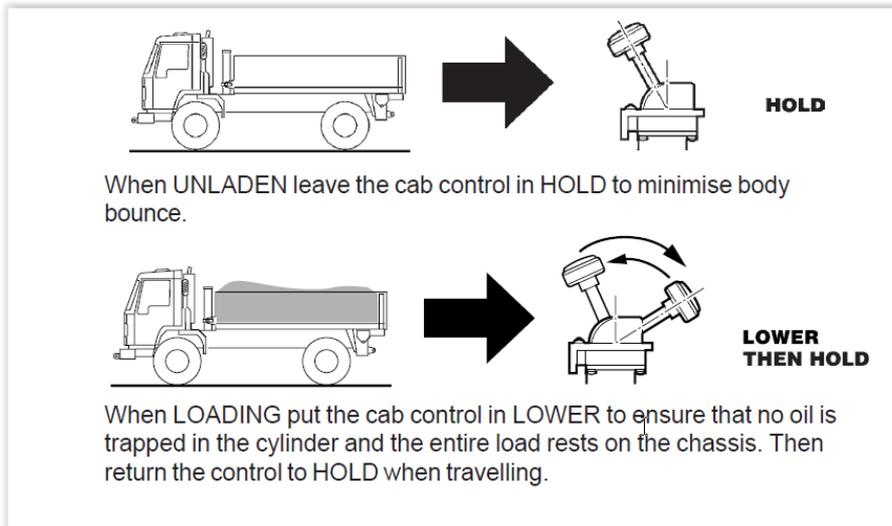
How to Lower the Body

Make sure that no-one is in the danger area (see page 7). Then:

- SLOWLY move the tipper lever out of 'hold' towards 'lower'; this will automatically disengage the PTO and the warning light will go out. If automatic PTO disengagement isn't fitted, switch the PTO to 'out' before driving off
- regulate the speed the body comes down by moving the lever towards 'hold' to slow it down or towards 'lower' to speed its descent
- When the body is down, move the lever back to 'hold'
- lock the tail door
- If fitted, raise the stabiliser legs.

DO NOT DRIVE OFF UNTIL THE BODY IS FULLY DOWN. MAKE SURE THAT THE PTO IS DISENGAGED BEFORE DRIVING OFF.

When Driving



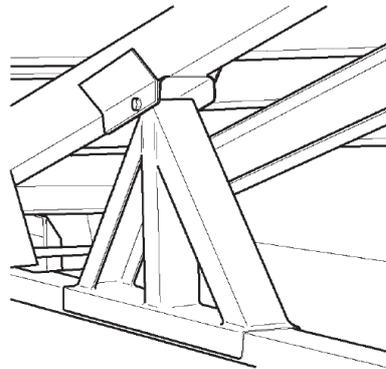
Edbro diagram

Safety during Maintenance

A body prop is considered by Edbro to be an Essential Safety Requirement. A prop must always be used if maintenance needs to be undertaken with the body raised.

- Never attempt to prop a loaded body
- use a prop designed to locate securely between the body underframe and chassis
- The prop must be between body and chassis, not between the body and the round
- lower the body gently onto the prop to minimize damage
- confirm that the prop is sufficiently strong to carry the bodyweight.

It is the operator's responsibility to ensure that only fully trained personnel repair or service this equipment. If necessary, contact your local service agent for assistance.



Typical body-prop arrangement

Edbro Drawing

Routine Maintenance

WEEKLY

Make sure the body is down, the handbrake is on and the engine is switched off. Then top up the oil in the tank to dipstick level with clean hydraulic oil (refer page 17). Use a grease gun to lubricate the points shown in the inset diagrams on pages 15 or 16 with a good quality, multipurpose grease.

MONTHLY

Grease the tail door hinge and locking mechanism. Where appropriate, check that the quickly detachable couplings seal when uncoupled. Replace any worn or damaged flexible pipes. Make sure all flexible pipes are secured to the chassis and are not hanging loose. Check the outer cover fixing studs are tight. Tighten any loose pipe connections.

Check and tell your Edbro service dealer if:

- The outer cover (where applicable) is loose (side-to-side or rotating)
- Any ram tube is damaged
- The ram trunnion arms, the outer cover trunnion arms, or the rear hinge brackets are worn
- Oil is leaking from the ram tubes, tipper valve, PTO, pump or flexible pipes
- Air is leaking from the air pipes
- Air is leaking continuously from the controls

THREE MONTHLY

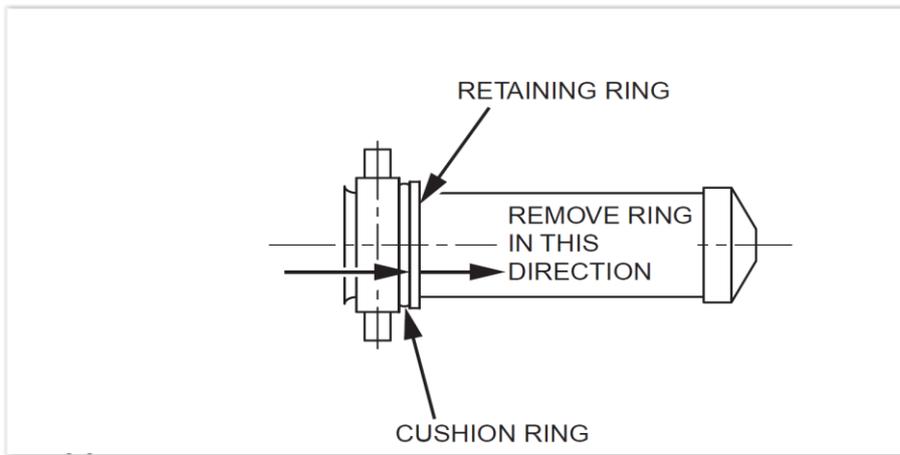
Use spanners to check the tightness of the fixing bolts on the tipper valve, PTO and brackets.

YEARLY (more often in dusty or dirty conditions)

Drain and refill the tank with clean hydraulic oil (refer page 17). In order to protect the environment, ensure that no oil is spilled when draining, and old oil is disposed of correctly.

ANNUAL INSPECTION OF OUTER COVER ASSEMBLY

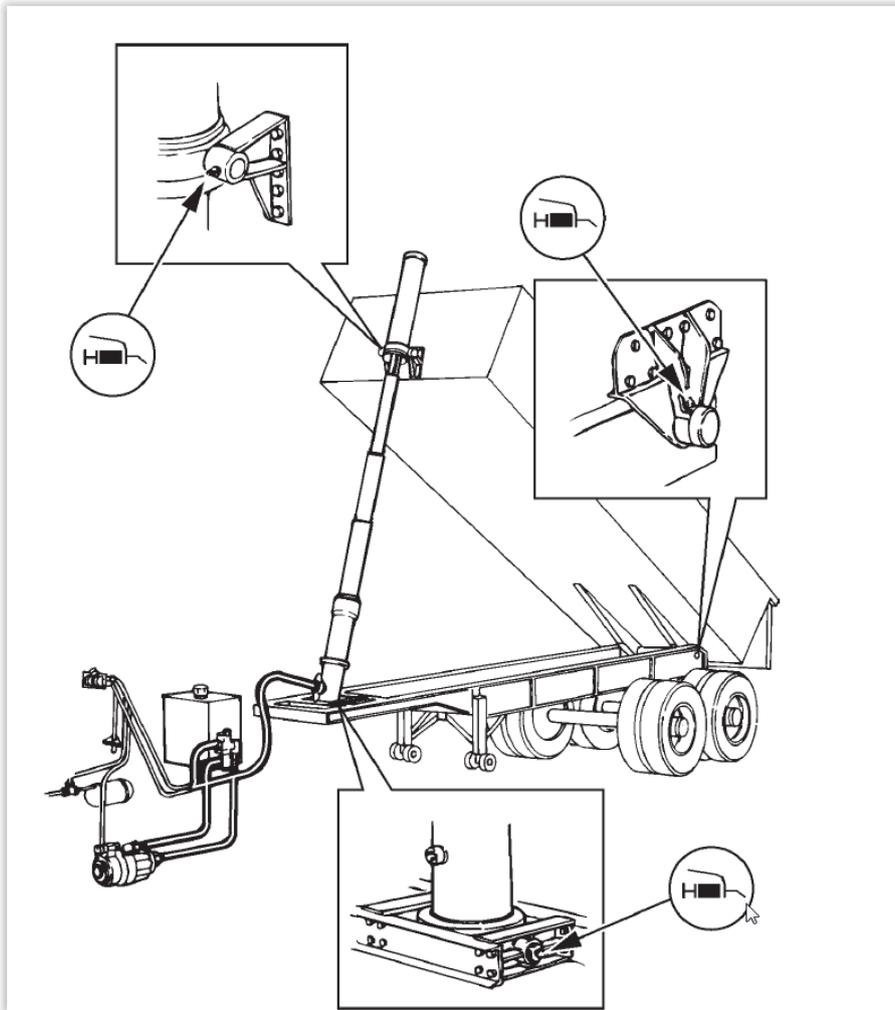
For older cylinders it is important to check for corrosion of the outer cover tube in the area behind the trunnion ring. This is particularly important where the equipment is used in a coastal/salty environment or is regularly power washed.



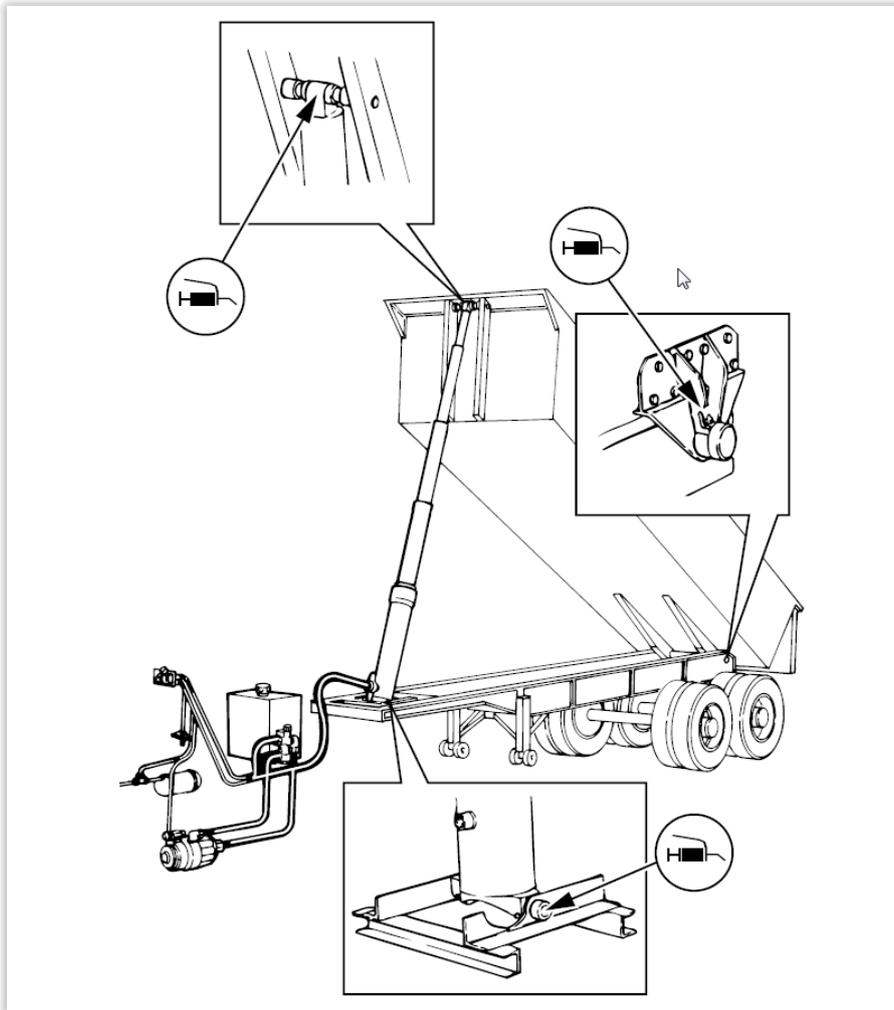
Edbro diagram

PROCEDURE

1. Remove rubber anti-rattle ring by levering out above top retaining ring.
 2. Visually inspect the exposed tube for signs of excessive corrosion.
 3. Serious scaling or perforation requires the cover to be replaced.
 4. Return the rubber cushion ring to the normal position after inspection.
- Depending on the specification of your equipment, other maintenance checks may be required. These should be advised by the bodybuilder/installer.



Edbro diagram



Edbro diagram

The following action can be taken without special tools. If unsuccessful, call your nearest Edbro service dealer (refer to www.edbro.com).

THE HOIST IS JERKY OR SLUGGISH

Air may be trapped in the system. Check oil level and then operate the hoist to full stroke several times; any air will be dissipated back to the tank. (See page 18)

THE BODY WILL NOT TIP

Make sure:

- The vehicle air pressure has had enough time to build up (see vehicle operator's manual)
- The oil in the tank is up to dipstick level (refer page 17)

- The PTO switch is 'in' and PTO is engaged (oil is circulating)
- The tipper lever is in 'raise'
- There are no kinks in the oil pipes
- The quickly detachable couplings of the tractor and trailer, where

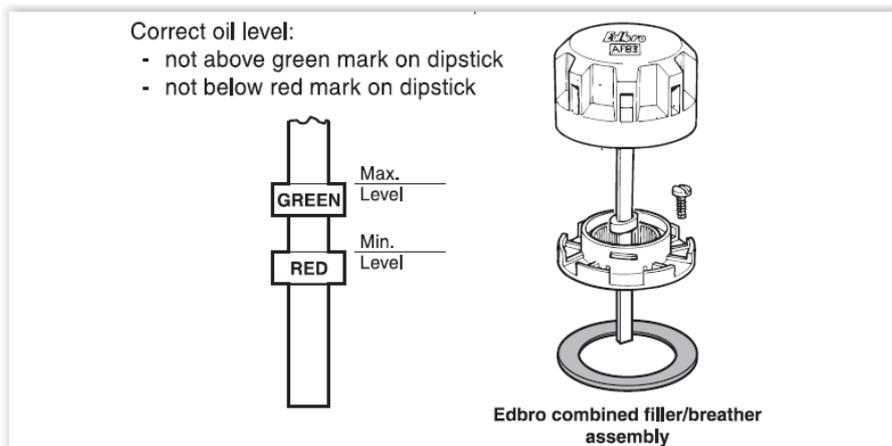
Oil

Dirty oil is the enemy of a hydraulic system. The cleaner the oil, the more efficient the hoist's operation and the longer it's life. So always use clean hydraulic oil for topping up or changing the oil in the tank. Use oil to specification ISO6734/4 HM32 for temperatures between -20°C to +30°C. Typical suitable trade names are:

CASTROL	AWS32
ESSO	VG32
GULF	HYDRASIL 32
MOBIL	DTE24
SHELL	TELLUS 32

For other climates seek advice from your local distributor or direct from Edbro. Never put used oil in the tank.

To determine the oil level, remove the filler cap and check that the level is within the max. /min. marks as shown:



Edbro diagram

Bleeding the System

If the hoist judders in 'LOWER', or the tubes operate out of sequence when lowering, there may be air in the system. For early cylinders without a bleed screw (approximately, serial numbers before LG017000 / LH002100) bleed the system as follows:

- loosen the pressure outlet hose from the pump a little

Bleeding the System

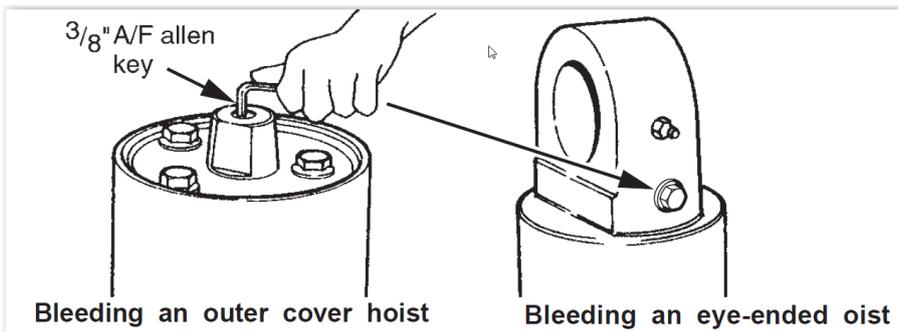
- loosen the hose connection at the cylinder
- Then with the pump running at low speed, put the control valve into 'TIP'. After a few seconds any air will have escaped and the connections can be tightened.

Warning: Take care to guard against the escape of high pressure oil

- tip the hoist to full stroke and leave the pump running on engine tick-over with the control in 'TIP' for approx. 5 minutes. This will purge the cylinder of air through the oil into the tank and filler/breather
- if the hoist still shows signs of trapped air, tip the body to full stroke a further 10 times, and at the end of each stroke leave the cab control in 'TIP' for about 30 seconds before lowering
- Finally, re-check the oil level

For later cylinders with a bleed screw (approximately, serial numbers after LG017000 / LH002100).

- lift the body to about 300mm (12") above the chassis frame
- put the tipper lever in 'HOLD'
- locate the bleed screw and slacken about one turn
- The body will come down slowly and force the air out of the system
- When oil flows freely, tighten the bleed screw
- If the hoist is still jerky, or sluggish, repeat the whole procedure
- lower the body, and top up the tank with clean oil
- replace the plastic cap on top of the outer cover



Edbro Diagram

Problem Solving

The following action can be taken without special tools. If unsuccessful, call your nearest Edbro service dealer (refer to www.edbro.com).

THE HOIST IS JERKY OR SLUGGISH

Air may be trapped in the system. Check oil level and then operate the hoist to full stroke several times; any air will be dissipated back to the tank. (See page 18)

THE BODY WILL NOT TIP

Make sure:

- The vehicle air pressure has had enough time to build up (see vehicle operator's manual)
- The oil in the tank is up to dipstick level (refer page 17)
- The PTO switch is 'in' and PTO is engaged (oil is circulating)
- The tipper lever is in 'raise'
- There are no kinks in the oil pipes
- The quickly detachable couplings of the tractor and trailer, where applicable, are clean and screwed together tightly
- No air is leaking from the air pipes.

THE BODY WILL NOT LOWER

Check PTO has disengaged and warning light is out.

Put the tipper lever back in 'raise'. Then:

- rev the engine until the relief (overload) valve blows, i.e. until you hear a high pitched noise coming from the tipper valve (page 3)
- keep the engine revs going for five seconds
- lower the body (page 11).

If the body still will not come down, put the tipper lever in 'hold',

PROP THE BODY, switch the PTO to 'out' and turn off the engine.

THE BODY STOPS ON THE WAY UP

Lower the body as slowly as possible. Then make sure:

- The body is not overloaded or badly distributed
- The oil in the tank is up to dipstick level (refer page 16).

THE BODY WILL NOT STAY UP WITH THE TIPPER LEVER IN 'HOLD'

Put the tipper lever back in 'raise' and lift the body. Then:

- rev the engine until the relief (overload) valve blows, i.e. until you hear a high pitched noise coming from the tipper valve (page 3)
- keep the engine revs going for five seconds
- put the tipper lever in 'hold'.

If the body still will not stay up, lower the body.

EXCESSIVE NOISE

- check the oil level
- check pipes for kinks and leaks.

Cargo Floor Instruction Section

IMPORTANT RECOMMENDATIONS AND GUIDELINES FOR THE COMMISSIONING

This is available as a download from www.cargofloor.nl it is reproduced with their kind permission.

Before putting the Cargo Floor loading and unloading system into operation, follow the recommendations provided below and check the specified checkpoints to avoid damage to the Cargo Floor system and the vehicle.

Please review the important instructions before operating the Cargo Floor system and loading cargo into the vehicle. Likewise, before loading cargo, check the operation of the various control switches/valves to familiarise yourself with how the system works. We strongly recommend that you perform these checks when picking up the vehicle from the dealer so that a resident expert can answer your questions and provide you with any necessary advice or guidance you may require.

Important:

- Always check that the selected loading or unloading direction is actually activated and occurring!!
- If the system fails to start, turn off the Cargo Floor system and the hydraulic pump and follow the recommendations and guidelines provided below. Do not repeatedly try to start the system as this may result in damage to your Cargo Floor system and/or vehicle.
- After use, turn off the Cargo Floor system and hydraulic pump. Set switches to the "0" position and the lever in neutral. In case of doubt or uncertainty about these recommendations and guidelines, always contact your dealer or an official workshop. The Cargo Floor system comes standard with an operating manual, but if this has not been supplied, please contact your dealer or download it from the official Cargo Floor website: WWW.CARGOFLOOR.COM

A) Always open the vehicle's doors before turning on the hydraulic pump. Note! Build-up of pressure against the doors can force them open, which may cause some of the cargo to fall out of the vehicle. That is why it is always advisable to use the pneumatic lock, if provided.

B) 1. Check that the vehicle's (quick-detachable) couplings are properly connected to the P (Pressure line, min. 20mm) and the T (tank/return line, min. 25mm). Also check that the couplings are fully tightened or slid completely into each other.

IMPORTANT: the pressure and return line connectors may not be reversed or exchanged to prevent dirt or water from entering the lines when connecting them!

2. Before connecting, check that the non-return valves can open easily (check: the non-return valves should open easily when pressed with the finger, if not, potential pressure build-up in the hydraulic lines may be preventing the system from starting).

NOTE: Incorrectly connected or unopened hydraulic couplings will cause serious damage to the Cargo Floor system and the vehicle.

C) The vehicle (pump) must be fitted with a pressure relief valve that is set to 250 bar. If fitted, check that the dual-function lever (function: tipper/Cargo Floor) is in the Cargo Floor position. Pressure may not exceed the maximum adjusted and allowable

operating pressure of the Cargo Floor system. An incorrectly adjusted pressure relief valve can cause damage to the Cargo Floor system and the vehicle.

D) During operation, the (hand) brake of the vehicle must always be applied. You must, however, move the vehicle forward on time to unload it quickly in order to prevent unnecessary strain and wear to the floor and the vehicle.

Use of a wireless remote control is permitted only if it is fully tested before the start of each loading or unloading operation. Always check if the function you have selected is actually activated and taking place. If, for example, you have accidentally pressed the load function when you actually meant to press the unload function, irreversible damage may occur to the Cargo Floor system and the vehicle.

F) During operation of the Cargo Floor system, all existing STOP and control knobs/levers must be freely accessible.

G) The pressure filter element needs to be replaced at least once a year. If the couplings between the vehicle and the Cargo Floor system are regularly removed, it is advisable to check the pressure filter for dirt build-up and replace the pressure filter element more often, if necessary. If provided, also check the return filter (not supplied with the Cargo Floor). Failure to replace a filter element on time may cause damage to or malfunctions in the Cargo Floor system and the vehicle.

H) Moving parts must be shielded. Always maintain at least 10m distance from the Cargo Floor system when it is in operation.

I) In the event of malfunctions/maintenance work, you may approach the Cargo Floor system only if all equipment, including the hydraulic pump, have been shut off, and the Cargo Floor system and the electro-hydraulic aggregate have been disconnected from the power supply and pump.

J) Regularly check and, if necessary, tighten any loose bolts that secure the aluminium floor profiles to the Cargo Floor system. All such checks can simply be performed inside the vehicle itself by qualified personnel. The Cargo Floor system must, however, be turned on in unloaded condition and the person performing the check must place his finger half on the floor profile and half on the bolt. There should be no appreciable movement/space between the floor profile and bolt. Failure to check these bolts may lead to damage to the Cargo Floor system. During this check, a second person must also be present to switch off the Cargo Floor system.

K) Check that the minimum required amount of oil is present (150L). Too little oil in the hydraulic tank will cause damage to both the pump and the Cargo Floor system.

L) Do not allow the number of strokes to exceed the maximum allowable 16 power strokes per minute. Only a Power speed Cargo Floor system may deliver up to 23 beats per minute. A higher number of power strokes can cause damage to the Cargo Floor system and the vehicle.

M) Hydraulic lines, couplings and hoses with very small diameters will cause damage.

N) If the Cargo Floor system fails to start or operates incorrectly, the Cargo Floor system and the hydraulic pump must be shut down immediately. Subsequently, check all the checkpoints before switching the pump and the Cargo Floor system back on. To prevent the oil from overheating, regularly check the oil temperature by CAREFULLY and CAUTIOUSLY touching the line and or oil tank. If either is too hot to the touch, stop touching them right away. **WARNING: TOUCHING OVERHEATED OIL AND COMPONENTS CAN CAUSE BURNS!**

O) The cause of failure or malfunctioning of the Cargo Floor system may also be due to other hydraulic components that may or may not be connected to the same hydraulic circuit of the Cargo Floor system.

P) Jamming of the floor profiles caused by the transport of abnormal loads and or the freezing of the floor or of the product to the floor may result in damage to the Cargo Floor system and the vehicle. Recommendation: in the event of freezing, stop the system and try to find a hall (heated area) to allow the product to thaw.

Q) Because the electrical power supply of the Cargo Floor system is often connected to the lighting circuit of the vehicle, it is advisable to turn on the lighting throughout the operation of the system. Maintenance and repairs to the Cargo Floor system may be only performed by qualified personnel. Use only original Cargo Floor components to ensure maximum reliability and long service life.

S) Maximum cargo weight is subject to the limits set by law and applicable regulations. Even if the system can transport heavier loads, the law determines the maximum limit. Excessively heavy cargo can cause damage to the Cargo Floor system and the vehicle.

T) Check that the correct type and quality of hydraulic oil is used. The use of incorrect oil type may cause damage to the Cargo Floor system and the pump.

U) Check the vehicle for correct voltage. Make sure there are no open electrical connections. A faulty electrical system can cause damage to the Cargo Floor system and the vehicle.

V) Check that the bulkhead, if present, is functioning smoothly and properly. A properly functioning bulkhead ensures that the product is unloaded in a clean and quick fashion. A malfunctioning bulkhead may extend the unloading time and cause damage to the vehicle.

W) Use of the Cargo Floor system by unqualified personnel can cause damage to the Cargo Floor system and the vehicle.

X) Excessively high oil temperatures will cause damage to the Cargo Floor system and other hydraulic components, such as the pump.

Y) It is at all times advisable to stop the Cargo Floor system when all the piston rods are retracted. This is usually the case when the floor profiles are positioned towards the unloading end (vehicle doors). Unretracted piston rods may cause damage to the Cargo Floor system.

Z) To prevent damage to the floor profiles, exercise caution and limit the dump height as much as possible. The transport of unauthorised goods, such as aggressive, corrosive, hot, hard, sharp and viscous materials may cause damage to the Cargo Floor system and the vehicle. Avoid loading and unloading sharp objects. Loads that are softer than the hardness of the floor profiles will extend the service life of your system; if in doubt, use a protective cloth or consult your dealer.

AA) Forklift trafficable. In principle, the floors are completely trafficable and can be driven over by forklifts, but always consult your dealer for advice on the maximum loads allowed on your vehicle. Overloading will cause damage to the Cargo Floor system and the vehicle.

BB) Always return emergency control(s) to their original non-activated position after use.

CC) during the operation of the system, test the temperature of the oil by touching the side of the tank. If the oil is so hot that you cannot continue to touch the tank, switch off the pump to allow the oil to cool off and determine what is causing the overheating. Stop loading or unloading if the oil is too hot, as this will irreversibly cause damage to the Cargo Floor system and the other hydraulic components.

WARNING: TOUCHING OVERHEATED OIL AND COMPONENTS CAN CAUSE BURNS AND INJURIES!

DD) during loading and unloading operations, the load should be spread to give an even weight distribution over the floor area, otherwise the load may stall. Tip: when transporting pallets, place softwood boards of 300 x 18 x 2350 mm to distribute the pressure more evenly.

WARRANTY:

Warranty is subject to prior approval by Cargo Floor B.V.! To request warranty coverage, visit www.cargofloor.com to fill out and submit the warranty application form provided there; do not forget to include your Cargo Floor system number on the form. In the event of an EMERGENCY, operation of the Cargo Floor system can be halted as follows:

- by pressing the stop button on the wired remote control unit;
- by turning all switches to position "0";
- By putting the handle of the control valve in the middle position (only B and A control);
- Turning off the pump;
- Turning off the main switch of the power supply;
- Turning off the motor of the electro-hydraulic aggregate; The WARNING STICKER is attached to the outside of the control cabinet.



The image shows a warning sticker with a blue vertical bar on the left containing the letters 'GB' and a red and blue logo. The main text is in black and red. It features a yellow warning triangle icon followed by the text 'Important tips before the Cargo Floor system can be put into operation:'. Below this are five bullet points: '- Always consult the operation manual first.', '- Always determine and check the direction of transport.', '- People must always maintain a distance of at least 10 metres from a working Cargo Floor system.', '- After use, always switch the Cargo Floor system back to the non-activated neutral (0) position.', and '- By maintenance work, switch off everything and disconnect the Hydraulics.' At the bottom right is the 'CARGO FLOOR' logo with a registered trademark symbol and the text 'HORIZONTAL LOADING-/UNLOADING SYSTEM' below it. The number 'S.006' is printed at the bottom left of the sticker.

FUNCTION OF "E"-CONTROL SWITCHES

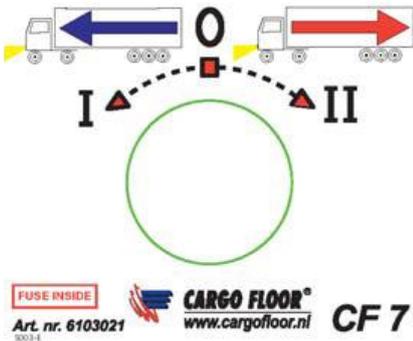
CF 7 SWITCH (EMERGENCY CONTROL)

The CF 7 switch is the permanent switch which is mounted on the frame/vehicle and has 3 switch positions with the following functions:

(Pos I) = loading is activated when you turn the rotary switch to the left.

Pos 0 = stop the rotary switch automatically returns to this position when the switch is released.

(Pos II) = unloading is activated when you turn the rotary switch to the right.



In the interest of safety this switch is fitted with an automatic spring-back for positions I and II, so that it always returns to the central "0" position. This is necessary to prevent conflict situations arising when using the CF 8 remote control.

Mounted below the CF 7 switch, is a connector to which the CF 8 switch or the RX RECEIVER can be connected without the need for any adjustments. Normally, the CF 7 switch should only be used if the CF 8 switch is defective. If, after the initial assembly, the switch does not work it is probably because the connections for the + (brown) and the - (blue) have been swapped around. The supply cable contains a blocking diode which prevents damages arising from the + and - from being connected in reverse. A 2 Amp fuse has been mounted in the CF 7 switch. Never mount a fuse over 3A, this can cause damage to the electrical installation.

CF 8 SWITCH (MAIN CONTROL)

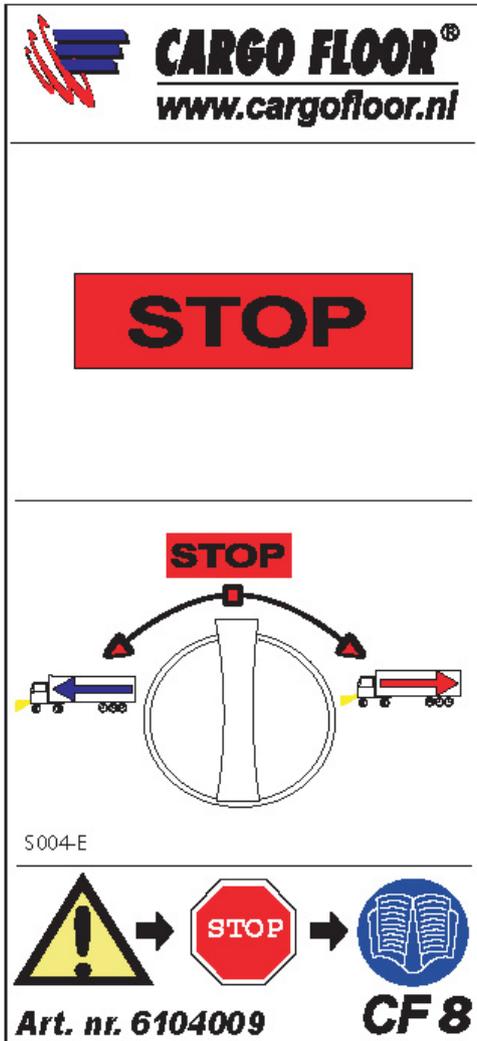
The standard supplied remote control CF 8, with 10 m. of cable, is used for the day-to-day control of the system. The CF8 switch is fitted with the following control buttons:
Red button: the stop button. Press the button to activate it, and deactivate it by turning it to the right, the button will go back by itself.

Rotary switch. This is a rotary switch with three positions.

(Pos I) = loading is activated when you turn the rotary switch to the left. The button will automatically go back to the middle position when the button is released.

Pos 0 = stop

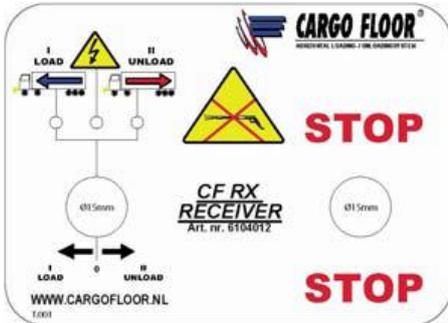
(Pos II) = unloading is activated when you turn the rotary switch to the right to the stop position. This position is provided with a position lock. The CF 8 switch has a plug connector, which can be inserted into the connector of the CF 7 switch and screwed tight. To disconnect this, the duct must be unscrewed, after which the plug can be pulled out. Normally, this plug should always be connected to the connector.



Radio Remote Control (Option)

A radio controlled remote control is available as an option.
This incorporates:

CF RX Receiver which has a plug connector which can be inserted into the connector of the CF 7 switch and screwed tight. To disconnect this the duct must be unscrewed, after which the plug can be pulled out. Normally, this plug should always be connected to the plug should always be connected to the connector.



Red stop button

On the receiver RX a red stop button is mounted, by pushing this button you can stop the system in case of emergency. By pulling it the system will be activated again. Do take care, with reference to the accessibility, that when using a remote control, the door of the switching box CF7 is opened so the red stop button can be operated. This receiver is also supplied with a tilting switch with which the system can be switched.

CF TX Remote Control, this has 3 buttons, which work as follows:

Button one (loading). By pushing this button the system will load, by releasing it the system will stop (or you push to stop the big stop button).

Button two (unloading). By pushing this button the system will unload, by pushing it again the system will stop (or you push to stop the red marked stop button).

Button three (stop). With this button you stop the system.



The switching positions I-0-II (applicable to all switches) energize the following solenoids (provided that they have been connected correctly):

- **Position II (unloading):** only the solenoid of valve A (GS02) is energized. A voltage of 24 VDC (12 VDC) is supplied to the solenoid
- **Position I (loading):** the solenoids of both valve A (GS02) and valve B (G02) are energized. A voltage of 24 VDC (12 VDC) is supplied to both solenoids
- **Position 0:** stop, the solenoids are not energized

IMPORTANT

Before starting to load or unload you must check the following:

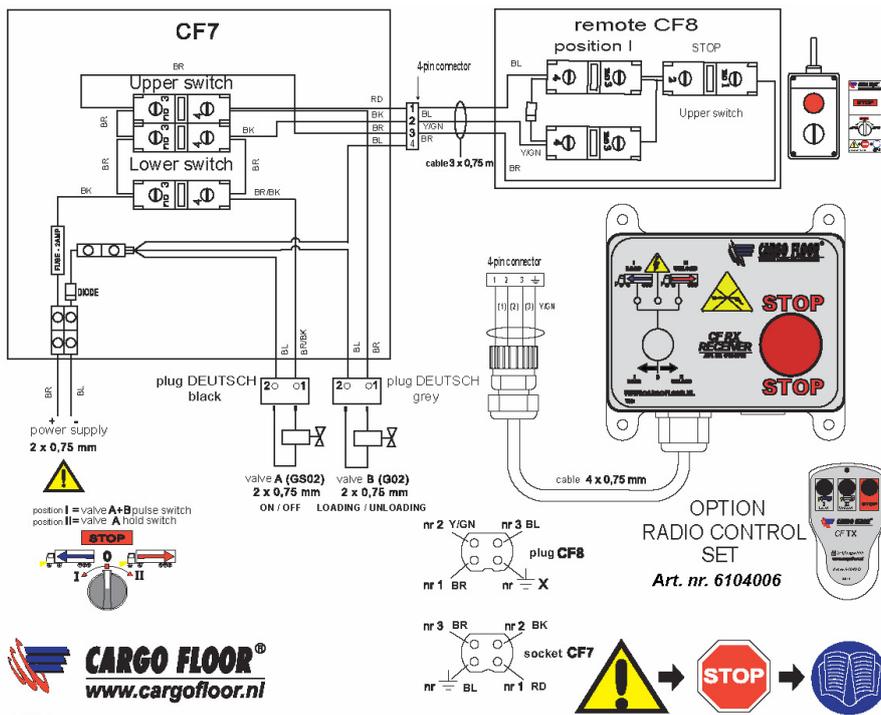
- There must be no people in the vicinity of the system;
- there must not be anything to obstruct the transport of the product (are the doors open?);
- bear in mind which action you want the system to carry out: Loading or Unloading? Immediately check, and continue to check, whether the system is transporting the product in the correct direction.

When loading pay special attention to ensure that the product is not pressed up against the bulkhead.

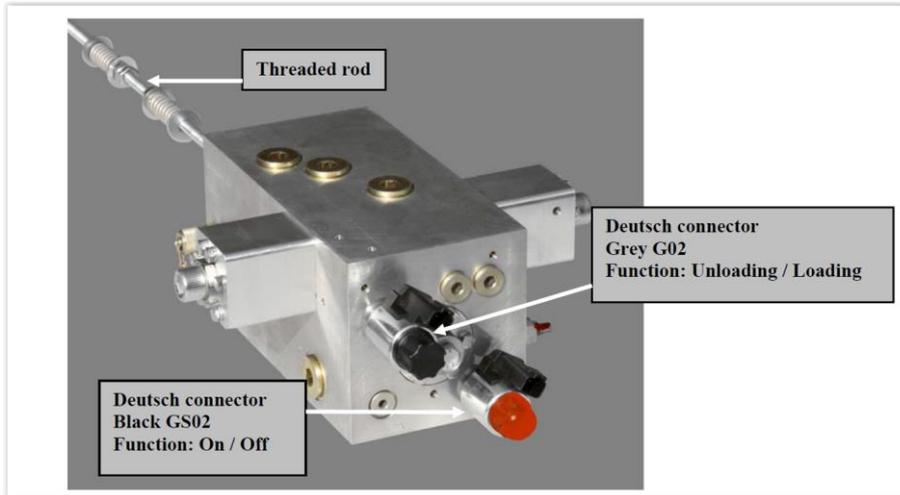
- Turn on the pump;
- Turn on the light and check that there is a supply of power.
- Keep your distance from the vehicle and operate it by means of the remote control CF 8 or the CF RX.

In the event of malfunctions in the electrical system, the standard manual operation mode can be used to activate the On/Off functions. See page 23. **When using this manual control you must always ensure that it is switched back to the original NON-ACTIVATED condition after use.**

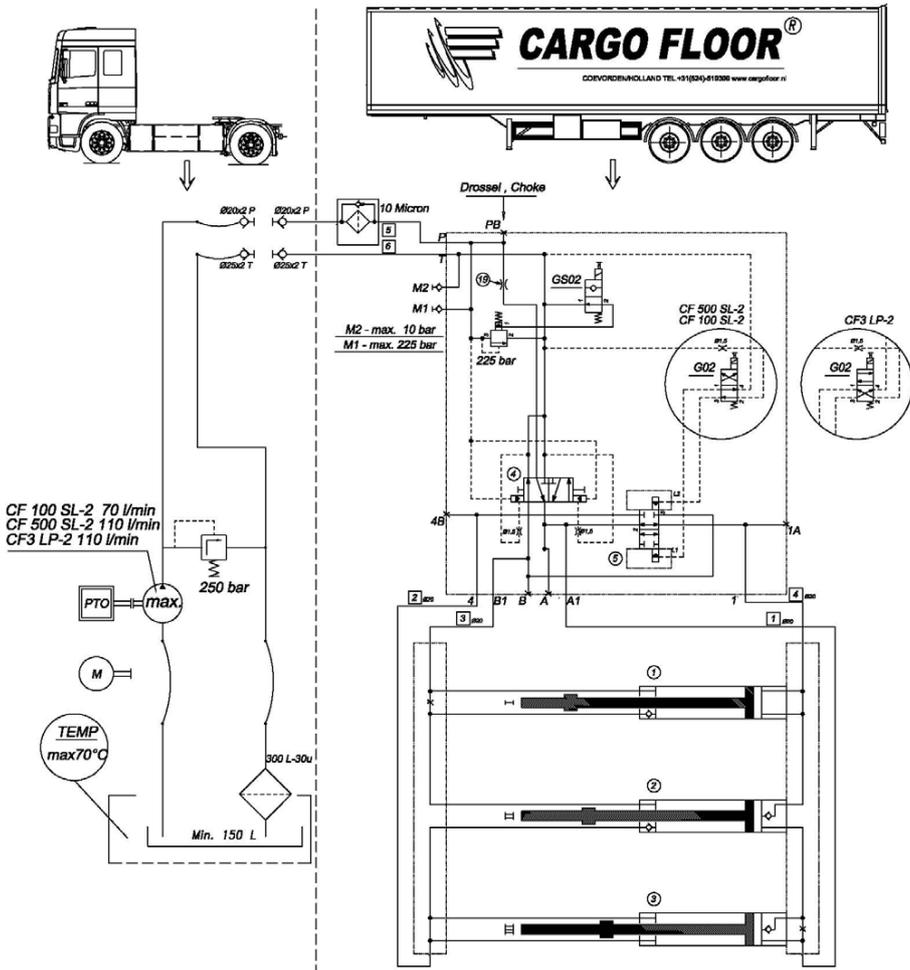
ELECTRICAL CIRCUIT DIAGRAM “E”-CONTROL



CONTROL VALVE "E"-CONTROL



HYDRAULIC CIRCUIT DIAGRAM "E"-CONTROL



FUNCTION OF "B"-CONTROL SWITCHES

**FUNCTION OF "B"-CONTROL SWITCHES
CF 3 SWITCH (EMERGENCY CONTROL)**

The CF 3 switch is the permanent switch which is mounted on the frame/vehicle and has 2 switch positions with the following functions:

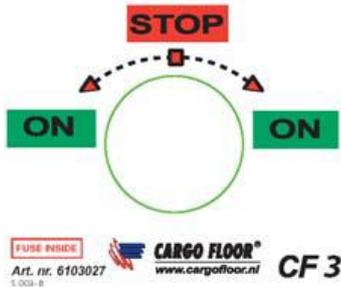
Middle position= the rotary switch automatically returns to this position when the switch is released.

= From this position the switch will go back to the stop position when released.

= From this position the switch will go back to the stop position when released.

In the interest of safety this switch is fitted with an automatic spring-back for position I, so that it always returns to "0" position. This is necessary to prevent conflict situations arising when using the CF 4 remote control.

Mounted below the CF 3 switch, is a connector to which the CF 4 switch or the RX RECEIVER can be connected without the need for any adjustments. Normally, the CF 3 switch should only be used if the CF 4 switch is defective.



In the interest of safety this switch is fitted with an automatic spring-back for position I, so that it always returns to "0" position. This is necessary to prevent conflict situations arising when using the CF 4 remote control.

Mounted below the CF 3 switch, is a connector to which the CF 4 switch or the RX RECEIVER can be connected without the need for any adjustments.

Normally, the CF 3 switch should only be used if the CF 4 switch is defective.

If, after the initial assembly, the switch does not work it is probably because the connections for the + (brown) and the - (blue) have been swapped around. The supply cable contains a blocking diode which prevents damages arising from the + and - from being connected in reverse. A 2 Amp fuse has been mounted in the CF 3 switch. Never mount a fuse over 3A, this can cause damage to the electrical installation

CF 4 SWITCH (MAIN CONTROL)

The standard supplied remote control CF 4, with 10 m. of cable, is used for the day-to-day control of the system. The CF 4 switch has the following buttons:

Red button: the stop button. This is activated by pushing it in and deactivated by turning it;

Rotary switch. This is a rotary switch with three positions. Activating this switch the system will, depending on the position of the operational lever, start loading or unloading. When this switch is deactivated the system stops.

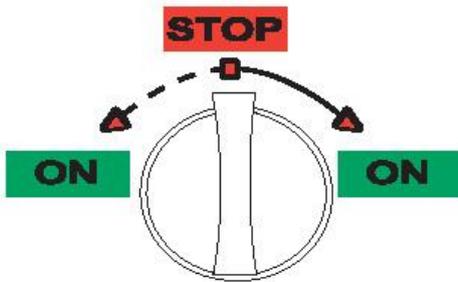
Middle position =

=

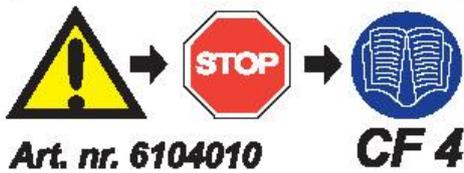
In this position the switch will stay in the position (position lock).

= From this position the switch will go back to the stop position when released.

The CF 4 switch has a plug connector, which can be inserted into the connector of the CF 3 switch and screwed tight. To disconnect this, the duct must be unscrewed, after which the plug can be pulled out. Normally, this plug should always be connected to the connector.



5004-B



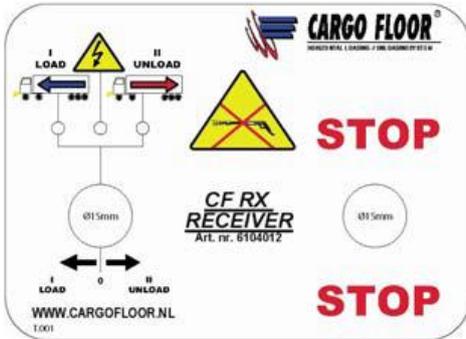
OPTIONAL

Radio Remote Control (Option)

A radio controlled remote control is available as an option.

This incorporates:

CF RX Receiver which has a plug connector which can be inserted into the connector of the CF 3 switch and screwed tight. To disconnect this the duct must be unscrewed, after which the plug can be pulled out. Normally, this plug should always be connected to the connector.



Red stop button

On the receiver RX a red stop button is mounted, by pushing this button you can stop the system in case of emergency. By pulling it the system will be activated again. Do take care, with reference to the accessibility, that when using a remote control, the door of the switching box CF7 is opened so the red stop button can be operated. This receiver is also supplied with a tilting switch with which the system can be switched.

CF TX REMOTE CONTROL

Fitted with three control buttons with the following functions:

Button one (on ON PULSE as pulse contact). By pushing this button the system will be activated, by releasing it the system will deactivate (or you push to stop the stop button).

Button two (aan/ON HOLD as hold contact). By pushing this button the system will be activated, by pushing it again the system will deactivate (or you push to stop the stop button).

Button three. With this button you stop the system.

The switching positions 0-II (applicable to all switches) energize the following solenoid (provided that they have been connected correctly):

- **Position I (On):** only the solenoid of valve A (GS02) is energized.
- **Position 0 (Stop):** no solenoids may be energized.



LOADING – UNLOADING FUNCTION

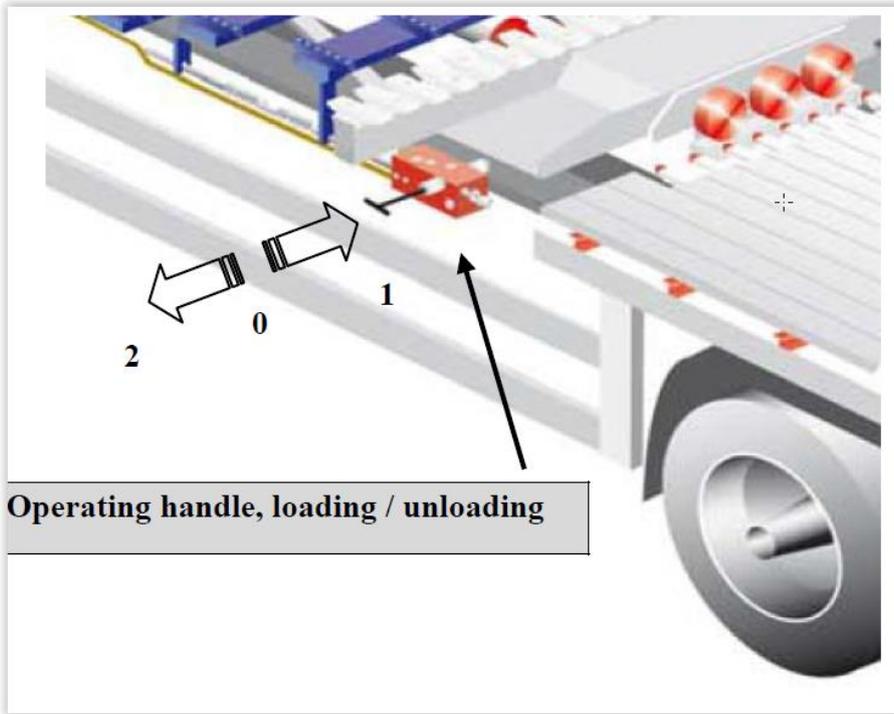
The loading or unloading modes can be selected using the handle located under the trailer, see the illustration.

The position of the handle:

0 handle in the middle position; floor is stationary

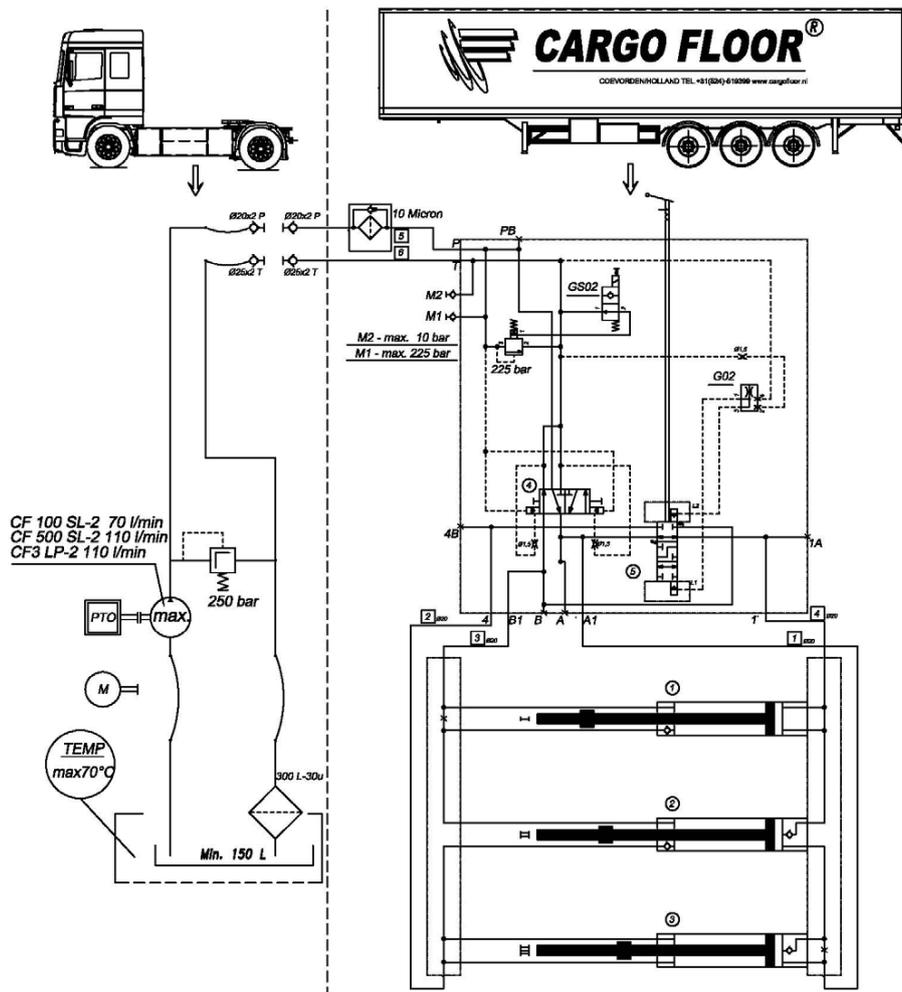
1 handle pushed in; floor will unload

2 handle pulled out; floor will load



Operating handle, loading / unloading

HYDRAULIC CIRCUIT DIAGRAM "B"-CONTROL



CARGO FLOOR TECHNICAL SPECIFICATIONS

System operation: completely hydraulic, with three double-action cylinders.

System control: completely hydraulic mechanical.

Operation control: fully automatic loading – stop – unloading or manually loading – unloading electrically on – off (option A/B control)

	CF500 SL-2(i)	CF100 SL-2(i)	CF500 SL-2 Power Speed	CF3 LP-2 (leak proof)
Bore (mm)	100	80	100	125
Piston rod diameter (mm)	45	35	45	60
Stroke (mm)	200	150	200	150
Cylinder volume (ltr.)	2.82	1.36	2.82	3.26
Oil volume per cycle (ltr.)	8.46	4.09	8.46	9.77
Over pressure valve threshold, max. operational pressure (bar)	225	175	225	150
Strokes per minute with advised pump capacity	13	17	21	11
Speed (mtr. / min) with advised pump capacity	2.6	2.6	4.2	1.7
Advised pump capacity: ^I				
Flow (ltr./min)	110	70	180	110
Pressure (bar)	250	200	250	175
Max. pump capacity:				
Flow (ltr./min)	130	80	200	170
Pressure (bar)	250	200	250	175
Speed at maximum pump capacity (mtr. / min.)	3.1	2.9	4.7	2.6

Control valves: 24V DC (Applies only to E and B control.)

Throughput variation: Completely variable speed by use of oil flow determined by the revs of the motor or by various pumps. Pay attention to the diameter of the choke, see page 22.

Drive: use of the PTO/pump on the truck; an electro-hydraulic aggregate or a hydraulic aggregate with an external combustion engine.

Filter: pressure filter type: high-pressure 10 micron (part number7372005).

Pressure piping: Ø 20 x 2 feed through 16 mm

Return piping: Ø 25 x 2, 5 feed through 20 mm

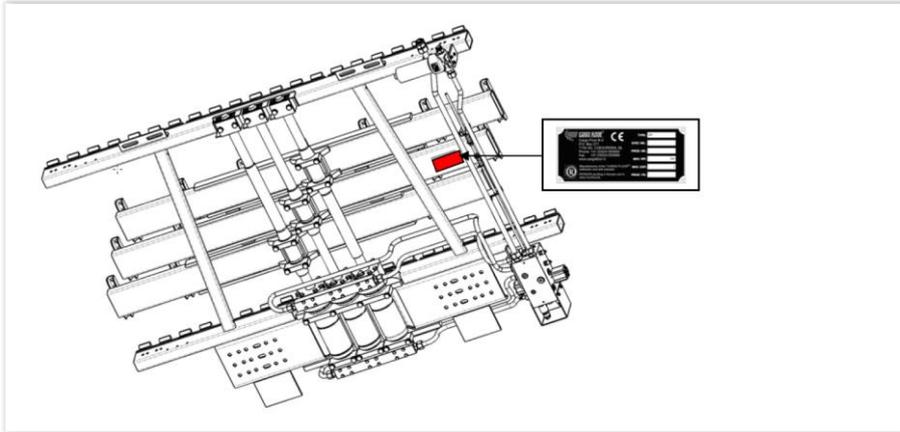
Oil ISO VG 32 b.v.: Shell Tellus T32 or ESSO Unavis 32 (or equivalent). Only use biological oil after agreement by Cargo Floor

Biological oil: A biological oil of the type synthetic ester (HEES) can be used as standard with the Cargo Floor system. **We advise you not to use other types of biological oil.**

Oil temperature: max. 70 ° C

[PUMP SPECIFICATIONS FOR CARGO FLOOR MOVING FLOOR SYSTEMS](#)

The pump unit used to power the Cargo Floor system must comply with the following specifications:



	CF500 SL-2	CF100 SL-2	CF500 SL-2 Power Speed	CF3 LP-2
Pump capacity (in ltr./min)	110	70	180	110
Max. pressure (bar)	250	200	250	175

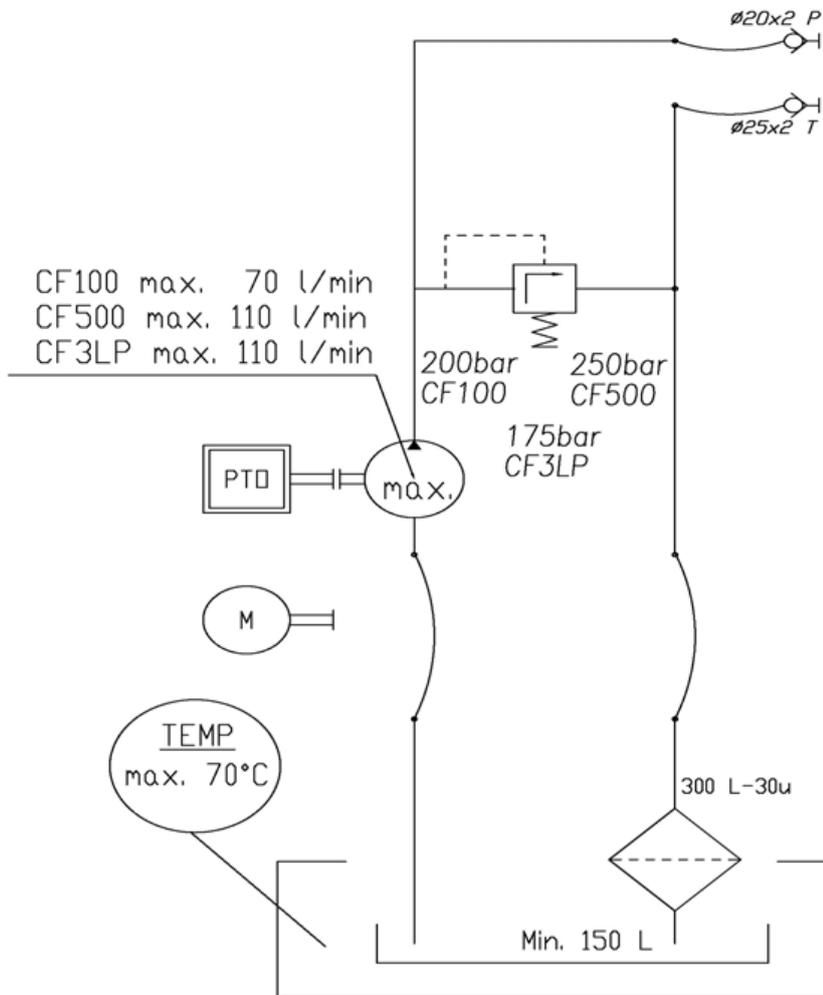
Oil tank, contents of min. 150 ltr. Provided with:

- return filter (30 micron) 300 ltr/min.
- Tank cover
- Oil level glass
- draining tap
- filling cap

Pipes complying with the following requirements:

- Pressure line min. 20 x 2 mm
- return line min. 25 x 2,5 mm
- Quick-detachable couplings (suitable for 110 l/min.).

The pump volume determines the transport speed; the pressure determines the force applied to the system.

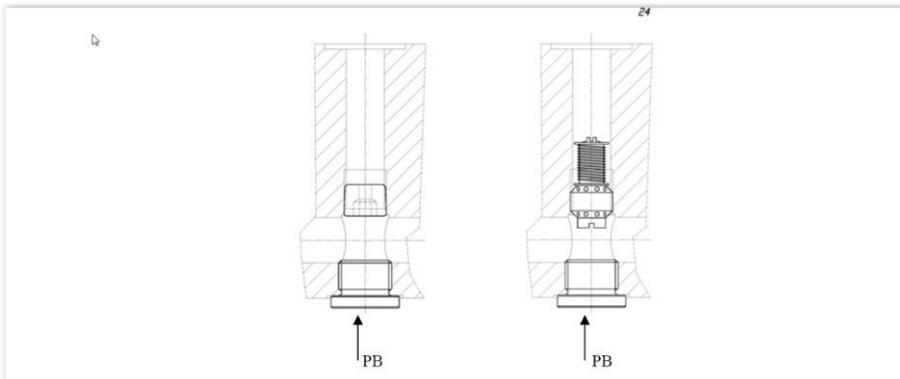
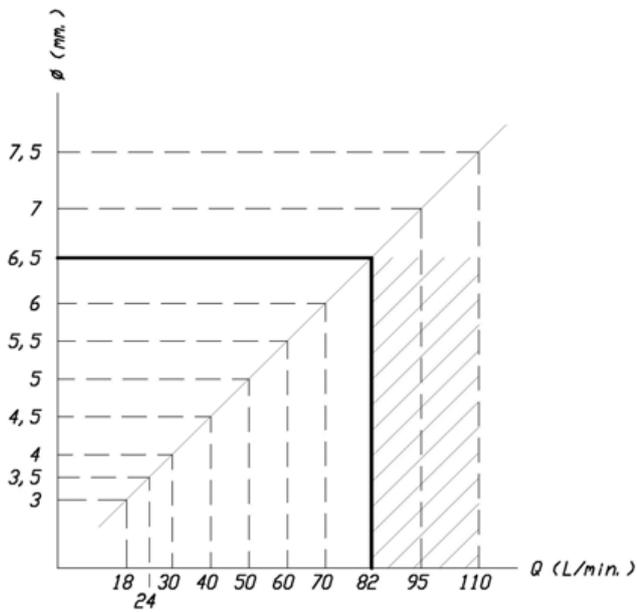


CHOKE:

There is a choke mounted as standard in the PB channel of the control valve. This allows the control valve to function correctly. This choke is suitable for an oil flow level of 80 to 110 litres per minute. The function of the control block can be affected by a deviation from this oil flow level. The oil flow diagram shows which level of oil flow is required by which opening. Adjustment of this is possible by simply changing the diameter of the choke.

Known consequences of a wrong choke diameter are:

- Oil flow too low: load/unload valve not switching;
- Oil flow too high: noise in system, high heat dissipation and capacity loss.



Flow independent choke

As an option a flow independent choke can be supplied (Article number 7370106). The standard mounted choke can simply be changed with these. You remove the cap out of channel PB (Allen key 12 mm) at the bottom of the control valve. After this you screw the choke out of the channel with Allen key 12 mm. Screw the new (flow independent) choke in the channel and fasten these by hand (about 15 Nm.). Screw the cap back into channel PB (Allen key 12 mm.) and fasten these by hand (about 50-75 Nm). Let the floor run (loading and unloading) in order to check if everything is functioning well and no leakage occurs. The flow independent choke has a flow range of 20-110 ltr. /min. and is suitable for a maximal work pressure of 225 bar.

For both types of chokes applies: connecting the pressure and return wrongly will result in a malfunctioning of the system and the filter element will permanently be damaged.

B- Control

Another possibility to be independent from a variable oil flow is using a B-control. With this the loading/unloading direction is determined by a handle.

Transforming the E control to a B control (or the other way around) can simply be done with a so called transformation set (set from E to B: part number 7170039).

EMERGENCY CONTROL

In the event of a malfunction in the electrical system the electric valve can still be operated by activating the cartridge fitted for that purpose (manual control, see photo).

MAKE SURE THAT THE DOORS ARE OPEN!

When using this manual control you must always ensure that it switched back to the original,

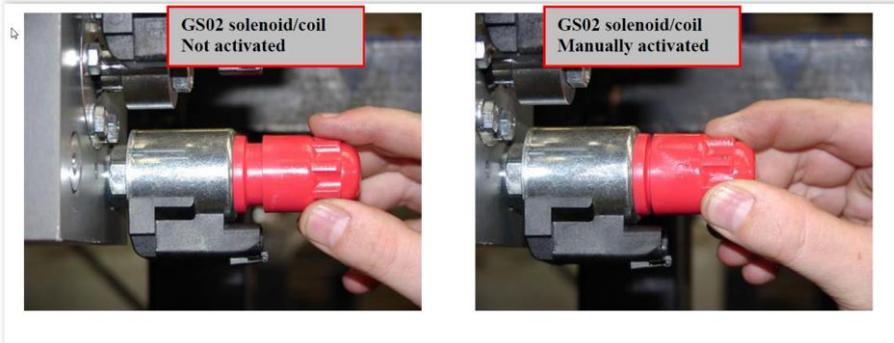
NON-ACTIVATED condition after use.

Activation of the emergency control on:

Remove the yellow security clip and turn in (clockwise) the red button on top of the GS02 solenoid till the stop (first remove the yellow security clip and put it back in place after the action).

Deactivation of the emergency controls:

Turn out (counter clockwise) the red button on top of the GS02 solenoid until the click and place back the yellow security clip.



Activation of the emergency control loading (floor will only be able to load):

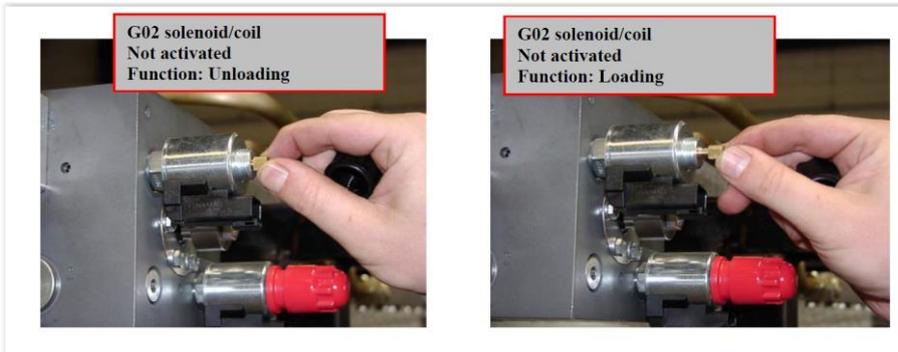
Screw the black cap off (pay attention to the O ring).

Turn out (counter clockwise) the screw under the cap of the G02 till the stop.

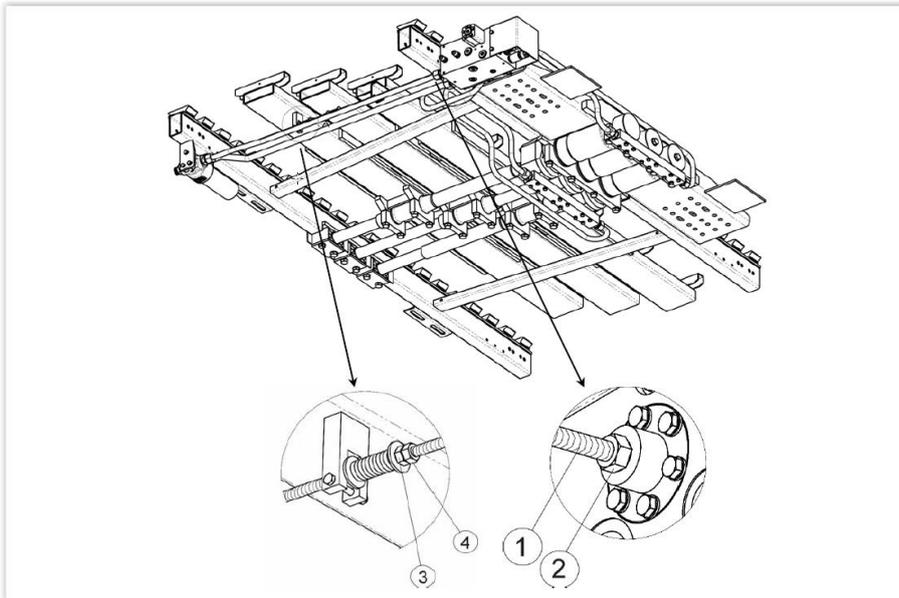
Deactivation of the emergency control loading:

Turn in (clockwise) the screw under the cap of the G02 till the stop.

Screw the black cap back on (pay attention to mounting the O ring).



ADJUSTMENT OF THE THREADED ROD OF THE STEERING VALVE



The Cargo Floor systems are already adjusted and tested when you take them over. You therefore do not need to adjust them anymore, but in certain circumstances (moved combination valve) it may be necessary to check the adjustment. The pump and electrical installation must always be switched-off when working on the system; in addition, the hoses and/or pipelines between the pump and the Cargo Floor should also be disconnected.

Check the oil level after when the work on the system is done.

Necessary tools:

2x spanner 17;

High viscosity oil;

Copper grease;

Steel brush.

Check that the wire rod is fastened securely to the steering valve, stroke exactly 12 mm. If not, then screw the wire rod (1) as far as possible into the plunger and secure this with the contra nut (2) (spanner size 17). Loosen nuts (3 and 4, spanner size 17) and move these about 3 cm in the direction of the steering valve. Now switch the pump on. The system will stop now at the point where the command lip no longer operates the switchover valve. Switch off the pump. Now push the wire rod (1) in until the spacer ring touches the switchover valve. Tighten nuts (3 and 4) so that the spring is fully pushed in, and secure them by tightening them against one another. Repeat this procedure for the other side.

N.B. It is worthwhile spreading some copper grease on the wire rod (1).

CARGO FLOOR MAINTENANCE INSTRUCTIONS

When works require turning on the floor you should take care of that the floor can be shut down immediately at any time. Places where clamping/clasping of body parts is possible may not be approached when the system is moving.

For more detailed explanation of the execution of the works we would like to refer you to our website:

www.cargofloor.nl

Check for the end user after receipt of the new trailer:

Check the join between the aluminium floor profiles and the Cargo Floor-system. You do this by placing your finger half on the bolt and half on the floor profile when the floor is operating. If you feel movement in the bolt connection then the bolt should be removed, cleaned, fitted with Loctite and mounted again, or be replaced.

Do not simply just tighten the bolts, the Loctite connection will be broken. If bolts are loose, we would like to refer you to our website:

www.cargofloor.nl. Check this a couple of days after receipt of the trailer, after 10 loads / unloads and after one month.

Specifications of the screws: M12 x 30 countersunk screws with hexagon socket, class 10.9, galvanized.

DIN 7991. (Dacromet). The torque is 100 – 140 Nm.

Regular checks:

To ensure that your Cargo Floor system operates reliably and has a long life, it is important that you regularly perform careful checks on the following aspects:

- The quality of the oil; this must be cleaned regularly (check every ½ year)
 - Replace the filter element every year;
 - Change the oil every 2 years, or more frequently if required;
 - The level of oil in the tank. In order to prevent heat developing it is required to have at least 100 litres of oil in the tank. Out of practical experiences (high flow, frequently loading and unloading) we advise you to have at least 150 litres of oil available. Use a good quality, hydraulic oil in accordance with the ISO VG 32 norm.
- Check and, if necessary clean the following components: - Floor profiles: are they still fixed, replace screws/bolts if necessary!
- Check the ducts and joints of all hydraulic components, and adjust if necessary!
 - Oil tank: by taking the lid off the tank, you can remove any remains (condensation, dirt etc.) from the bottom.

- Return-/pressure filter: by removing the filter lid/ chamber you can check the filter element, or after about one year replace it.

- Check the seal between the two fixated floor profiles and the moving profiles. If a margin exist in between, then adjust the fixated floor profiles, in order for the sealing to be optimal and leakage via the side walls is prevented. This is all necessary to avoid internal wear (of the pump/cylinders etc., for example).

New filter parts are available at your system builder. For the right type we refer you to our “exploded views” which you can find on our website:

www.cargofloor.nl

We want to emphasize that the minimal costs of replacing dirty parts or oil do not match the costs and discomfort that can proceed out of this.

- Adjusting the threaded rod of the steering valve;

It is important that the steering valve is correctly adjusted and that the switchover moment occurs according to the procedures. See page 22.

Cleaning the floor parts with a steam cleaner is also part of the regular preventative maintenance, especially with the so called SLP profiles this is mandatory to clean the large gulley regularly.

TROUBLESHOOTING

In the event of the failure of the Cargo Floor system to operate (in the correct manner) when used in accordance with the operating instructions carry out the following checks:

malfunction	cause	remedy
1. floor does not move in either the loading or unloading direction	No hydraulic pressure	<ol style="list-style-type: none"> 1. Switch on PTO / pump 2. Check quick-detachable couplings between tractor unit and trailer; where relevant, lock in position
2. floor does not move in either the loading or unloading direction; the hydraulic system is at working pressure	No power supply	<ol style="list-style-type: none"> 1. Switch on lights 2. Switch on control cabinet 3. Measure power supply to control cabinet
3. no power supply to the control cabinet; the lights are switched on	Break in cable, contact points corroded, system connected wrongly	Trace the cause of the electrical malfunction in the circuit between the control cabinet and the trailer lighting. See 6 and 7 also.
4. floor does not move in either the loading or unloading direction; the hydraulic system is at working pressure, and power is supplied to the control cabinet	Blocked quick-detachable coupling – note, also the return line!	Check the quick-detachable couplings, and unblock if necessary
4a. floor does not move in either the loading or unloading direction; the hydraulic system is at working pressure, and power is supplied to the control cabinet	Hydraulic oil released via the pressure relief valve fitted to either the tractor unit or the system	Check whether oil is released via the pressure relief valve fitted to either the tractor unit or the trailer. This can be determined from the hissing sound made by the valve.
4b. pressure relief valve on the tractor unit is activated	System does not achieve working pressure	<ol style="list-style-type: none"> 1. If a tipping valve is fitted, is it in the correct position? 2. Measure the pressure at the pump, have the pressure adjusted if necessary.
4c. pressure relief valve on the semi-trailer switches	Measure the pressure at measurement point M1, pressure (above) 225 bar	<ol style="list-style-type: none"> 1. Check the setting of the threaded rod 2. Capacity of the system is insufficient to move the load.
4d. capacity of the system is insufficient to move the load	<ol style="list-style-type: none"> 1 frost 2 overloaded 3 floor is dirty 	<ol style="list-style-type: none"> 1. Thaw 2. Remove part of the load 3. Clean the floor once the load has been removed
5. floor does not move in either the loading or unloading direction; the hydraulic system is at working pressure	Measure pressure at M1 Pressure = 0-10 bar	<ol style="list-style-type: none"> 1. Move threaded rod backwards and forwards 2. GS02 on/off cartridge does not switch Activate the emergency control.

malfunction	cause	remedy
6. GS02 on/off cartridge does not switch	No power	1. Check power supply 2. Check voltage across solenoid Activate the emergency control.
7. GS02 on/off cartridge does not switch	Solenoid inoperable 1. Corroded contacts 2. Solenoid defective 3. Breach in the cable	1. Clean contacts 2. Use emergency control, see Emergency control section 3. If the loading function is not used, then swap the solenoids for GS02 and G02; note the plugs must also be swapped
8. floor moves in loading direction when either loading or unloading is selected	Emergency control G02 is in the loading position, the extreme position	Deactivate the emergency control.
9. floor moves in the loading direction when loading is selected, but does not move when unloading is selected	Plugs are connected the wrong way round on the solenoids	Reverse the plugs
10. floor does not move when loading is selected, but does move when unloading is selected	See point 6 or point 7	See point 6 or point 7. 1. Check the flow, see page 21.
11. all three floor groups simultaneously move backwards and forwards under high pressure when unloading is selected	Capacity of the system is insufficient to move the load.	See point 4d 1. Thaw 2. Remove part of the load 3. Clean the floor once the load has been removed
12. all three floor groups move correctly when unloading is selected, the individual groups move slowly whereby group 2 and 3 move together	Capacity of the system is insufficient to move the load.	See point 4d 1. Thaw 2. Remove part of the load 3. Clean the floor once the load has been removed
13. other malfunction	-	Contact your body builder; make sure you have the system number available when you do so

GUARANTEE CONDITIONS

Guarantee shall only be given with the prior consent of Cargo Floor B.V.! With guarantee requests always fill in and send a guarantee request form to Cargo Floor B.V. beforehand. You can fill in a request for guarantee simply on our website: www.cargofloor.nl

The guarantee conditions, as specified in the most recent "Metaalunie" conditions, filed with the registrar of the District Court of Rotterdam, are applicable in unabbreviated form. On request available.

A short extract of these conditions follows:

A guarantee period of 12 months (starting directly after installation) applies for all Cargo Floor system materials supplied by us. In the case of malfunction and/or manufacturing faults we are only responsible for the costless supply of replacement parts, if:

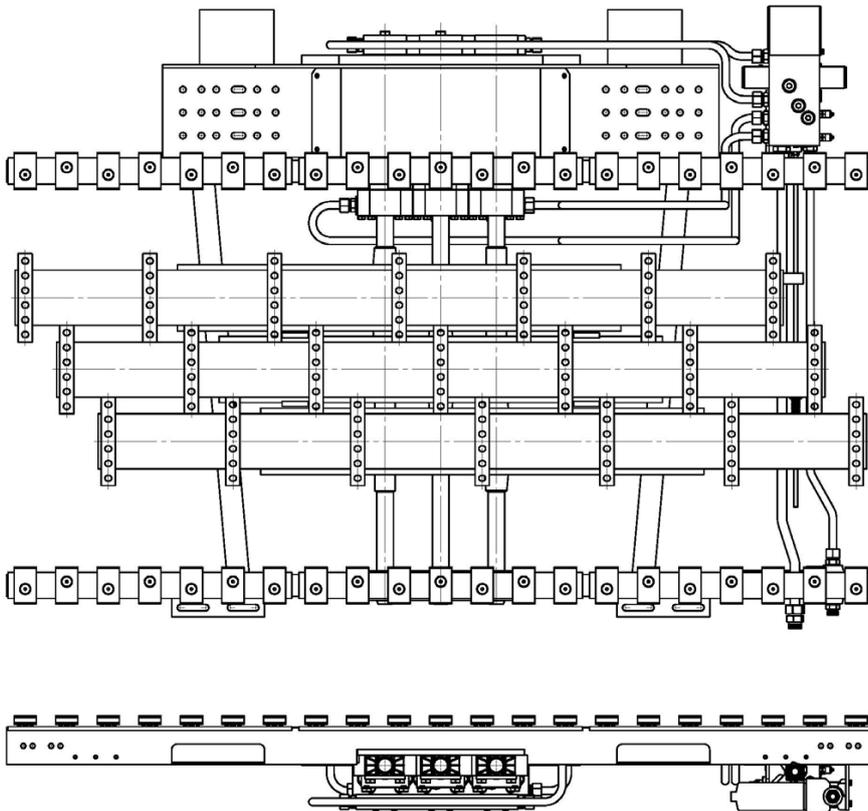
- The Cargo Floor system is installed by your trailer builder according to our installation procedures.
- Our maintenance and control procedures have been followed.
- In the case of a malfunction, the system builder, or Cargo Floor have been informed

The following components are not covered by the guarantee:

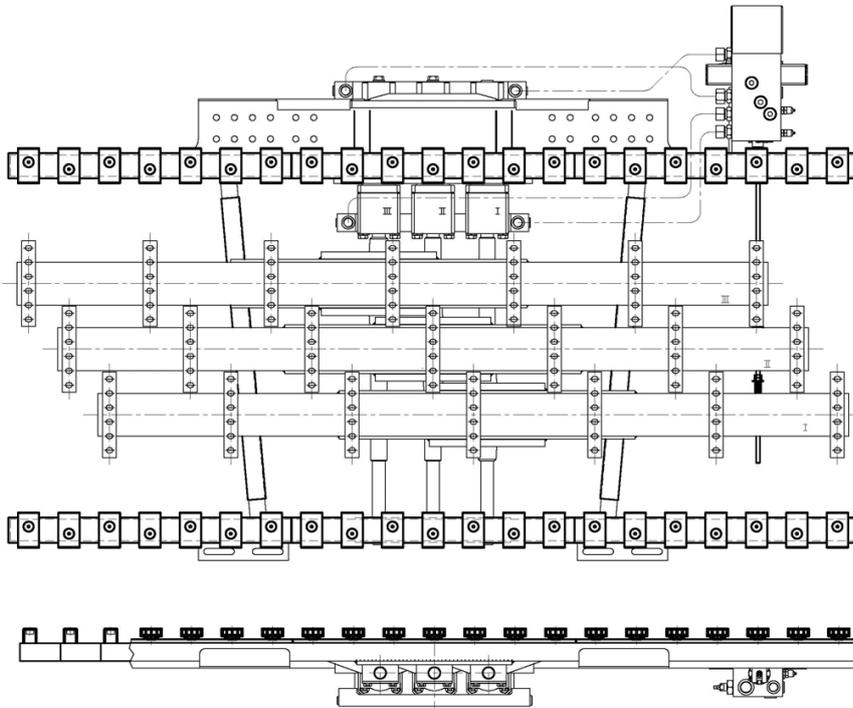
- Malfunction of equipment, or caused by equipment, which was not supplied by Cargo Floor.
 - Malfunction caused by the use of dirty oil, or oil of the wrong type.
 - Malfunction caused by overheated oil, T. max. \square 70 °C.
 - Malfunction caused by overloading or injudicious use.
 - Malfunction caused by repair work, which is carried out by third parties.

 - Filter elements and components, which are subject to wear-and-tear.
 - Defects in electrical components due to incorrect connection and/or incorrect voltage levels.
 - Resulting damages
- The guarantee is void if:
- The system is used for purposes, which have not been recommended by Cargo Floor
 - The Cargo Floor system has not constructed correctly by your trailer builder, insofar as this has a negative influence on the operation of the system.

[DRAWING OF THE CARGO FLOOR CF500 SL-2](#)



DRAWING OF THE CARGO FLOOR CF100 SL-2



Safe Use of Ladders on Vehicles

This is Fruehauf Limited extract – with thanks

General

Safe Use of Ladders

Introduction

Use of ladders is hazardous and potentially fatal activity if not properly managed. A third of all fall from height incidents involve ladders and stepladders. Ladder work and all work at height is controlled by the Work at Height Regulations 2005. This guidance relates specifically to ladders, which are a “means of last resort”.

No ladder should be used if it has:

- A missing or defective rung or tread
- A rung or tread supported solely on rails; spikes or similar
- An insecure tie rod

A defective stile or side-member

A defective rope or associated fitting (rope operated extension ladders)

Any sign of warping

Missing fastenings or rivets

Make shift repairs

[Preventing slips, trips and falls from vehicles: the basics](#)

Work at height the principles

There are some basic principles for working at height, and they apply equally to working at height on a vehicle. In law, work at height means 'work in any place where a person could fall a distance likely to cause personal injury if no precautions are taken'. It includes getting on and off a vehicle, trailer or climbing into or out of a cab.

Although some people might not regard work below average head height as 'work at height', the law requires people to consider falls from any height where someone could be injured, including falls from trailers or the tops of vans. In fact most of the injuries reported to the HSE resulting from falls from vehicles are from a fall below head height. The most common area of the vehicle for people to fall from is the load area, followed but the cab access steps and fifth wheel catwalk – you don't have to fall far to land hard. If you are in control of the work, you must think in terms of a hierarchy of controls:

Plan to avoid work at height where you can

Where you cannot, make certain you use a work equipment to prevent falls

First choice – vehicle based systems

Second choice – on site systems

For some work at height on a vehicle there may not be a single, simple solution. You will have to consider a range of options when you are planning the loading/unloading maintenance activity.

[How do I work out what I need to do?](#)

You need to think about what might go wrong and what you need to do to prevent it. I.e. carry out a risk assessment. It's important to be sensible and to concentrate on the most likely things to happen and those with greatest possible consequences.

You cannot do everything, but this is not an excuse to do nothing; you have to take action that is 'reasonably practicable'. Also, remember that getting controls put in place is far more important than paperwork. You won't be able to do everything you want at once, so make a plan for improvements, concentrating on the likelihood of an incident and the consequences.

Ladders on all vehicles for access and egress are used as a last resort, ladders should only be placed in position when they are to be used, if ladders are placed on the rear

of the vehicle before tipping the load, be careful as the position of the ladder will change when the body has been raised and lowered, the ladder may not be secure.

Ladders should NEVER be in the used position whilst tipping is in progress.

Imperative maintenance for the first four weeks of a new tipping trailer operation:

Torque wheel nuts: Prior to first journey; daily for first week; weekly for first four weeks.

Torque suspension nuts: Regularly but refer to maintenance book for the suspension fitted; or to manufacturers website or use downloads at www.newtontrailers.com

Check brakes: Initially; weekly for first four weeks

Hub bearing: First 1600km and monthly

Clean in line filters: First 1600 km and monthly

King pin: Monthly

Check Body clamp bolts: Daily for first week and then monthly

Brakes & Brake Repairs

This is such a detailed area that workshops must check the manufacturer's manuals to help you. Downloads are easy to find on the internet

e.g.: http://www.sdctrailers.com/uploads/documents/SAF-HOLLAND_disc_brakes.pdf

General Safety Instructions Brakes:

Please observe the following safety instructions in order to maintain the operational and road safety of your axles and suspension systems:

1. The wheel contact surfaces between the wheel disc and wheel hub and the wheel nut contact surface at the wheel disc must not be additionally painted. The contact surfaces must be clean, smooth and free from grease. Failure to observe this may result in the wheel coming loose. Any additional instructions of the wheel manufacturer must also be observed.

2. Only the wheel and tyre sizes approved by the trailer builder may be used. The tyres must always have the specified inflation pressure.

3. The brake systems of the tractor and the trailer/semi-trailer must be synchronised by means of a tractor/trailer Brake synchronisation not later than 5,000 km after the initial start of operation of the trailer/semi-trailer in order to ensure a safe and uniform braking behaviour and uniform brake pad wear. Tractor/trailer brake synchronisations should be carried out by appropriately qualified and equipped brake workshops.

The use of an additional braking system, such as a trailer anti-jack-knife brake is forbidden by law on vehicles with type approval after January 1999.

- 4.** Before starting a journey, ensure that the maximum permissible axle load is not exceeded and that the load is distributed equally and uniformly.
- 5.** On trailers with air suspension, ensure that the air bags are completely filled with air before starting the journey. Incompletely filled air bags may result in damage to axles, suspension, frame and superstructure and impair road safety.
- 6.** Ensure that the brakes are not overheated by continuous operation.
With drum brakes, overheating can result in a hazardous deterioration in the braking efficiency.
With disc brakes, overheating can result in damage to surrounding components – in particular the wheel bearings. This can result in a significant deterioration in road safety, e.g. failure of wheel bearings.
- 7.** The parking brake must not be immediately applied when the brakes are hot, as the brake discs and brake drums may be damaged by different stress fields during cooling.
- 8.** Use the supports provided when loading and unloading in order to avoid damage to the axle.
- 9.** Observe the operating recommendation of the trailer builder for off-road operation of the installed axles and suspension systems. The SAF-HOLLAND definition of OFF-ROAD means driving on non-asphalted / non-concreted routes, such as e.g. gravel roads, agricultural and forestry tracks, on construction sites and in gravel pits. Off-road operation of SAF-HOLLAND axles and suspension systems not designed for the purpose may result in damage and hence to an impairment of road safety.
- 10.** SAF-HOLLAND axles and suspension systems require continuous care, service and maintenance in order to maintain operational and road safety and to be able to recognise natural wear and defects in good time. The daily inspection of the trailer for road safety before starting the journey is one of the driver's obligations.

SAF-HOLLAND recommends that the tests and maintenance operations described on page 7 are carried out.

The SAF-HOLLAND repair manuals and instructions must always be observed during all repairs.

We recommend the use of original SAF-HOLLAND spare parts.
A close-knit service network of SAF-HOLLAND partner companies is available for the technical support of the SAF-HOLLAND axles and suspension systems and for the supply of original SAF-HOLLAND spare parts (see rear cover or on the Internet under www.safholland.com).
Updates will be published as necessary on the Internet under www.safholland.com.

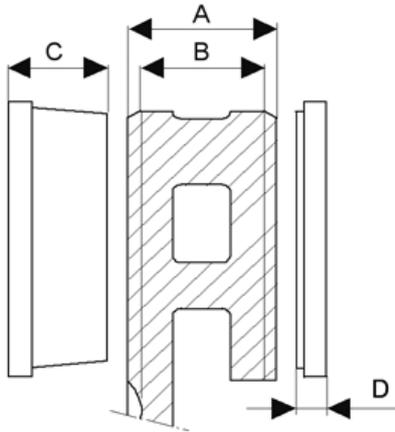
General Service Instructions – Brakes

Caution: After every wheel change, be sure to retighten the wheel nuts to the prescribed torque after 50 km and after 150 km.

- Check the brake pad thickness at regular intervals, e.g. when checking the tyre inflation pressure. Minimum wear limits*, see page 19.
- Carry out regular visual checks of the brakes, tyres and all chassis components and inspect for secure mounting, wear, leaks, corrosion and damage.
- At each brake pad change, inspect the wheel bearing unit for grease leaks.
- At each brake pad change, inspect the brake calliper guide system for free movement.
- Inspect the outer and inner bellows on the brake calliper for splits and damage and for the correct seating of the brake calliper adjuster cap at each brake pad change.
- Inspect the brake disc for wear* and cracking at each brake pad change.
- Check the air suspension system ride height according to the trailer builder's instructions at regular intervals and adjust, if necessary, as instructed on page 23.
- With aluminium and stainless steel hanger brackets, check that the bolts of suspension arm bearings and shock absorbers are tightened to the prescribed torque as described on page 8.
- With MODUL suspension systems, check that the U-bolts is tightened to the torque specified on page 8 according to the trailer builders instructions.
- Carry out a general safety check according to the statutory requirements.
- We recommend the use of only original manufacturer spare parts.

Brake disc safety check

In order to be able to inspect the friction surface of the brake pads, the pad retaining bracket has to be removed and the brake calliper adjuster backed off. Remove and inspect the pads.



Wear limits: Brake disc, brake pad

Diameter (mm)	Brake disc		Brake pad			
	"A" new (mm)	"B" Wear limit reached (mm)	"C" new (mm)		"D" Wear limit reached (mm)	
			Wabco	Knorr	Wabco	Knorr
430	45	37	32	30	11	11 (SK7 - 9)
377	45	37	32	30	11	11

Brake pads: Install only brake pads approved axle manufacturer. When replacing brake pads due to wear, the pads on both sides of the axle must be replaced. Brake pad wear difference: max. 5.0 mm (inner/outer pad)

Brake disc

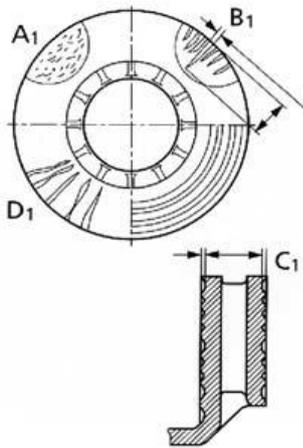
Carefully inspect the braking surface of the brake disc for further serviceability.

A1 -Mesh-like cracking is permissible.

B1 -Cracks running to the hub centre up to max. 1.5 mm (width and depth) are permissible.

C1 -Unevenness of the disc surface is permissible.

D1 -Through cracks are not permissible. Measure the brake disc thickness and polish, if necessary. For safety reason, the minimum thickness for polishing the brake discs is defined as 39 - 40 mm.



Axle Alignment

In order to avoid tyre wear, we recommend that an axle alignment is performed at regular intervals.

2. We recommend the use of an optical measuring system for carrying out the axle alignment.
3. For alignment, only the centres of the middle of the wheel cap or the middle of the axle stub end are of interest as reference points.
4. Possible causes of deviations in the axle alignment are:
 - Loose U-bolts
 - Wear of the spring guide bearing
 - Deformation of the axle assembly components due to improper use.