

Wilcox Commercial Vehicles Limited

SEMI-TRAILER OPERATORS HANDBOOK

This publication is an integral component of the vehicle and it has been compiled to give owners and operators essential information regarding the safe operation of the vehicle and the imperative maintenance operations that are required to maintain the vehicle in best condition. This handbook should accompany the vehicle at all times.

Acceptance of the details herein is implied by acceptance of the vehicle. A failure to follow the recommendations in this publication may lead to a risk of injury or damage and may invalidate your warranty.



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VEHICLE DETAILS

Model Designation: _____

Body No: _____

Chassis No: _____



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1. READER'S GUIDE

This handbook covers a variety of bodies based on a model type. It has been compiled to give you, the Driver-Operator, essential information regarding correct operation and operator maintenance.

It is not intended to cover detailed servicing of components, refer to Wilcox After Sales and Service Department, if this becomes necessary.

How to use this handbook

Read **Section 2** for **HEALTH & SAFETY** warnings (note that there are warnings throughout this handbook that must be read and understood).

Read **Section 3** for information relating to vehicle **WARRANTY**.

Read **Section 4** for the **GENERAL DESCRIPTION** of your vehicle.

Read **Section 5** for **OPERATING INSTRUCTIONS**.

Read **Section 6 and 7** for **MAINTENANCE** requirements.

Legal requirements

This Operator's Handbook is written as a complement to existing UK legislation. The instructions in this manual do not overrule any existing legal requirements and Operator's should ensure that they are compliant with the legislation, regulations, guidance, best practice and specific operating procedures pertinent to the operation of the vehicle in the relevant country of operation.

Your comments

We are constantly trying to improve the technical information supplied with our products. Should you find fault with this publication, or have any recommendations for improvement, we would appreciate your assistance by forwarding your comments to us at:

**Wilcox Commercial Vehicles Ltd
Blenheim Way
Northfield Industrial Estate
Market Deeping
Peterborough
PE6 8LD**

2. HEALTH & SAFETY

ASBESTOS

DANGER FROM ASBESTOS

Some components on your vehicle, such as gaskets, friction surfaces (brake linings) and heat shields (exhausts) may contain asbestos.

CAUTION

ASBESTOS

Breathing asbestos dust is dangerous to your health.

THE FOLLOWING PRECAUTIONS MUST BE FOLLOWED WHEN WORKING ON SYSTEMS AND COMPONENTS LIKELY TO CONTAIN ASBESTOS. WHEN IN DOUBT, ASSUME ASBESTOS IS PRESENT:

- Work outside or in a well ventilated area.
- Wear a respirator mask with a suitable asbestos grade filter. Wearers of spectacles and people with facial hair should ensure a good, sealed fit.
- Do not remove dust by blowing.
- Dampen area with atomized water. Use a watery detergent solution in grease contaminated areas. Wipe down with clean dampened rags.
- Do not reuse contaminated rags. Dispose of soiled rags as 'special waste' in accordance with legal requirements.
- If planing cutting, drilling, grinding or performing any activity that has the potential to produce dust, the area should be dampened and only hand tools or low speed power tools (equipped with appropriate dust extraction) should be used.
- Do not use brushes to sweep up dust, use a special type H vacuum cleaner or dampen thoroughly and scrape up.
- Put all waste (old components, soiled rags, debris and dust etc) into sealed, appropriately labeled containers and dispose of them as 'special waste' in accordance with legal requirements.
- Follow manufacturer's instructions when operating, maintaining or cleaning specialised equipment (i.e. type H vacuums, tools etc).
- Wear protective clothing at all times and wash regularly or dispose of as 'special waste' in accordance with legal requirements.
- Wash hands and face before eating, drinking and smoking and at the end of each working period.

2. HEALTH & SAFETY

NON ASBESTOS BRAKE LININGS

If you are unable to determine if the brake linings on your vehicle contain asbestos, it should be assumed that they do and the precautions listed under 'ASBESTOS' should be followed.

AIR PRESSURE SYSTEMS

Avoid direct skin contact with exhausting air. Exercise extreme care and wear the appropriate protective clothing when releasing pressure from the system.



HYDRAULIC SYSTEMS

Avoid skin contact with hydraulic fluid. Exercise extreme care and wear the appropriate protective clothing. Ensure that the vehicle body is well propped and that there is no pressure left in the system before any disassembly.



SYNTHETIC RUBBERS AT HIGH TEMPERATURES

All polymeric materials, especially fluoroelastomers, should be handled with care following any form of high temperature decomposition (i.e. fire).



Fluoroelastomers are synthetic rubbers commonly used in the motor industry. Typical applications include test rigs, fuel systems, oil seals, wiring and cabling, bearing surfaces, gaskets, diaphragms and "O" rings.

Avoid skin contact with fire damaged rubber.

POLYURETHANE FOAM

When repairing insulated vehicles, precautions should be taken to prevent high temperature contact or accidental ignition of the insulated material in the body cavity.



FIBREGLASS & ROCKWOOL INSULATION

When repairing insulated vehicles, precautions should be taken to prevent high temperature contact or accidental ignition of the insulated material in the body cavity.



2. HEALTH & SAFETY

USED OILS

Prolonged and repeated contact with used oils may cause serious skin disorders including dermatitis and cancer. Therefore, precautions should be taken in the handling and disposal of used oils. Hazards may also arise from the inhalation of oil mist and the handling of grease containing toxic metals.

CAUTION

USED OILS

THE ROAD TRAFFIC (CARRIAGE OF DANGEROUS SUBSTANCES IN ROAD TANKERS AND TANK CONTAINERS) REGULATIONS 1992

Reference should be made to The Road Traffic (Carriage of Dangerous Substances in Road Tankers and Tank Containers) Regulations 1992 (statutory instrument number 1992/743) when carrying dangerous substances. It is the Operator's responsibility to ensure that the vessel is suitable for the substance and that the carriage of dangerous substances is in accordance with the regulations.

Always ensure that the correct emergency cards or markings are displayed.

STABILITY WARNING

Some trailers with a long deck length forward of the support legs or rearwards of the running gear may be unstable if loaded or unloaded when uncoupled from the tractor unit.

Look for the warning decal indicating the potential problem and only load and unload with the trailer coupled or supported as follows:



Forward support (semi-trailers)

Use a suitable trestle the full width of the upper coupler plate positioned forward of the king pin.

Rearward support

Use a suitable trestle (or blocks). Position under the main beams next to the under run bump bar, if fitted.

Ensure the support(s) are centrally positioned under the 'I' beam and have a support area of at least 200mm X 200mm under each beam. Do not place a support under an under run bump bar.

Trailers fitted with stabiliser legs

Use the stabiliser legs to support the uncoupled trailer.



3. WARRANTY

Should the vehicle become unserviceable during the stipulated warranty period, proceed as follows:

- a) When purchased from an authorised distributor or dealer, contact the establishment concerned who will advise you accordingly.
- b) Refer major problems directly to our After Sales Service Department at the following address:

*Wilcox Commercial Vehicles Limited
Blenheim Way
Northfield Industrial Estate
Market Deeping
Peterborough
PE6 8LD*

*Tel: 01778 345151
Fax: 01778 347269*

- c) Our After Sales Service Department will notify you of the appropriate action required to ensure your vehicle is rectified at the earliest possible date.

Always quote the vehicle body serial number on all correspondence or during all communications. See section 4 General Description for location of body serial numbers.

OPERATOR'S ARE RESPONSIBLE FOR ENSURING THAT VEHICLES RETURNED TO WILCOX FOR WARRANTY, REPAIR, SERVICING OR MODIFICATION ARE CLEANED AND DECONTAMINATED. VEHICLES NOT RETURNED IN A CLEAN AND SAFE CONDITION MAY BE REFUSED ENTRY OR CUSTOMERS MAY BE CHARGED FOR THE COST OF CLEANING. VEHICLES CONTAMINATED WITH UNKNOWN OR UNIDENTIFIED SUBSTANCES MAY BE REFUSED ENTRY.

The manufacturer reserves the right to vary the specification with or without notice and at such times and in such a manner as they think fit. Major as well as minor changes maybe involved, in accordance with the manufacturer's policy of constant product improvement. Providing the vehicle is operated within its specified limits, and is maintained in accordance with the Operators Handbook, the length of life is limited only by possible accidents or economic obsolescence. A failure to maintain the vehicle in accordance with the maintenance schedule herein may invalidate your warranty.



3.1 OUT OF WARRANTY

The operator is responsible for any remedial work required once the trailer is out of its warranty period.

As all Wilcox trailers are fitted with sophisticated electronic braking systems (TEBS), which may also control various suspension functions (Lift Axle Control, Traction Help or Return-To-Ride Height), it is highly recommended that any diagnostic/remedial work is carried out by a trained specialist.

Wilcox Commercial Vehicles Limited has teamed up with a Peterborough based trailer brake and suspension specialist, who is fully trained and equipped to deal with out of warranty work on all makes of trailer braking and suspension control systems. Should you require diagnostic or compatibility help with WABCO, HALDEX or KNORR-BREMSE systems then please contact Peter Metzger directly at:

METZGER Trailer Services Limited
77 Lawn Avenue
Peterborough
PE1 3RA

Office: 01733 860381
Mobile: 07979 763382
Email: peter.metzger@virgin.net

Should you wish to receive on-site diagnostic or brake & suspension system training, then METZGER Trailer Services also offers this service.

Metzger Trailer Services will travel anywhere in the UK , so please contact Peter directly for travel and labour rates.

Diagnostic "telephone consultations" are also available for a £25.00 fixed price, on a "no win, no fee" basis, so there will be no charge if the problem is not resolved.



4. GENERAL DESCRIPTION

Vehicle identification

The body serial number is located on the nearside bottom corner of the front bulkhead. It is essential that this information is quoted in all communications. Observe all information on other plates and labels attached to the vehicle.



Vehicle type

The vehicle consists of an end tipping body constructed in either aluminium or steel, mounted onto a semi-trailer with either a straight, tapered or stepped frame.

The body is elevated by means of multi-staged telescopic hydraulic cylinder(s) either mounted at the front or under the floor of the body. The hydraulic cylinders are powered from a hydraulic pump coupled to either a gearbox mounted power take off (on either the vehicle itself or the tractor unit), or mounted on a separate self contained engine fitted to the semi-trailer.

Control is usually by means of two controls, one for engaging and disengaging the power take off unit (PTO) and the other for raising, holding and lowering the body.

Bodywork

There are three basic body types of which nearly all vehicle variants are built.

The traditional aluminium fixed side '**Monocoque**' body with pressed side pillars and deck cross bearers is normally specified as a general purpose, bulk tipper. Its inherent design strength lends itself for heavy duty muck away applications without the weight penalties of a comparable steel body. This body type is available to suit both rigid and trailer chassis. It can be adapted to carry specific types of load such as scrap by the addition of deck and side overlays, or ribbing may be added to the deck to prevent damage from falling loads. This design of body may also be insulated for carrying Tarmac products. This body design can also be supplied with extruded '**Plank**' section side panels, making for a cleaner external appearance. Bulk blowers (Pneumatic loading and/or discharge vehicles) for carrying animal feeds are also based on this body type. The addition of partition doors and pneumatic discharge equipment allows varying sizes and types of load to be carried and distributed.

The '**U**' shaped body, offers great strength with minimum weight; by utilising extruded one piece ribs, bending forces are resisted by the sides and floor, and its 'shape' is maintained during all operating conditions. The body is fully welded throughout thus preventing ingress of water to enclosed parts and eliminating corrosion caused by entrapment of payload or cleaning materials etc. Radiused corners make for easy discharge, especially with materials known to 'hold up' in the body.

4. GENERAL DESCRIPTION

Vehicles can be supplied with a variety of tailgate configurations. They range from the basic top swung full depth gate, to horizontally split for Tarmac operation, barn doors for bulk carrying, rubber sealed for carrying grain, with or without tie bars, and with a variety of hinges and locking mechanisms.

Sheeting systems vary from simple covers and nets to manually and electrically operated systems. Where these are fitted, separate instructions will be supplied from the manufacturer of the system.

Semi-trailer chassis

The semi-trailer chassis supplied, incorporates specially designed 'I' beams that provide the support for the suspension, axles and running gear, together with an upper coupler which provides connection via a king pin to the prime mover (tractor unit) fifth wheel.

This chassis is supplied with either of two types of suspension: Air, as standard, or mechanically sprung suspensions as an alternative. Other suspensions may be fitted to customer requirements, these are covered by separate instructions supplied by the manufacturer, and where relevant are included with this handbook.

Air suspension generally consists of heavy duty forged steel trailing arms pivoting at the leading end on rubber bushed mountings attached to hanger brackets with an air spring assembly comprising of a piston and rolling rubber diaphragm (air bag) at the trailing end. The air springs are supplied with variable air pressure from an automatic height control (levelling) valve which maintains a level and stable attitude.

Mechanical suspensions consist of single (monoleaf) or multi-leaf springs mounted above the axle (over slung) or below the axle (under slung) and secured by 'U' bolts. Axle positions are controlled by a combination of fixed and adjustable rubber bushed radius rods.

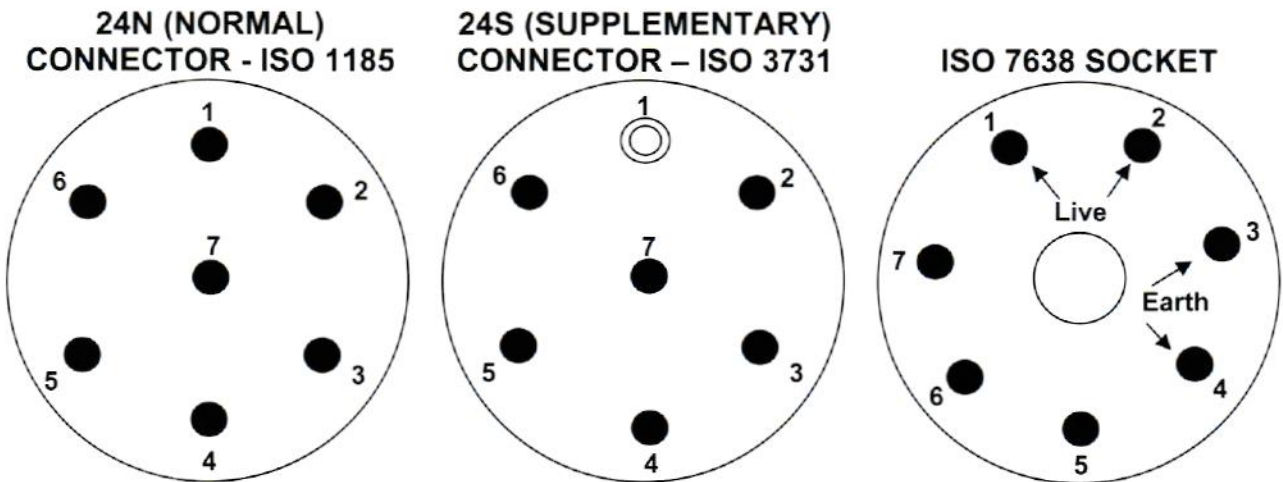
Braking system

The Electronic Braking System (EBS) consists of a two line air pressure system used in conjunction with asbestos-free 'S' cam (or disc) brakes, spring brake actuators and automatic slack adjusters (on 'S' cam brakes only). The system is designed to prevent the trailer wheels from locking over a wide range of road conditions whether laden or unladen, and from March '92 also includes load sensing as standard thereby giving the optimum braking performance available from both methods of control. The trailer brakes are activated by the controls in the tractor unit cab utilising the tractor's air pressure system with hoses making a flexible connection between the two systems; the connectors being either 'C' type couplings (UK) or palm type couplings (Europe).

4. GENERAL DESCRIPTION

Electrical system

The electrical system conforms to the current EEC requirements utilising two ISO seven-pin connectors and a dedicated ISO seven-pin connector for the powering of EBS. Single pole lamp holders are fitted, however, alternative systems wired to customer requirements may be installed.



24N (NORMAL) CONNECTOR -
ISO 1185

24S (SUPPLEMENTARY)
CONNECTOR - ISO 3731

<u>Pin No.</u>	<u>USE</u>	<u>USE</u>
1	Common return	Common return
2	L/Hand front side & tail lights	Strobe
3	L/Hand indicator	Reversing light
4	Stop lights	Tailgate lock & lift
5	R/Hand indicator	Magnetic tailgate sensor
6	R/Hand front side & tail lights	Body guard device
7	Spare	Rear fog lights

4. GENERAL DESCRIPTION

Note: Pins 2 and 6 of the 24N – ISO 1185 connector are linked to make the arrangement compatible with early tractor units utilising a single 7 pin system wired to SMMTEE4L. Pin 4 includes wiring to provide supplementary powering of the trailer Anti-Lock brake system. An ISO7638 connector, conforming to EEC requirements is also fitted, to provide dedicated power to the EBS brake system, for suitably equipped tractor units. Tractors without an ISO 7638 socket should not be used to pull Wilcox tipping trailers produced from January 2000 onwards.

Body Guard warning device

On all tipping trailer vehicles supplied after April 1998, a bodyguard device is fitted, to warn when the body is not fully lowered onto the vehicle chassis.

For tipping trailers, a warning light is fitted to the offside of the chassis frame. For this warning device to function correctly, it must be supplied with an ignition switched power supply on pin no. 6 of the 24S socket. It is the responsibility of the operator, to ensure that a suitable power supply is fitted to all tractor units that may operate with the tipping trailer.

Support legs

Two speed support legs are fitted to support the trailer in the uncoupled condition, operated by a winding handle on the nearside leg. High speed operation should only be used to lift or lower unladen trailers.

DANGER OF DAMAGE

High speed operation on a laden trailer will damage the gearbox.



Hydraulic system

Vehicles can be specified with a variety of different tipping gears. Instructions in this book will give general information about using this equipment. For more detailed and specific instructions and maintenance information please refer to the information provided by the manufacturer of the product fitted to your vehicle.

For a semi-trailer the hydraulic system is usually an integral part of the tractor unit which is connected via a hose to the lower end of the multi-stage ram (when the combination is coupled). Alternatively, the option of an on-board Donkey engine driving an hydraulic pump may be adopted, raising and lowering the body from a trailer mounted control; full details of the engine will be found in the manufacturer's literature when fitted. The body must not be raised when uncoupled from the tractor unit.

4. GENERAL DESCRIPTION

DANGER OF DAMAGE

A loaded body must not be raised when uncoupled from the tractor unit. This could cause the neck of the chassis to break. See 'Tipping Safety' section for further information.

CAUTIONDANGER OF
DAMAGE

DANGER OF INSTABILITY

An unloaded body must not be raised when uncoupled from the tractor unit. This could lead to instability and danger of overturning.



5. OPERATING INSTRUCTIONS

LEGAL REQUIREMENTS - where applicable

The following information details various regulations; if the vehicle is built to any of these it will carry a plate conforming to the regulation.

- The Road Traffic (Carriage of Dangerous Substances in Road Tankers and Tank Containers) Regulations 1992 - all substances covered by the Regulations must be carried in a vessel complying with the Regulations (see 'Health & Safety information').
- In the event of accident damage, repairs to the substance carrying vessel (tank) and its fittings must be carried out in a manner that will reinstate the vehicle to the original design; Re-certification under the Regulations (7) will be required.
- Similarly no changes to the design of the vehicle can be carried out without re-certification.
- ADR Requirements (International Carriage of Dangerous Goods by Road) - only products covered by the ADR classes listed in the ADR-4 approved by the Ministry of Transport (MoT) on the ADR-1, may be carried in the hazardous goods range.
- IMO Requirements (International Maritime Organisation) - These are requirements covering the conveyance of hazardous goods on board British ships and through British ports.
- TIR Requirements - When the vehicle has been TIR approved by Wilcox in conjunction with the MoT, the customer will be issued with TIR documentation and one set of photographs.
- Changes to the design of the vehicle are not allowed without reference to the TIR Authority (DoE MoT).

TRAILER OPERATION

Bolt-in King Pin

Check for correct position and security (refer to Section 3 of this book).

Coupling trailer to tractor

1. Couple only in a well lit area on firm and level ground.
2. Ensure the trailer parking brake is applied. Using a trailer not fitted with a parking brake is **ONLY** acceptable when the air brakes of the trailer are fail-safe or there are other safe measures employed to stop the trailer from moving.

5. OPERATING INSTRUCTIONS

3. Set the trailer support legs to the coupling height (see 'To set the legs for coupling') or set the tractor air suspension height to match the trailer height.
4. Check the tractor fifth wheel jaws are open (refer to Tractor handbook); tilt fifth wheel so that the rear end is sloping downwards, to assist trailer coupling.
5. Remove stabilising support, if applicable (see 'STABILITY').
6. With the tractor and trailer correctly aligned, slowly reverse the tractor into the coupled position.
7. Ensure the combination is securely coupled by trying to move forward with the trailer parking brake applied. Visually check to ensure correctly coupled and securely locked. Disengage parking brake.
8. Connect the tractor's electrical and air couplings to their respective colour coded couplings on the front of the trailer. Open tractor airline 'shut-off' cocks, if fitted. Couple hydraulic line(s) if applicable.
9. Raise the trailer support legs fully and correctly secure in the running position.
10. Test brakes for operation and carry out 'Checks before moving off' (detailed in this Section of the handbook).
11. Check trailer swing clearance to ensure trailer does not foul equipment on tractor unit.

Uncoupling trailer from tractor

1. Uncouple only in a well lit area on firm and level ground.
2. Ensure the trailer parking brake is applied.
3. Lower the support legs to the ground (detailed in this Section).
4. Disconnect the air and electrical couplings from the trailer. Close tractor airline shutoff cocks, if fitted. Disconnect hydraulic line(s) if applicable.
5. Unlock and release fifth wheel coupling, slowly drive the tractor clear of the trailer.
6. Check that the trailer is not sinking into the surface.

STABILITY WARNING

Some tippers when uncoupled from the tractor unit in a partially laden state forward of the support legs, may be prone to 'nosedive' if the load is not redistributed evenly or additional support used forward.



5. OPERATING INSTRUCTIONS

Support legs

For the purpose of supporting the trailer when uncoupled and for setting the trailer to the required height when coupling; these are sometimes referred to as the landing legs.

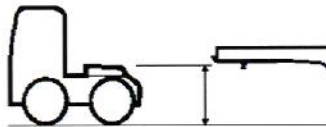
The following instructions should be carried out on firm, level ground; if not, ensure the legs are positioned on suitable footplates to prevent them from sinking.

Note: On vehicles fitted with legs that can be operated from either side of the trailer, ensure the gearboxes of **both** legs are set in the **NEUTRAL** position before operating. The handle on the offside leg turns in the opposite direction to the handle on the nearside leg (i.e. opposite to the following instructions).

To Lower the Legs when Uncoupling

- Unclip the winding handle and pull shaft outwards to select high gear
- Rotate handle clockwise until legs reach the ground - **STOP** - select low gear
- Continue until trailer is supported
- **Do not raise the trailer**
- Secure handle in stowage and uncouple as detailed.

To Set the Legs for Coupling



- Unclip the winding handle and push shaft inwards to select low gear
- Rotate handle and adjust trailer height so that the upper coupler is level or slightly lower (20mm max.) than the tractor's fifth wheel
- Couple tractor as detailed and then raise the legs when coupled

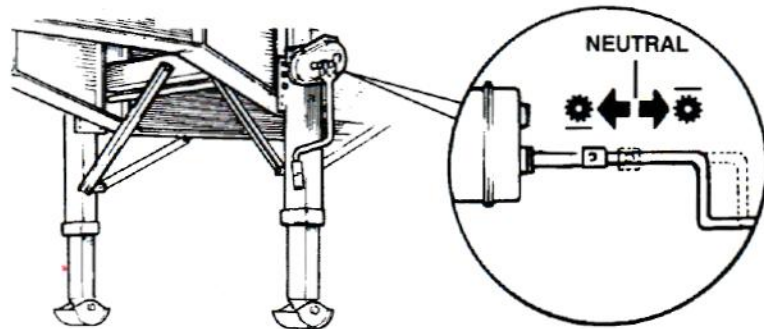
To Raise the Legs when Coupled

- Select high gear
- Rotate handle anti-clockwise until legs are fully raised - **Do not force beyond this position.**

5. OPERATING INSTRUCTIONS

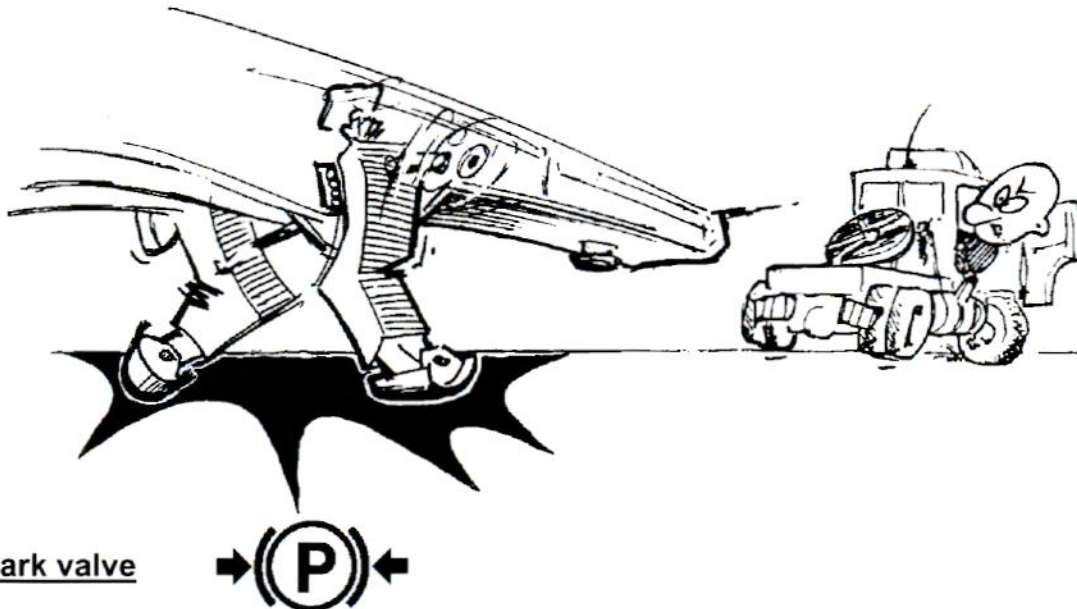
- Secure handle in stowage on completion.

Typical arrangement illustrated with rocking feet.



Note: Some vehicles are not fitted with legs but the facility to support the trailer with a trestle is available; legs can be installed, if required.

! LOWER LEGS BEFORE UNCOUPLING!



This is fitted to trailers incorporating Spring Brake systems and dispenses with the need for a manually operated handbrake.

On disconnection of the Emergency (RED) Line the brakes are automatically applied (as with any system). However, unlike other systems, as the air is depleted the Spring Brake system maintains a brake through powerful springs in the brakes actuators.

The trailer brakes can be applied when coupled to the tractor by pulling the Park Valve control button (a desirable practice when parking a tractor and trailer combination); the valve will require resetting before moving off. Do not use the Trailer Brake Release valve.

5. OPERATING INSTRUCTIONS

Trailer brake release valve

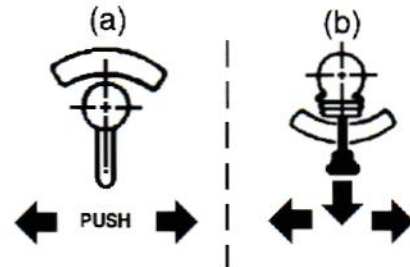


This valve allows the uncoupled trailer brakes to be released. However, it is not recommended that this valve is used for moving the trailer with vehicles not suitable for the purpose and, therefore, should only be used in an emergency situation. At all other times the trailer should only be moved when coupled to a vehicle with an appropriate air supply. Ensure this valve is reset to its original position after use.

Note: Spring Brakes need sufficient air pressure in the reservoir to release the powerful spring in the actuators (see Park Valve).

Variable height control - air suspension

When fitted, this enables the operator to raise or lower the vehicle using the trailer suspension.



DANGER OF DAMAGE

Do not operate the height control when coupled – this can bend the legs of the trailer when loaded

CAUTION

DANGER OF
DAMAGE

DANGER OF DAMAGE

Do not operate the height control with the trailer brakes applied – this can bend the legs of the trailer when loaded

CAUTION

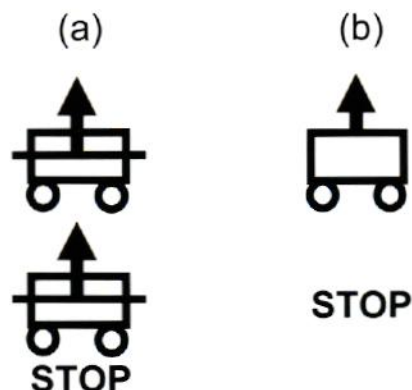
DANGER OF
DAMAGE

ALWAYS LEAVE A PARKED TRAILER WITH THE SUSPENSION LOWERED (unless the support legs incorporate rocking feet)

To Raise from the '**RUNNING (RIDE)**'
Position

Set control to the '**RAISE**' position

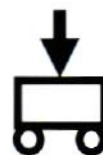
On reaching the required level (or maximum allowable), set the control to the '**RAISED/STOP**' position



5. OPERATING INSTRUCTIONS

To Lower from the 'RUNNING (RIDE)' Position

Set control to the 'LOWER' position



On reaching the required level (or maximum allowable), set the control to the 'LOWERED/STOP' position



STOP

Always reset control to the 'RUNNING (RIDE)' Position



Note: Auto-reset systems require one application of the brake pedal to reset suspension.

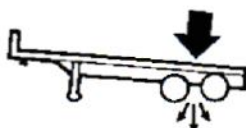
DANGER OF DAMAGE

Do not move the trailer in the 'raised' or 'lowered' position as this will cause damage.

CAUTION

DANGER OF DAMAGE

Dump valve – air suspension



When fitted, this enables the operator to lower the suspension fully by exhausting the air system for the suspension.

DANGER OF DAMAGE

Do not exhaust the suspension with the lift axle in the raised position – this can bend the legs of the trailer when loaded

CAUTION

DANGER OF DAMAGE

DANGER OF INSTABILITY

Do not exhaust the suspension on tipping trailers during tipping as this could lead to instability.



5. OPERATING INSTRUCTIONS

DANGER OF DAMAGE

Do not move the trailer with the suspension exhausted – this could lead to damage of the shock absorbers, suspension and air bags.

CAUTIONDANGER OF
DAMAGE

Lift axle - air Suspension



When fitted, this facility enables the operator to lift an axle (usually the front) clear of the ground; allowing extra manoeuvrability and/or a different suspension configuration.

Control is automatic via the trailer's electronic load sensing valve with optional manual override on the chassis or brake pedal (3 applications) where appropriate.

DANGER OF INJURY OR DAMAGE

Raising an axle in the fully laden condition will exceed the plated weights and must only be considered for low speed manoeuvring.

CAUTIONDANGER OF
INJURY OR
DAMAGE

! OBSERVE YOUR PLATED AXLE WEIGHTS WHEN OPERATING WITH AXLE RAISED !

RISK OF INJURY

Ensure all personnel stand clear of the axle when raising and lowering.

CAUTIONRISK OF
INJURY

When the trailer is unladen, the lift axle will automatically lift when the ECU is powered and the vehicle reaches a speed of 8 km/h.

Electronic brake system (EBS)



The Electronic Brake System fitted to Wilcox semi-trailers feature an on board electronic control unit (ECU) with self-diagnostic capabilities. The System must be permanently powered (ignition switched) via the ISO 7638 connector.

The tractor unit is designed to permanently power the trailer EBS (via the dedicated ISO 7638 connector) there will be a red lamp in the cab on the dashboard which will indicate the functioning of the trailer EBS system.

5. OPERATING INSTRUCTIONS

Electronic Brake System Check

Check out the system using Red lamp in cab.

With the electrical lines coupled the EBS trailer warning lamp should operate as follows:

- On initial power-up (ignition ON) the warning lamp will flash once and then stay **ON** until a speed of 10 kph (6 mph) is attained.
- Above 10 kph (6 mph) the lamp is extinguished and should stay **OFF**.
- A failure is indicated if the lamp stays **ON** above 10 kph (6mph) or does not illuminate as detailed on initial power-up. Should this occur the system reverts to normal operation giving full trailer braking without the advantage of anti-lock.

Circuit Testing (trailers with EBS); refer to supplementary information provided with this handbook.

Energy absorbing under-run bump bar and side guards

DANGER OF DAMAGE

Do not lift or secure the trailer using the rear bump bar or side guards – damage could occur.

A yellow rectangular sign with a black border. The word "CAUTION" is written in bold, black, uppercase letters on a black background. Below it, the words "DANGER OF DAMAGE" are written in black, uppercase letters on the yellow background.

DANGER OF
DAMAGE

On board load weighing equipment

If your vehicle is fitted with electronic on board weighing equipment, refer to the operating instructions provided by the manufacturer of this equipment. This will be provided as a separate booklet.

TIPPER OPERATION

VEHICLE OVERLOADING

Never exceed the gross vehicle weight or individual axle weights of your vehicle.

It is the driver's responsibility to ensure that vehicle overloading does not occur.

A yellow rectangular sign with a black border. The word "CAUTION" is written in bold, black, uppercase letters on a black background. Below it, the words "VEHICLE OVERLOADING" are written in black, uppercase letters on the yellow background.

VEHICLE
OVERLOADING

5. OPERATING INSTRUCTIONS

DANGER OF DAMAGE

The body must not be in the raised position when loading or damage to the load cell and body mountings may occur.

CAUTIONDANGER OF
DAMAGE

Sheeting

Before loading commences, covers and sheets must be removed. Loose sheets and nets must be secured in such a way that they will not come into contact with exhaust systems or hot engine parts and that they will not become entangled in loading apparatus (i.e. loading shovels and conveyors). Ensure that sheets cannot fall from the top of vehicles and endanger personnel.

When sheeting up, ensure that the sheet itself and its securing ropes are properly secured. Loose ropes or elastics are a danger for personnel when the vehicle is moving. If the sheet is not secured properly it is possible for wind to get under it and wrench it from the vehicle.

If your vehicle is fitted with mechanical sheeting arrangements please refer to the operating instructions that are provided by the manufacturer of your equipment, ensuring that the Health & Safety recommendations are observed.

Ladders, rungs and handrails

Ladders, rungs and handrails are provided for a variety of reasons, one of the most common being to enable the operator to gain access to the top of the body for sheeting purposes.

Only climb on parts of the body work that have been provided for that purpose, i.e. ladders and rungs. Do not use ladders, steps and handrails that have become loose or damaged. Beware of snow, ice, mud or other substances making steps and ladders slippery and dangerous to use. Only climb onto vehicles in areas that are safe to do so. Beware of overhead cables, conveyor systems and mechanical handling equipment.

The risks from working at height should always be assessed by a competent person in accordance with the Working at Height Regulations 2005 before climbing up onto any part of the vehicle. Hand rails and access rungs may vary in position and design depending upon individual customer requirements.

Do not enter the load space unless there are steps specifically provided to do so. Some bodies, particularly those designed for use with scrap or refuse, do not have internal access ladders or steps.

5. OPERATING INSTRUCTIONS

DANGER OF ENTRAPMENT

Do not get trapped inside the body.

Do not walk on top of the payload, whether sheeted or not.

CAUTION

DANGER OF
ENTRAPMENT

Suitability of payload

The specification of your vehicle body will have been chosen with the intended payload in mind at the time of purchase. Although most bodies look the same there are differences in, for example, the thickness of the floor and side panels. Tailgates also vary in specification.

Make sure that your vehicle is suitable for the intended payload, both in terms of payload density and the ability of the tailgate to discharge the payload in a safe and efficient manner. If you are in any doubt then contact the After Sales and Service Department of Wilcox.

When loading large, heavy objects such as boulders, take care to ensure that the floor and sides of the tipping body are not damaged by the impact of these objects being dropped into the vehicle.

If the vehicle is being used for the conveyance of scrap then, again, take care to protect the body from damage whilst loading and unloading and remember that there is the added danger of scrap snagging up.

Do not try to compact the load to gain more payload as the body may be punctured and the load may snag when discharging, causing the vehicle to become unstable.

Tailgate

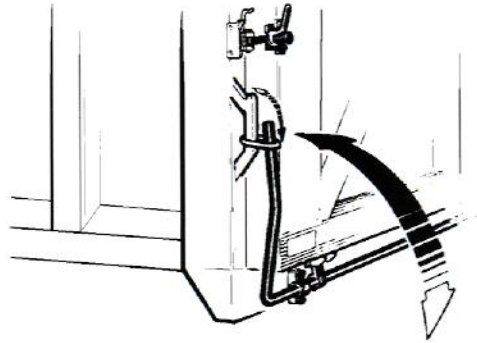
The varieties of different tailgates and taildoors are numerous, ranging from full height, one-piece gates to horizontally split tarmac types however, they all share similar locking arrangements.

To release the tailgate:

- Release the screw clamps (if fitted) and swing them away from the gate.
- Move the locking ring upwards to clear the operating handle.
- Standing to one side of the body, pull the operating handle downwards as far as possible.

5. OPERATING INSTRUCTIONS

If the tailgate has a double locking handle, make sure that you release both sides.



To lock the tailgate:

- Prior to lowering the body completely, check around the tailgate aperture to ensure that nothing can be trapped between seal and door; clean aperture if necessary.
- Lower body fully, pull operating handle up to the locked position (illustrated) and secure handle with locking ring provided. Some gates have locking bars in addition to the one at the bottom, for example very high gates or split gates. Ensure that all locking bars are closed.
- Secure tailgate in the closed position with screw clamps.

DANGER OF LOAD RELEASE

Screw clamps are an integral component of some tailgate locking mechanisms and where fitted, they must be used. If the screw clamps are not used, there is a danger of inadvertent load release. Screw clamps are to be correctly tightened when a load is carried and must not be removed from the vehicle.

CAUTION

INADVERTENT
LOAD RELEASE

Some types of tailgate are horizontally split. These have two sets of locking bars, one for the lower part of the gate and the other for the upper part. The gate can either be opened fully by releasing both sets of locks or only the bottom part may be opened, depending upon the locking bar specification.

Air operated locking bar

Some vehicles are fitted with an optional air operated locking bar mechanism. The tailgate is just the same as those fitted with manual mechanisms but the four (or five) locking cams are actuated by air cylinders and/or an over centre mechanism, depending upon the vehicle type.



5. OPERATING INSTRUCTIONS

Prior to tipping, release screw clamps and if fitted, release the locking mechanism by turning and releasing the control knob mounted in the cab. After the body has been fully lowered the tailgate is locked by pressing in the air control knob. Refit screw clamps before reloading.

DANGER OF DAMAGE

Do not lock the tailgate before the body is lowered. The unlocked door may impact the locking mechanism causing damage.



RISK OF INJURY

Do not operate the tailgate locking mechanism unless you are sure that all personnel are clear of the area.



Grain hatch

If fitted, the grain hatch can be used for the discharge of a 'free flowing' commodity. These are usually used in conjunction with a dust box and sock which is attached to the hatch surround by 'anti-luce' fasteners provided.

RISK OF INJURY

Respiratory difficulties can be caused by dust in or around the rear of the vehicle while unloading through the grain hatch.



DANGER OF EXPLOSION

A danger of explosion exists while unloading some products through the grain hatch.



DANGER OF INJURY OR DAMAGE

The grain hatch should not be adjusted once the tipping operation has commenced.





5. OPERATING INSTRUCTIONS

LOADING

Do not exceed the gross vehicle weight or the individual axle weights of your vehicle.

Ensure that sheets are removed before loading commences.

Some vehicles that are fitted with pneumatic discharge equipment have an optional auger trough blanking plate. Ensure that this is in position, if required, prior to loading.

Loading safety

Before loading the vehicle, ensure that the body is down firmly on the vehicle chassis and that the tailgate and grain hatches are secured.

Stand clear of the vehicle whilst it is being loaded and be aware of the danger from objects falling from loading socks, loading shovels and conveyor belts.

Ensure that the payload is evenly distributed within the tipping body, having regard to the position of the load along the length of the body. Loads should be evenly spread without excessive 'humping'. Loads that are piled up within the body will move under acceleration and braking forces and upset the load distribution; adversely affecting the stability of the vehicle.

If the vehicle is being used to carry dangerous substances then, in addition to the above notes, additional Health & Safety precautions must be taken. Contact the supplier or manufacturer of the substance in question and get advice on how to deal with it.

Partition doors

If your body is compartmented and is fitted with movable partition door(s), ensure that the door(s) are locked into the correct location before loading the vehicle.

Pneumatic loading equipment (Inflo)

If your vehicle is fitted with Inflo equipment it is able to self load through the pneumatic system. Instructions for the use of this equipment are provided in a separate booklet by the supplier of this equipment.

TIPPING SAFETY

!WARNING!

READ THIS SECTION BEFORE BEGINNING TIPPING OPERATIONS.

Before commencing the tipping operation ensure that:

- The vehicle is stood on firm level ground with the parking brake applied (other than when tipping into road laying machines).

5. OPERATING INSTRUCTIONS

- There is sufficient headroom to allow the body to tip fully without contacting overhead obstructions such as cables, gantries or bridges.
- There is no danger of vehicle instability due to wind forces.
- There is no danger of the vehicle being run into by another vehicle.
- There is sufficient room at the rear of the vehicle for discharge.
- The tailgate / taildoor or grain hatch has been released.
- There is no one behind the vehicle.
- **ENSURE** the tractor and trailer are positioned in a straight line, on firm level ground, with **ALL** wheels in contact with the ground and the brakes applied.
- **ONLY** discharge the load with the tractor and trailer coupled.
- **NEVER** tip with the AIR SUSPENSION system deflated.

DANGER OF INJURY OR DAMAGE

Do not discharge the load from an uncoupled trailer.

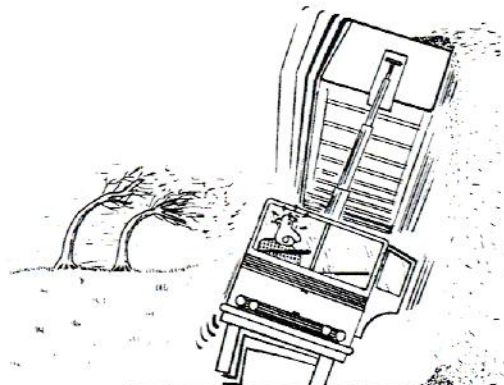


CAUTION

DANGER OF
INJURY OR
DAMAGE

DANGER OF INJURY OR DAMAGE

Do not tip in high winds. High winds can cause the vehicle to overturn.



CAUTION

DANGER OF
INJURY OR
DAMAGE

5. OPERATING INSTRUCTIONS

Ensure the tailgate / rear doors are unlocked before tipping.

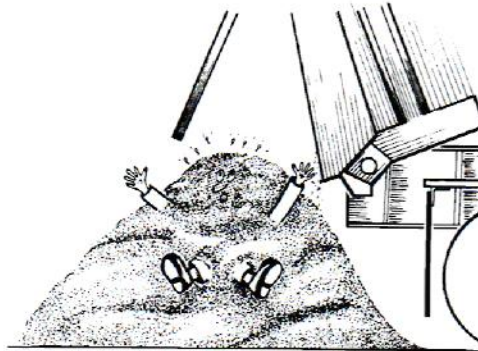
If a grain hatch is fitted and the load is a free-flowing commodity, discharge may be possible (without opening the tailgate doors) via the hatch; attach grain sock and open hatch before tipping. The grain hatch is designed for 'progressive' tipping only.

Always make certain that no one is behind or near the rear of the vehicle when releasing the tailgate and during tipping operations; if necessary erect warning signs.

Stay at the tipper controls during all tipping operations and lower body immediately should it start to lean or shift to one side.

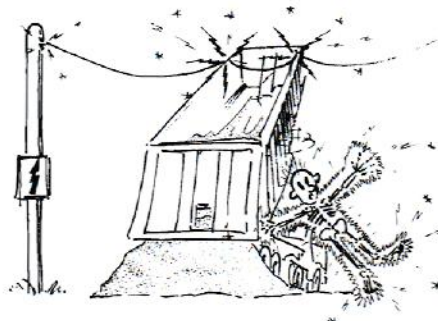
DANGER OF INJURY

Ensure no one is near the rear of the vehicle when tipping – danger of being crushed by load.



DANGER OF ELECTROCUTION

Never operate near overhead cables.



NEVER discharge load in the vicinity of overhead cables or obstructions of any other nature.

DO NOT race the engine while raising the tipper body.

NEVER loosen a wet or sticky load by moving the vehicle and hitting the brakes; return body to lowered position and dislodge load appropriately.

5. OPERATING INSTRUCTIONS

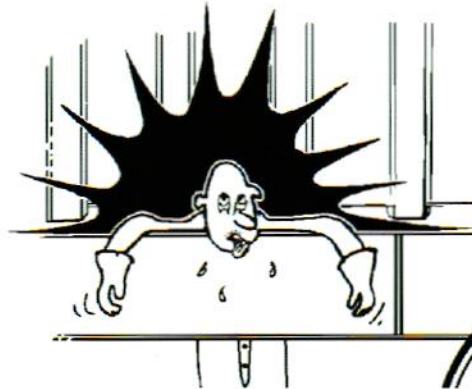
Set the ram control in the HOLD position when not in use and disengage the PTO when the ram is not in use.

Only move the vehicle when the body is completely lowered.

NEVER work on an unpropped body; make sure the body is supported independently.

CRUSH DANGER

Do not work on an unpropped body.



TIPPING

Before tipping ensure that the sheet is released or that the sheeting mechanism is in the open position. Failure to observe this may mean that the sheet is sucked in when the load is discharged.

Open the tailgate, grain hatch or rear doors before commencing the tipping operation. Follow the procedure for your particular tailgate version (see tailgate section). Ensure that when the tailgate is opened there is no danger to personnel from either the discharging load or the sudden rearward movement of the tailgate.

If the grain hatch is being used for discharging the load, then the driver / operator must ensure that all tailgate locking devices are securely locked. During the tipping operation, the level of the load must be monitored, to ensure that it does not build up on, or come over the top of the tailgate.

The driver / operator should try to ensure that the level of the load, once tipping operations have started, is kept just above that of the grain hatch.

RISK OF INJURY

Do not stand behind the vehicle when discharging via the Grain Hatch





5. OPERATING INSTRUCTIONS

NOW CHECK THE POINTS IN THE PREVIOUS SECTION OF THIS BOOK ON TIPPING SAFETY.

When the vehicle has been unsheeted, the tailgate has been opened and the vehicle is ready to be tipped, follow the instructions that have been supplied by the manufacturer of your tipping gear which are provided in a separate book, ensuring that the relevant Health and Safety recommendations have been observed.

Whilst the body is being raised and the load is discharging, continuously observe the discharging load and the stability of the vehicle. If any change in vehicle stability is observed then lower the body immediately.

When discharging difficult loads that may possibly stick in the body the operator, or an assistant, must observe the load during the operation. If the load sticks to one side of the body, or at the front, the uneven weight left in the body will increase the danger of the vehicle tipping over.

After the load is discharged from the vehicle the body must be lowered immediately. The tailgate must be secured and the vehicle sheets replaced.

Tipping into hoppers, pits and road laying machines

When tipping into hoppers, pits or road laying machines additional precautions must be taken. The operator must observe the progress of the load into the hopper or pit and control the elevation of the body to ensure that the hopper or pit does not flood. If the operator cannot see into the hopper or pit then an assistant must guide the operator.

Discharging into road laying machines calls for extra care. The road laying machine will propel the vehicle along so the operator will not only have to control the tip but also guide the vehicle along the road. In these circumstances extreme caution must be used and constant monitoring of the situation is required. The operator/driver must satisfy himself that the ground is level for the duration of the run and that there are no overhead obstructions.

If a horizontally split tailgate is fitted to the body, then the lower section should be retained against the upper section, by using the mechanism provided. Any locking devices fitted on the tailgate must also be released prior to tipping into the road laying machine.

DANGER OF INJURY OR DAMAGE

During tipping operations, the operator/driver must ensure that the body is tipped in a controlled manner, and must stop immediately if the body comes into contact with the road laying machine.



5. OPERATING INSTRUCTIONS

TIPPING OPERATION

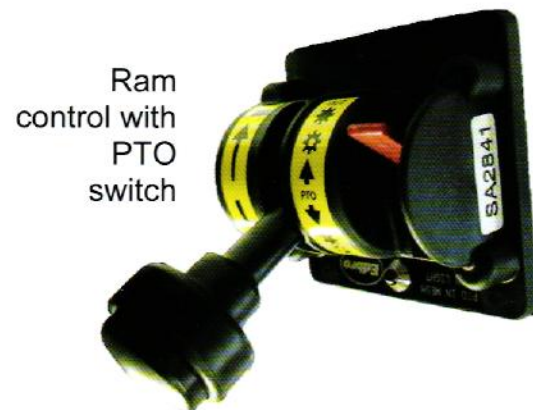
The control used to operate the tipping gear may differ from the one illustrated but the procedures for use are basically the same for all types. Know the function of all the controls in the system.

Also read the information supplied by the manufacturer of the tipping gear fitted to your vehicle.

The ram control has three positions - 'RAISE', 'LOWER' and 'HOLD' with the latter taking the central position.



Ram control without PTO switch



Ram control with PTO switch

To Raise the Body

1. Observe all instructions detailed under 'TIPPING SAFETY'.
2. Start engine and engage the P.T.O. to drive the hydraulic pump.
3. Select '**RAISE**' on ram control and commence tipping operations.

To maintain body at any position select 'HOLD' and disengage P.T.O.

DANGER OF INJURY OR DAMAGE

Do not leave the P.T.O. engaged with the tipping gear in the 'hold' position. Releasing the 'hold' could cause unexpected movement of the tipping gear.

CAUTION

DANGER OF
INJURY OR
DAMAGE

To Lower the Body

1. Select '**LOWER**' on the ram control and allow the body to lower. If the body is partially laden, carefully lower to the chassis to eliminate possible damage to ram or chassis.
2. Avoid jerky movement of control.



5. OPERATING INSTRUCTIONS

Partial and batch unloading

When unloading vehicles with partition doors ensure that the partition door locking mechanism is released before tipping the body. Ensure that all partition doors in front of the compartment that is being unloaded are locked.

When a vehicle is being used for compartmented distribution the vehicle is obviously unloaded from the rear towards the front. This progressive unloading pattern has an effect on the axle weight distribution. In some instances this will cause the front axle of the vehicle to become overloaded at a certain point in the delivery cycle. If this is the case with your vehicle it will be necessary to discharge the next laden compartment into the rear of the body before moving on to the next customer.

If your vehicle requires load re-distribution as outlined above then the following procedure must be adopted:

- After the load has been discharged for the current site, the body must be lowered.
- Secure the tailgate and/or grain hatch.
- Release the partition door at the rear of the next full compartment.
- Tip the body in a controlled tip to move the load from the compartment towards the rear of the body. This operation can be observed through the sight windows.

Partition doors

Partition doors are locked by means of rotating the cam locks on the sides of the vehicle. The locking handles are adjacent to the relevant door position and are held locked by tailgate type locking rings.

The partition door is suspended on two, retractable pivot pins at the top. When the cam lock handles are released the door is able to swing on the pivot pins to allow the load to discharge underneath. If you need to move the partition door to another location within the body, or if you need to remove it from the body completely, then rotate the pivot pin handle from its locked position and slide it back to disengage it from the pivot bushes. The door is now free from its mountings and can be moved. Partition doors can be fitted with wheels at the base as an option to enable them to be easily moved. Some partition doors are in two parts with a fixed portion at the top and an opening portion at the bottom, these doors are not movable.

DANGER OF INJURY OR DAMAGE

When moving a partition door, care must be taken as the doors are heavy and may cause damage or injury if dropped or allowed to fall.





5. OPERATING INSTRUCTIONS

Pneumatic discharge equipment

If your vehicle is fitted with pneumatic discharge equipment and you wish to use this method of unloading then prepare the vehicle for unloading as outlined previously but prior to, and during tipping, carry out further operations relative to the blowing equipment as outlined in the operating instructions that have been supplied to you by the manufacturer of your equipment in a separate booklet. Familiarise yourself with the relevant sections of the blowing equipment manual regarding Health & Safety.

Auger Trough Blanking Plate

Some vehicles are fitted with an optional auger trough blanking plate. This is used to cover up the auger trough and screw when these are not going to be used. The plate is secured either by anti-luce fasteners or, alternatively for longer term use, nuts and bolts. The plate is usually stowed vertically on the inside face of the tailgate when not in use.

CHECKS BEFORE MOVING OFF

The following checks to be carried out in addition to Drivers Routine Checks before moving off.

- **Bodywork**

ENSURE that the body is fully lowered and secured.

Any nets or sheets are secured correctly.

Check that tailgate / taildoor is secure and that the rear of the vehicle is free from debris and discharged load.

- **Electrical and air lines (and hydraulic lines where applicable)**

All connections should be tight and clean. They should be well supported to prevent pinching or entanglement, but long enough to permit a 90 degree lock if a semi-trailer.

ENSURE that the PTO is disengaged.

- **Lights and Markers**

Check all lights and reflectors are clean and functioning correctly.

Replace damaged components promptly; it is illegal for components to be functioning (or positioned) incorrectly.

Ensure correct Emergency Cards or Markings are displayed; if applicable (refer to Health & Safety information 'Dangerous Substances').

5. OPERATING INSTRUCTIONS

Ensure correct number plate is affixed to the trailer. **NEVER** use illegal markings.

- **Check Brake Operation**

Allow system to pressurise, check tractor pressure gauges and if necessary run up to between 6.0 bar (87 psi) to 10.0 bar (145 psi), depending upon manufacturers instructions.

Try the Service (foot) control (where applicable). Listen for air leaks during each application.

Carry out an Electronic brake check as detailed earlier in this Section.

- **Air Suspension**

On trailers fitted with air suspension, allow the suspension to reach 'RIDE' height before moving off.

Ensure Raise/Lower or Exhaust control (if fitted) is reset prior to moving. Some auto-reset systems require initial energising via the brake light circuit; press the brake pedal prior to moving.

- **Lift Axle**

If axle is raised ensure the configuration is within legal plated weights.

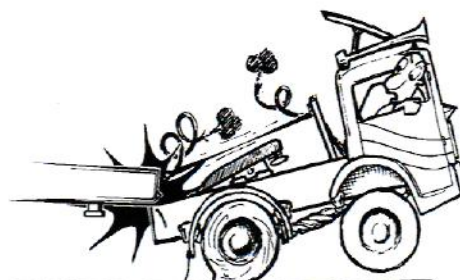
- **Fifth Wheel**

Ensure fifth wheel is locked by pulling forward slightly with the trailer parking brake applied.

If the fifth wheel is fitted with a safety locking mechanism, visually check it has locked after coupling to the tractor unit.

DANGER OF INJURY OR DAMAGE

Always check that the fifth wheel coupling is locked before moving off.



CAUTION

DANGER OF
INJURY OR
DAMAGE

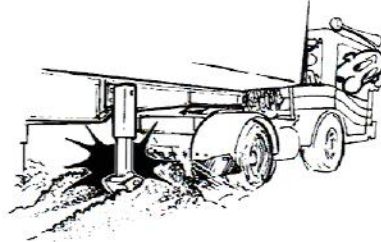
5. OPERATING INSTRUCTIONS

- **Raise Support Legs**

Check the support legs are fully retracted and that the handle is secured in its stowage.

DANGER OF INJURY OR DAMAGE

Ensure support legs are fully raised before moving off.



CAUTION

DANGER OF
INJURY OR
DAMAGE

- **Ancillary Equipment**

Where applicable, check the condition of all ancillary equipment and ensure it is correctly positioned / stowed.

- **Unsafe Equipment**

Report all unsafe equipment before its condition becomes an operational hazard.

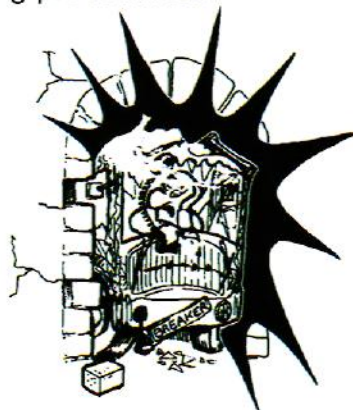
Check the general condition of your vehicle e.g. load carrying area, doors, sidewalls, ladders, handrails, walkways, drain tubes etc.

- **Know Your Vehicle**

Your life and others depend on your knowledge and experience, ensure your vehicle is **SAFE before moving off - never assume.**

DANGER OF INJURY OR DAMAGE

Know the height, width and length of your vehicle. Ensure that you know any special operating procedures.



CAUTION

DANGER OF
INJURY OR
DAMAGE



5. OPERATING INSTRUCTIONS

TIPPING ANGLES FOR VARIOUS COMMODITIES GUIDANCE ONLY

Taken from 'The Essential Tipper Handbook' – a Road Haulage Association publication.

<u>Commodity</u>		<u>Tipping Angle (Degrees)</u>
Ashes	- Dry	33
	- Moist	36
	- Wet	30
Asphalt		45
Brick		40
Cinders	- Dry	33
	- Moist	34
	- Wet	31
Cinders and Clay		33
Clay		45
Coal	- Hard	24
	- Soft	30
Coke		23
Concrete		30
Earth	- Loose	28
	- Compacted	50
Garbage		30
Gravel		40
Ore	- Dry	30
	- Fresh Mined	37
Rubble		45
Sand	- Dry	35
	- Moist	40
Sand and Crushed Stone		27
Shingles		40
Stone	- Whole	30
	- Broken	27
	- Crushed	30

5. OPERATING INSTRUCTIONS

APPROXIMATE MATERIAL WEIGHTS GUIDANCE ONLY

Taken from 'The Essential Tipper Handbook' – a Road Haulage Association publication.

<u>Commodity</u>	<u>Weight (tonne/metre³)</u>
Ashes	0.8 - 1.03
- Damp/Dry	
- Wet	1.01 - 1.33
Asphalt	1.59
Ballast	1.53 - 1.73
- Dry	
- Wet	1.73 - 1.93
Barley (bulk)	0.63
Bricks, weight / 1000	
- Common Brick	3.05 - 3.56t
- Facing Brick	3.56 - 4.06t
- Rustic Brick	4.06 - 4.46t
Bricks	1.48 - 1.99
- Stacked	
- Tipped	1.26-1.66
Cement	0.9
- Natural	
- Portland (loose)	1.45
Clay	1.01
- Dry	
- Wet	1.76
Coal	0.9
- Anthracite	
- Bituminous	0.76
- Pulverised	0.55
Coke	0.6
- Loose	
- Breeze	0.40 - 0.55
Concrete	1.25
- Dry Mix	
- Wet Mix	2.38
Corn	0.76
- Rye (bulk)	
Earth	1.11
- Dry (loose)	
Fertiliser (bulk)	1.03
Flour (bulk - loose)	0.45
Fluedust (blast furnace)	1.76 - 1.99
Garbage	0.68
Gravel	1.68
- Dry	
Gravel & Sand	1.46 -1.73
- Dry	
- Wet	1.93
Hardcore	1.66
- Fine	
- Rough	1.20-1.46
Iron	2.12 - 2.56
- Hemalite Ore (loose)	
Lime	1.53
- Gypsum	
Oats (bulk)	0.42 - 0.51
Road Metals	2.39
- Asphalt	
- Mastic or Rolled	2.39
- Macadam	2.13
- Bitumen	
- Macadam	1.88 – 2.51
- Tar	
Rubble	1.05



5. OPERATING INSTRUCTIONS

APPROXIMATE MATERIAL WEIGHTS (Cont.) GUIDANCE ONLY

<u>Commodity</u>		<u>Weight (tonne/metre³)</u>
Sand	- Dry Pit	1.33
	- Wet Washed Pit	1.66
	- Dry Silica	1.45 - 1.59
	- Foundry	1.45 - 1.59
Shale	- Crushed	1.43
Shingles	- Dry	1.73
	- Wet	1.93
Slag	- Blast Furnace	1.26 - 1.66
Street Sweeping		0.5
Stone	- Crushed	1.59
Sugar	- Refined (bulk)	0.8-0.88
Urea	- Powder	0.6-0.73
Wheat (bulk)		0.76

NOTE: Multiply tonne/metre³ by 1.31 to determine yd/m³

6. MAINTENANCE

SEMI-TRAILER MAINTENANCE SCHEDULE		After 150 Km	Daily	Weekly	Monthly	6 Weekly	Annually
Photo	Description						
1	◆ Tipping ram attachment to chassis – check for tightness and security					✓	
2	◆ Tipping ram attachment to body – check for tightness and security					✓	
3	◆ Rear hinge attachment to chassis – check for tightness and security, re-torque					✓	
4	◆ Rear hinge attachment to body – check for tightness and security					✓	
5	◇ Tipping ram bottom trunions – grease			✓			
6	◇ Tipping ram lift bracket trunions – grease			✓			
7	◆ ◇ Rear tipping hinge – grease			✓			
8	◆ ◇ Tailgate hinge – grease (if required)			✓			
9	Tip warning lamp in cab – operate		✓				
10	●◆ Ram outer cover – check security					✓	
11	●◆ Ram – inspect for tube damage					✓	
12	● Base ram nut – not loose					✓	
13	●◆ Ram upper trunions, lower body fixing point and rear hinge – check for wear					✓	
14	Ram seals and flexible pipes – check for leaks				✓		
15	Air pipe work – check for leaks					✓	
16	Brakes – check for correct operation and wear					✓	
17	EBS system – check operation (tractor dash display)		✓			✓	
18	Wheel nuts – check security	✓		✓			
19	Tractor to trailer brake balance – check predominance				✓		
20	◆ Body guide wear plates – check security and grease as necessary				✓		
21	◆ Body pads – check security				✓		
22	Body hinges – check security				✓		

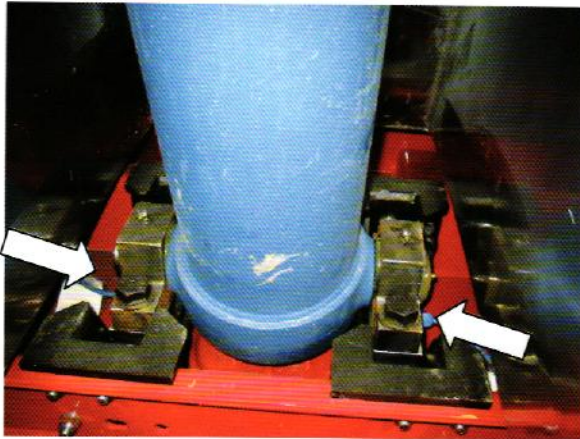


6. MAINTENANCE

- Advise the tipping ram manufacturer if there is a problem
- ◆ Photograph in section 7
- ◇ May need to be carried out more frequently depending upon the conditions of use (i.e. carrying hot loads or using solvent and chemical washes may necessitate more regular grease changes to prevent joint seizure). The frequency detailed should be seen as an absolute maximum.

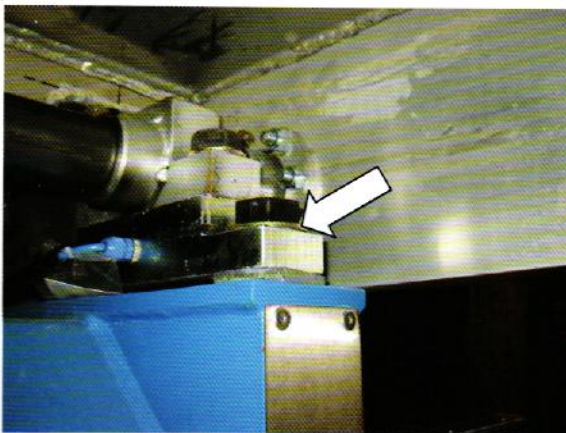
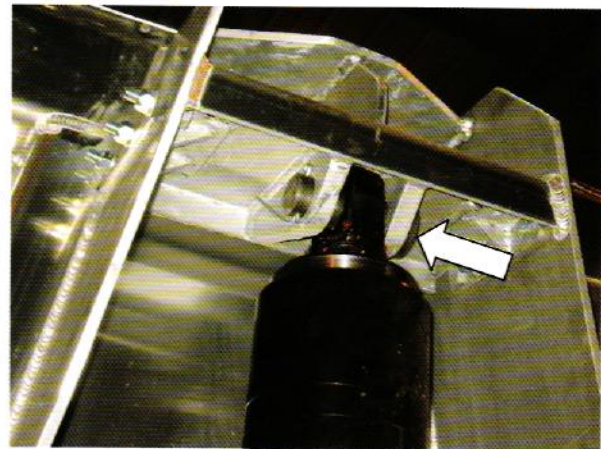
Torque settings should be in accordance with the information displayed on the trailer or in accordance with British Standard requirements.

7. VISUAL MAINTENANCE GUIDE



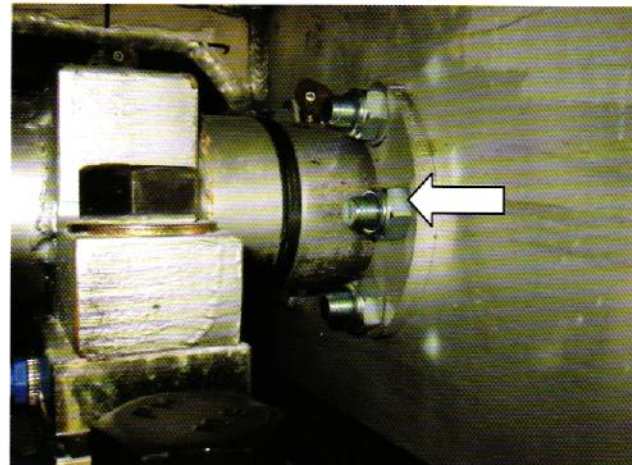
1. Tipping ram attachment to chassis – check for tightness and security

2. Tipping ram attachment to body – check for tightness, security and re-torque



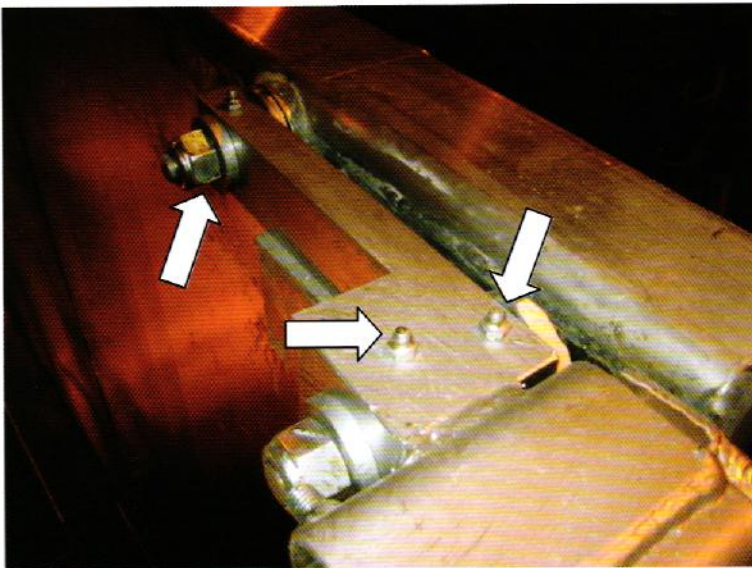
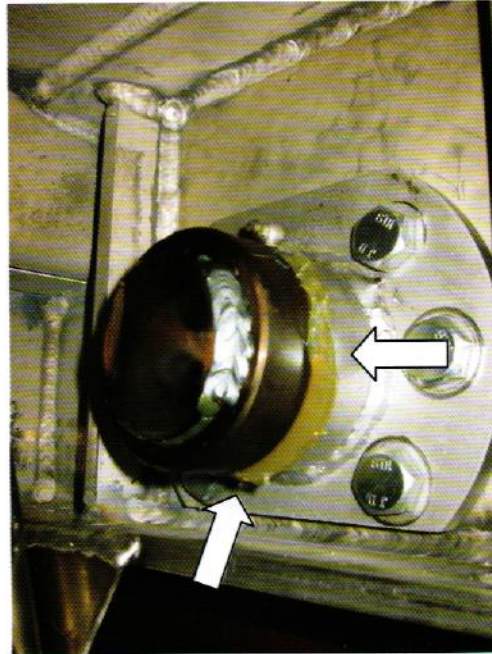
3. Rear hinge attachment to chassis – check for tightness and security

4. Rear hinge attachment to body – check for tightness and security



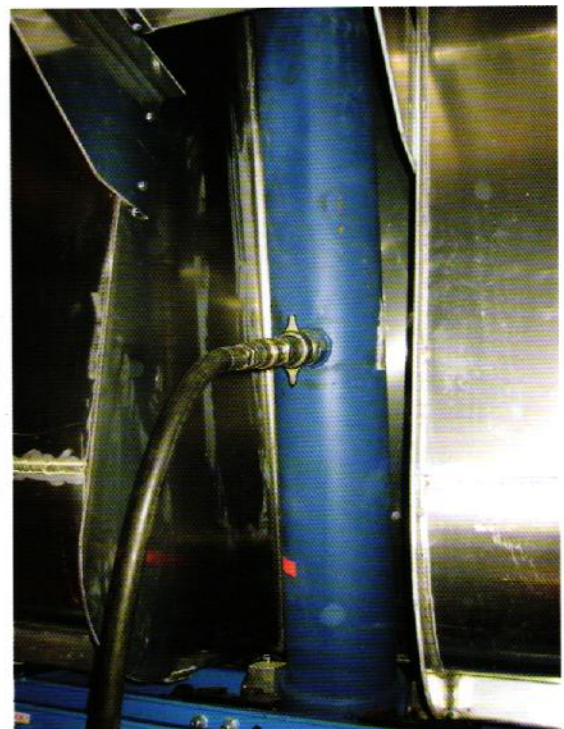
7. VISUAL MAINTENANCE GUIDE

7. Grease rear tipping hinge
– pump grease until clean
grease can be seen around
hinge bar

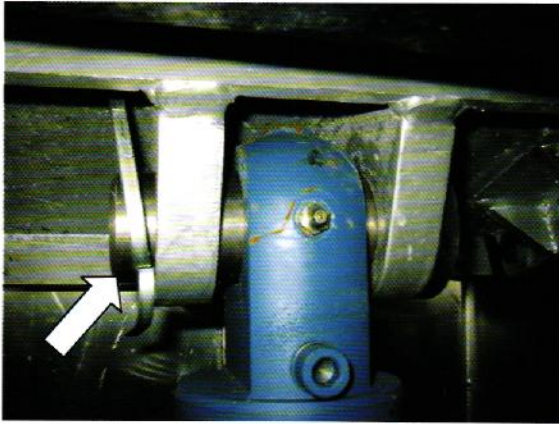


8. Grease tailgate hinge if required
– grease all nipples that can be
seen, pump grease until clean
grease can be seen around
hinge

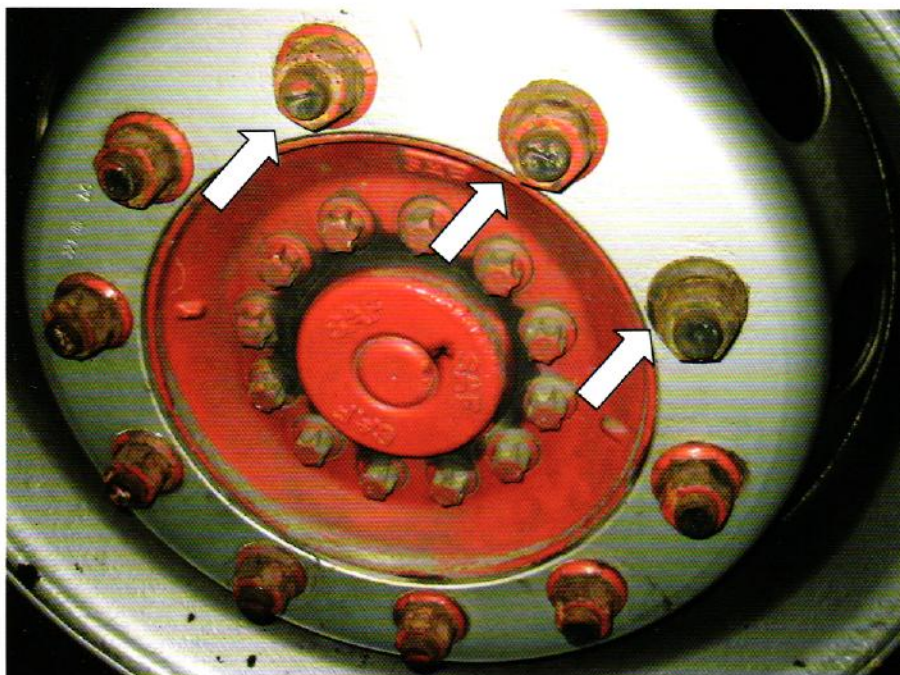
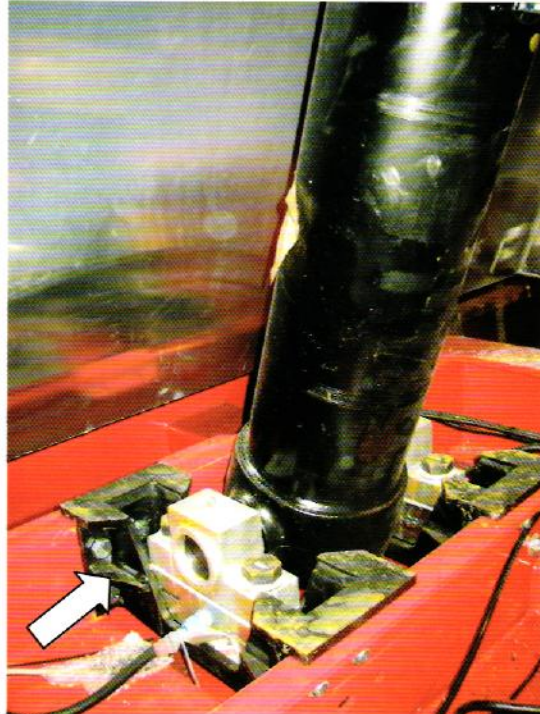
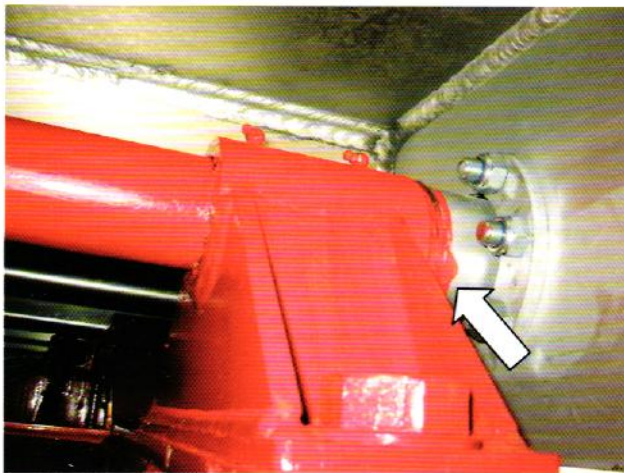
10. Inspect ram outer cover for
security
11. Inspect ram tube for damage



7. VISUAL MAINTENANCE GUIDE

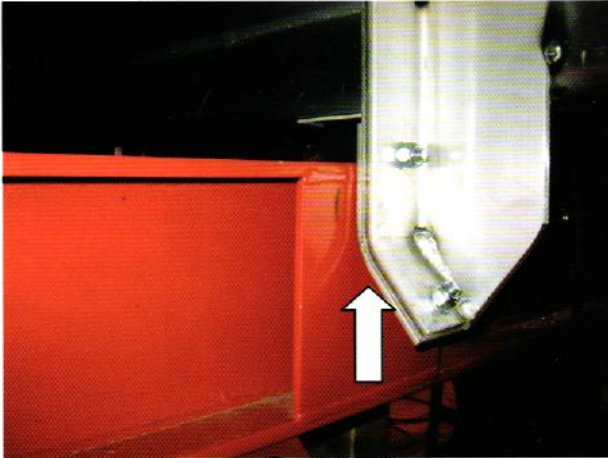


13. Check ram lower trunions, upper body fixing point and rear hinge for wear



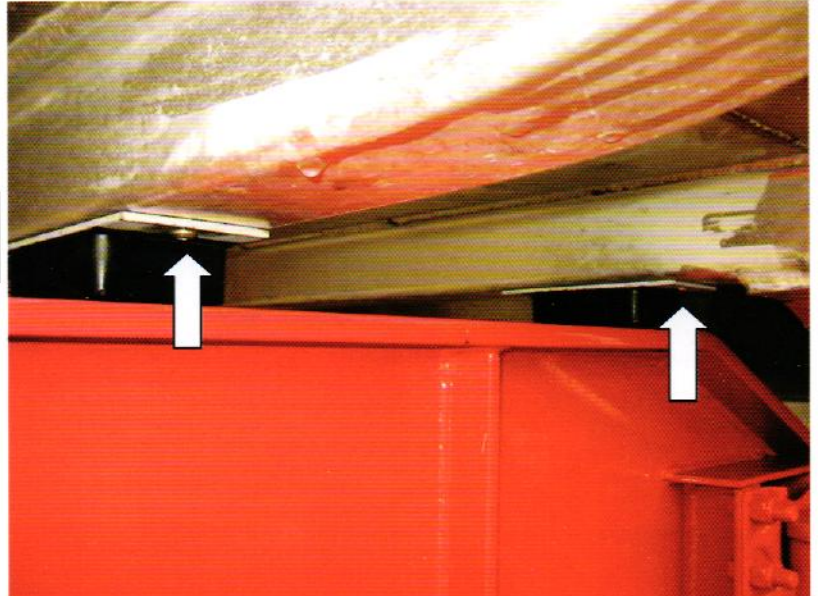
18. Check security of wheel nuts

7. VISUAL MAINTENANCE GUIDE



20. Check body guide wear plates for wear and grease as necessary

21. Check security of body pads





7. VISUAL MAINTENANCE GUIDE

Notes: