

(RT-001)

RAIL OPERATING INSTRUCTIONS

&

EMERGENCY RECOVERY PROCEDURES

RAIL- ABILITY



20 and 23 TONNE RAIL TRAILER



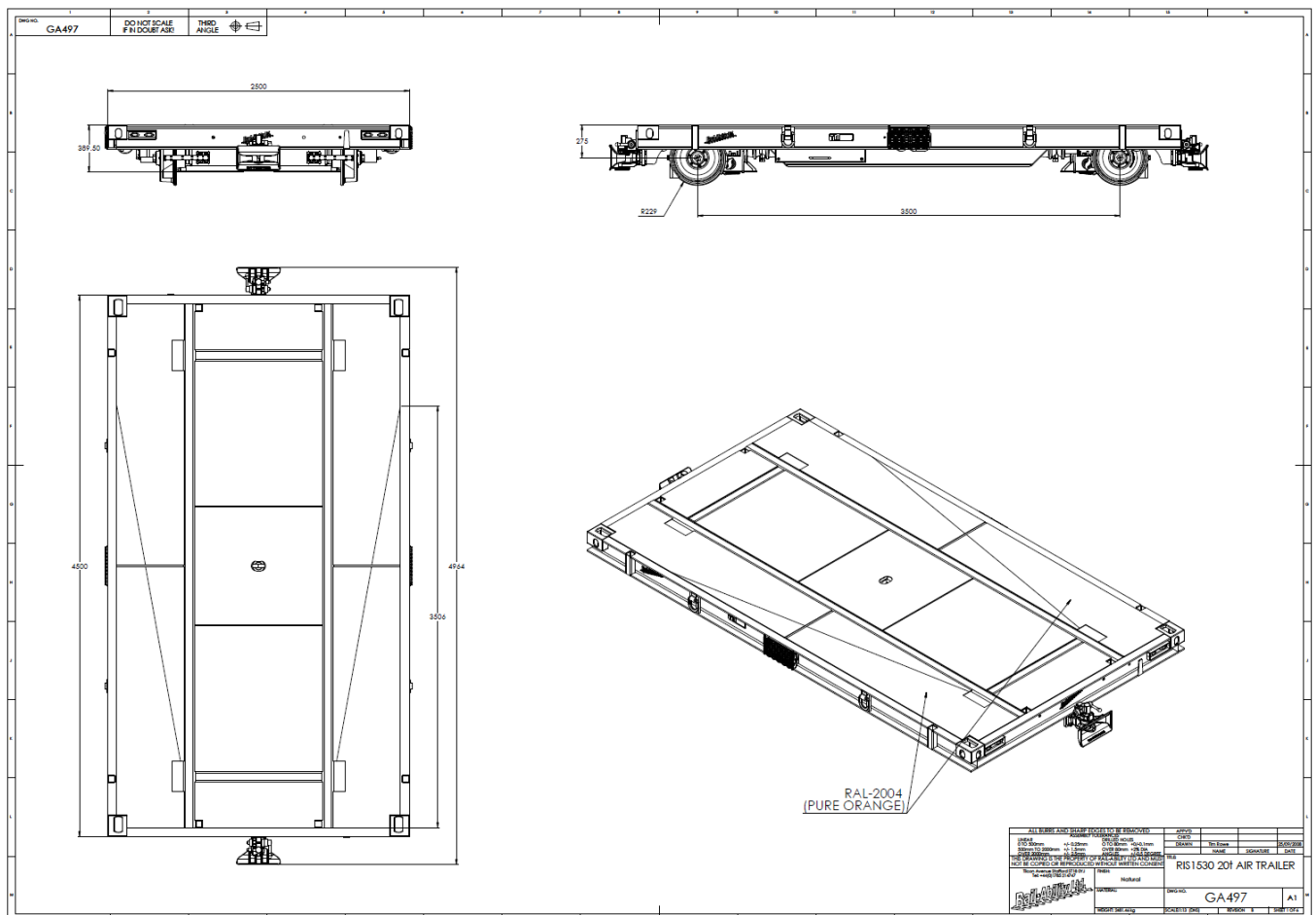
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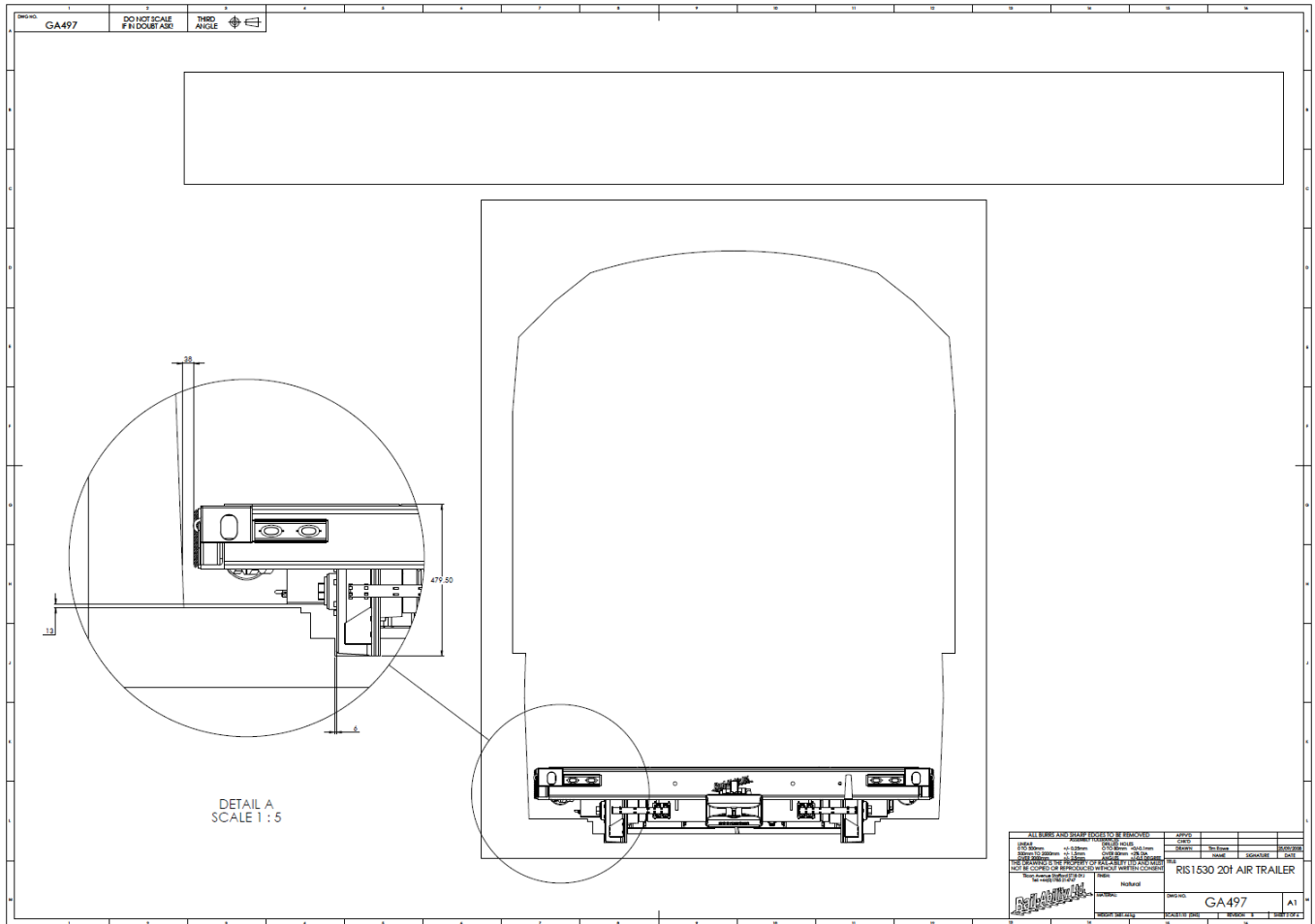
Introduction

This document outlines the lifting and operation of a single and multiple 23t 4.5m length rail trailer (2.5t tare) with 20t load. This document focuses on the safe use of the trailers when lifted centrally while unloaded, jacked from one of the jacking points when fully loaded and operational on rail wheels when fully loaded and highlights some of the risks involved in doing so. This manual should be used in conjunction with a risk assessed safe system of work each time. Operatives and maintenance personnel should be trained and assessed to an approved training plan, by and authorized trainer/assessor.

Specification - principal dimensions



Trailer Diagram showing compliance with the Plant gauge.



OPERATIONAL SAFETY PRECAUTIONS

- **ALL WORK ON OR NEAR THE RAILWAY INFRASTRUCTURE MUST BE CARRIED OUT STRICTLY IN ACCORDANCE WITH RAILWAY REGULATIONS.**
- **ATTENTION MUST BE PAID TO RAILWAY GROUP STANDARDS AND ALL SAFETY PRECAUTIONS MUST BE FOLLOWED AT ALL TIMES.**
- **WHEN WORKING ON ELECTRICALLY OPERATED ROUTES, BE SURE TO OBSERVE OFFICIAL REGULATIONS. ALWAYS OBSERVE MINIMUM CLEARANCE FROM OVERHEAD WIRES.**

- **ALL STAFF MUST BE FULLY TRAINED AND ASSESSED AS COMPETENT TO USE THIS PIECE OF EQUIPMENT ON RAILWAY INFRASTRUCTURE.**
- **THIS 4-WHEEL TRAILER MUST ONLY BE TOWED BY MACHINE TYPE THAT HAS BEEN TESTED IN CONJUNCTION WITH A TRAILER OF THESE TYPES AND IS KNOWN TO PROVIDE ADEQUATE BRAKING POWER AND HAS COMPATIBLE BRAKE SYSTEM PRESSURE.**
- **THE TRAILER IS FITTED WITH ROCKINGER COUPLINGS AT BOTH ENDS AND IS PROVIDED WITH A DEDICATED NUMBERED TOW BAR FOR TOWING PURPOSES. NO OTHER TOW BAR SHOULD BE USED.**
- **THE BRAKING SYSTEM IS CONTROLLED BY THE MACHINE OPERATOR, FROM THE CAB OF THE TOWING MACHINE USING EXISTING CONTROLS.**
- **THIS TRAILER IS SUITABLE FOR USE UNDER THE LIVE OLE WHEN USED IN CONJUNCTION WITH A SAFE SYSTEM OF WORK DETERMINED AND AUTHORISED BY TAKING GUIDANCE FROM THE REQUIREMENTS OF GE/RT8024.**
- **LIMITATIONS OF USE ARE AS PER THE CURRENT VEHICLE SPECIFIC ENGINEERING CONFORMANCE CERTIFICATE.**
- **THIS MANUAL SHOULD BE USED IN CONJUNCTION WITH THE OPERATORS SAFE SYSTEM OF WORK.**
- **MODIFICATIONS TO THE VEHICLE MUST BE AUTHORISED BY RAIL-ABILITY AND A PLANT ACCEPTANCE BODY THAT WILL ISSUE AN AMENDED ENGINEERING CONFORMANCE CERTIFICATE. FAILURE TO GET APPROVAL WILL INVALIDATE THE EXISTING ENGINEERING CONFORMANCE CERTIFICATE.**
- **THIS MANUAL SHOULD REMAIN WITH THE MACHINE AT ALL TIMES. ALL OPERATING PERSONNEL SHOULD BE AWARE OF ITS LOCATION AND CONTENTS.**
- **IT IS IMPORTANT THAT ALL PERSONNEL ARE FULLY TRAINED AND FAMILIAR WITH THE MACHINE AND THAT THEY HAVE READ AND UNDERSTOOD THE INFORMATION CONTAINED WITHIN THIS MANUAL BEFORE OPERATING IN THE SITE CONDITIONS FOR WHICH THE MACHINE WAS DESIGNED.**
- **ONLY AUTHORISED STAFF MAY START, OPERATE OR INTERFACE WITH THE VEHICLE.**

- **THE USER OF THE VEHICLE SHALL ONLY OPERATE THE MACHINE IN ACCORDANCE TO THIS MANUAL AND AVOID OVERLOADING.**
- **ALL PERSONNEL ARE OBLIGED TO TAKE PRECAUTIONS GIVEN BY THE RAILWAY INFRASTRUCTURE MANAGER.**
- **PERSONNEL ARE NOT PERMITTED BETWEEN MOVING VEHICLES.**
- **THE VEHICLE MAY ONLY OPERATE WITH THE ACCESS ADJACENT TO ACCESS OR A LINE CLOSED TO ALL TRAIN MOVEMENTS OR THE DOCUMENTED SAFE SYSTEM OF WORK MUST TAKE ACCOUNT OF ADEQUATE SAFE CLEARANCES TO ADJACENT LINES.**
- **THE VEHICLE IS NOT SUITABLE FOR OPERATION OF SPRING LOADED POINTS.**
- **THE VEHICLE IS NOT FOR USE ON LIVE THIRD/FORTH RAIL AREAS.**
- **THE ORANGE AREAS PAINTED ON THE TRAILER DECK INDICATE THE POSITION OF THE TIPPING LINES AND ARE LEAST STABLE. LOAD THESE AREAS OF THE TRAILER DECK LAST AND UNLOAD THEM FIRST.**

SEE THE NETWORK RAIL P.A.B ENGINEERING CONFORMITY CERTIFICATE FOR ADDITIONAL, SPECIFIC MACHINE LIMITATIONS OF USE.

ON / OFF TRACKING THE TRAILER – GENERAL POINTS

1. Lift the trailer onto the track at a suitable access point

NOTE – AN APPROVED ACCESS POINT IS ONE OF THE FOLLOWING:

- LEVEL CROSSING
- YARD WHERE SURFACE IS LEVEL WITH THE RAIL TOP
- PROPRIETARY APPROVED TRACK ACCESS SYSTEM (WITH RAIL SHIELDS).
- CONSOLIDATED BALLAST TO AT LEAST THE UNDERSIDE OF THE RAIL HEAD WITH RAIL SHIELDS.

THE FOLLOWING HAZARDS SHOULD ALSO BE ADDRESSED:

- CANT – NOT TO EXCEED 200MM
 - NO BALLAST SHOULDER
 - NO DEEP CESS / SOFT CESS
 - NO DRAINAGE ROUTES, TROUGHING ROUTES OR OTHER SERVICES/CABLES
 - HIGH / NO OHLE
 - 3RD RAIL MUST BE WHERE GAP EXISTS ON BOTH SIDES,
 - NO POWER CABLES.
 - CARE SHOULD BE TAKEN WHEN ON/OFF TRACKING NOT TO DAMAGE THE RAILHEAD, SUITABLE RAIL SHIELDS SHOULD BE USED IF NECESSARY.
2. For on and off tracking a site specific plan, shall be used taking account of the requirements of the applicable module of Network Rail specification NR/PLANT/0200 in the UK.
3. The trailer cannot be on/off tracked in laden condition.

4. Ensure brakes are working effectively by pulling the trailer with the chains. The trailer brakes should resist movement: the wheels should not rotate.
5. Connect drawbar to towing vehicle before attaching to the trailer.
6. Only connect the brake hose to the trailer after fitting drawbar.
7. Switch lights on at master switch once trailer is positioned on the track.
8. Check the brakes release allowing the wheels to roll when starting to travel.

GROUNDING OUT, FORCING OR STRIKING THE TRAILER WHILST THE MACHINE IS CARRYING IT OFF RAIL MAY RESULT IN SEVERE DAMAGE TO THE TRAILER.



On Tracking and Coupling

It is assumed that the trailer will be delivered to the trackside by lorry. Care must be taken when transferring the trailer from delivery vehicle to the track. The trailer must only be lifted onto the track by a machine that is standing on sound level ground. Particular care should be exercised if this takes place under live OLE. No items of equipment should be placed on the trailer bed during this operation.

Ensure that the lifting machine has adequate capacity at required radius to safety lift switched on with its rated capacity indicator/safe working load indicator.

Un-laden (Tare) weight of trailer: 2.5 tonnes.
Connect lifting eye, found in centre of the deck, to the lifting machine.

Note: If four leg lifting chains are used **only** the 4 designated lifting points on the outsides of the deck of the trailer.

Place trailer onto the line with oscillating axle toward the towing machine. The apex where the orange triangles meet painted on the trailer bed should point towards the host machine. A machine/crane controller must be available to guide rail wheels onto track.

Ensure that all personnel not involved with control and manoeuvres are outside the operating range of the machine and that all others are in view and remain safely away from vehicle during these operations.

When on tracking a trailer, ensure the park brake is functioning by:
Using the lifting machine, push/pull the trailer along the track a small distance using the lifting chains. All wheels should skid and not rotate.

If the trailer moves freely because wheels rotate, remove from use and investigate the cause. **THE TRAILER MUST NOT BE USED.**

Connect the trailer tow bar to the towing machine (but not the brake hoses). Undertake a pull test and check the trailer resists the movement.

Note: If the trailer is already on line undertake a pull test and check the trailer resists the movement.

Note: If trailers are interconnected with those of other manufacturers, the braking requirements of the complete system should be checked for compatibility.

Air Connections

Apply towing machine parking brake, and then couple the red pneumatic hose connections using supplied hoses.

Ensure that the park brake line blanking plugs/caps are fitted on opposite end of trailer to that being coupled.

Remove blanking plugs from red park brake connections on trailer and towing vehicle at connecting end. Connect park brake hose.

Connect the yellow service brake hose to the trailer and towing vehicle at connecting end.

RED couplings serve the Park Brake Circuit, and should be BSAU138A-1980 **female** 'C' without self-sealing valve, located on the host vehicle and trailers. The corresponding male 'C' couplings are fitted on each end of the connecting hose.

YELLOW couplings serve the Service Brake Circuit, and should be BSA138A-1980 **male** 'C' with self-sealing valve, located on the host vehicle and trailers. The corresponding female 'C' couplings with operating sleeve are fitted on each end of the connecting hose.

Multiple Trailers

If connecting a second trailer, ensure that the correct hose is used, after first removing the dummy blanking plugs on each trailer. It is important to remember to re-fit these blanking plugs when the hoses are subsequently removed.

If trailers are interconnected with those of other manufacturers, the braking requirements of the complete system should be checked for compatibility. Ensure total towed load does not exceed that permitted for the towing vehicle.

Release park brake and move trailers to establish that the park brakes have released.

The service brakes will be applied when the road-rail vehicle brake pedal is depressed. Light pedal pressure results in low pressure in the trailer brakes, high pedal pressure increases pressure to the trailer brakes and may cause the wheels to lock.

The combined outfit is now ready for use.
Apply parking brake and stop engine before disconnecting brake hoses.

Air Reservoirs

1. Trailers fitted with air tanks can be used with any compatible host machine approved for towing within the limitations of the machine towing capability.
2. Trailers without air tanks fitted require 25 litres of air reservoir capacity each from the host machine supply. Therefore if the host machine does not have air reservoir capacity for trailer brakes, it cannot tow trailers without air reservoirs fitted.

Host machine supplementary air capacity required for trailers without air reservoirs fitted:

0-24L	enables	0 trailers
25-49L	enables	1 trailer
50-74L	enables	2 trailers
75-99L	enables	3 trailers
100-124L	enables	4 trailers
125-149L	enables	5 trailers
150-174L	enables	6 trailers
175-199L	enables	7 trailers
200-224L	enables	8 trailers
	Etc.	

[WARNING] BRAKE LINES ON TOWING MACHINES WITHOUT AIR RESERVOIRS WILL PHYSICALLY INTERCONNECT TO TRAILERS WITHOUT AIR RESERVOIRS! THIS MUST NEVER BE DONE. THE BRAKING SYSTEMS, IN PARTICULAR THE SERVICE BRAKING SYSTEM, WILL NOT FUNCTION PROPERLY AND BRAKE PERFORMANCE WILL BE SEVERELY IMPAIRED.



TOWING PROCEDURES

3. When towing only travel at 10mph / 16km/h or below.
4. Ensure that the trailer is never overloaded
5. Ensure the towing vehicle is approved for towing.
6. Ensure the load the machine is certified to tow is not exceeded. Never exceed the accepted towing weight limit.
7. When loading the trailer ensure that the yellow areas of the deck are loaded first. The orange sectors of the deck indicate the unstable areas of the trailer and should always be loaded last and equally with lighter elements of the load to be carried.
8. Make sure that loads are secure.
9. Total combined weight of trailer(s) and load(s) should not exceed the allowable maximum trailing specified on the machine's engineering acceptance certificate. This must not exceed three trailers at each of the towing vehicle.

[WARNING] EXTRA CARE AND OBSERVATION OF LINE SIDE AND OVERHEAD STRUCTURES IS REQUIRED WHEN THE TRAILER IS CARRYING A LOAD THAT IS OUTSIDE THE TRAVEL GAUGE IN ANY WAY.



Brake Status

To confirm the park brakes are released before travel along the track it is possible to check that the brake shoes are no longer in contact with the tread of the rail wheels in each case. Trailer brakes will take different amounts of time to release depending on the host machine air supply.

Trailer Break Away Detection

This depends on type of towing machine. The towing vehicle must have park brake air flow sensing or hose connection activated break away detection systems fitted.

Rail Lights

Operation of the rail lights is automatically controlled by a direction sensor located at one of the rail wheels, to provide the correct colour lights according to the trailer's operation. An On/Off switch is provided on the trailer headstock to activate the rail marker lighting system. This switch should always be on whenever the trailer is placed on the track. When the trailer is stationary red lights show at both ends. When moving, the white lights will illuminate and the red lights will be turned off by the system in the direction of travel.

Power for the rail lights is provided by an on-board 12V battery. Lamp irons are also provided if the lighting system fails or if the battery gets discharged. Battery charging is provided by trailer mounted solar panels. It is important to switch the marker lighting system off while the trailer is not in use to allow the solar panels to recharge the battery fully. If the trailer is operated and/or stored in low light level environments for prolonged periods of time, it may be necessary to charge the system battery with a trickle charger prior to use.

Load Retention Points

Lashing Rings

The lashing rings can be used to attach a load to the trailer, and they are **also** suitable for lifting and tying the trailer down when it is carried as a load on another trailer or lorry.

Twist locks

On some trailer variants, there are twist locks located on the trailer for securing demountable modules such as box sides and drum carriers etc.

To secure: ensure twist locks on the module are in the extended unlocked position, as follows:

Unlock the twist lock on the demountable module.
Place in designated position on trailer so that the twist locks insert into the castings.

Ensure all twist locks are in the locked position, as follows:
Turn the handle to locked position.

The demountable module is now locked to the trailer.

To remove: ensure all twist locks are in the unlocked position, Fig 7.10.C as follows:

Turn the handle through 90° to the unlocked position. This will allow the twist lock to retract from the trailer.



Coupling and Uncoupling

WARNING

- The operator is responsible for all coupling/uncoupling procedures. The machine/crane controller must be present to verify that each procedure has been carried out correctly.
- Only trained and assessed competent staff are allowed to undertake coupling/uncoupling procedures for these vehicles.
- In DC electrified line areas (3rd and 4th rail), and in addition to the possession, a DC isolation must be in place at all times whilst a trailer is on the line.
- When not in use, all trailers must be off-tracked to a safe position.
- Whenever a rail trailer is placed on track, a test of the brakes must be carried out.
- **NOTE: THE MACHINE ENGINE SHOULD NOT BE RUNNING WHEN THE TRAILER BRAKES ARE CONNECTED AND DISCONNECTED AND THE HYDRAULIC BRAKE PRESSURE GAUGE ON THE RAIL AXLE SHOULD READ ZERO BAR IN BOTH CASES TO ENSURE THE TRAILER BRAKES APPLY FULLY.**



Coupling/Re-Coupling

Connect the trailer tow bar to the RRV/RMMM towing jaw. Then allow the machine to approach the trailer automatic coupling end. The drawbar will automatically operate the coupler on the trailer as the drawbar eye end enters the coupler funnel. (Do not connect the brake hose).

WARNING – Never attempt to connect a towing jaw end of a vehicle to another towing jaw end of a vehicle, unless following emergency recovery procedures.

Carry out a test pull. The trailer brakes should resist movement: none of the wheels should rotate.

Connect up the brake hose, release the trailer parking brake from the machine and repeat the test pull, allowing for any time delay in the system operation. The trailer should now move freely.

WARNING – Only if the above brake tests are satisfactory should the trailer be used.

If the brakes are found to be ineffective, the trailer must be off-tracked.

If the trailer cannot be lifted off track in one operation while the host machine is in rail mode, then the end of the trailer nearer the host machine must be carefully derailed in order to prevent runaway.

At all times, the trailer must be secured to prevent runaway.

Uncoupling

The vehicles should be brought to a stop; the towing vehicle's parking brake applied and the engine stopped (where necessary). Follow the manufacturer's procedure for ensuring that the brake pressure has been released. Note that after stopping the engine there is usually a delay before line pressure decays.

Disconnect the brake hose and restart the engine (where necessary).

Use the towing vehicle to carry out a test pull. The trailer brakes should resist movement: none of the wheels should rotate.

WARNING – If brakes are found to be ineffective, the trailer must be off-tracked.

If the trailer cannot be lifted off track in one operation while the host machine is in rail mode, then the end of the trailer nearer the host machine must be carefully derailed in order to prevent runaway.

At all times, the trailer must be secured to prevent runaway.

FAILURE TO COMPLY WITH ANY OF THE REQUIREMENTS STATED IN THIS DOCUMENT MAY RESULT IN DAMAGE TO THE MACHINERY AND/OR THE RAIL INFRASTRUCTURE AND MAY RESULT IN SEVERE INJURY OR DEATH TO PERSONNEL.



Uncoupling and Off Tracking

Bring the towing machine to a stop, apply the towing vehicle parking brake and switch off the engine.

Apply towing vehicle parking brake but not service brake. Stop engine. Remove service brake connection first, then the park brake hose.

Disconnect the air brake hoses, and replace the dummy blanking plugs.

Using the towing machine, push/pull the trailer a few feet. Trailer wheels should skid and not rotate.

Providing the brakes have applied uncouple the tow bar.

Emergency Recovery Procedure

Should it be necessary to move the trailer without a correctly configured towing machine being available, one of the following procedures can be employed.

- Lift & carry.
- Drag (short distance).
- External pneumatic pump capable of maintaining at least 5 bar pressure.
- Adjust the brakes off then quarantine

Firstly, couple the towing machine to the trailer via the tow bar. Connect to towing vehicle first. The trailer brakes can now be released manually, with an external pump connected to the park brake coupling or by de-tensioning the slack adjusters.

The trailer brakes are now released allowing it to move.

Release pressure and disconnect brake release pump before disconnecting the tow bar.

If the brakes have been adjusted off, the lifting chains must be connected to the trailer at the off tracking point and tensioned using the lifting machine, prior to the tow bar being released from the towing machine. The trailer must then be chocked when placed on the ground and clearly marked up as 'brakes failed' and reported to the owner.

FAILURE TO COMPLY WITH ANY OF THE REQUIREMENTS STATED IN THIS DOCUMENT MAY RESULT IN DAMAGE TO THE MACHINERY AND/OR THE RAIL INFRASTRUCTURE AND MAY RESULT IN SEVERE INJURY OR DEATH TO PERSONNEL.

