



Safe Work Instruction	Issue date: 22/07/10
Pony Bogie – Safe Fitting	Review date: 01/07/13

Document no.	Work description		
SMS-06-SW-0932	This SWI outlines the safe work practices for fitting a Pony Bogie to a rail vehicle.		
	Scope This SWI applies to the safe fitment of temporary bogies (Pony Bogies) to rail vehicles with damaged and/or non-functioning wheel sets. This enables the rail vehicle to be transported to a Maintenance Centre.		
Review date	References		
01/07/13	<ul style="list-style-type: none"> • OHS Act 2000 • NSW OHS Regulation 2001 • Rail Safety Act 2008 • Network Rules 414 • SMS-06-PR-0329 Hot work • SMS-06-PR-0173 Plant and Equipment Lock-out Tag-out • SMS-06-GD-0001 Guide to Manual Handling • SMS-06-GD-0323 Personal Protective Equipment • SMS-06-SW-0944 Vehicle Loading Crane • SMS-16-SR-0057 Inspection and testing • SMS-05-SR-0027 Records management • SMS-06-SW-0487 Entering Trains from Ballast • SMS-06-SW-0488 Climbing out of Trains onto Ballast • SMS-06-SW-0838 Pantograph Raising and Lowering • SMS-06-GD-0268 Working Around Electrical Equipment • SMS-06-FM-0582 Electrical Permit to Work • SMS-11-GD-0244 Personnel Certifications – Electrical Authorisations • SMS-06-SW-0839 Compressed Air - Safe Use 		
Responsible Supervisor	PPE and precautions	Competencies or qualifications	Licences or permits required
Line Manager	<ul style="list-style-type: none"> • High Visibility Clothing or Vest • Sun Safe Clothing • Safety Eyewear • Protective Gloves • Hearing Protection • Protective Full Length Overalls • Knee Pads, as required • Steel capped, lace up Safety Boots • Sunscreen, as required • Insect Repellent, as required • Bump Hat, when working under vehicles • Hard Hat, when working on construction sites • Appropriate Respiratory Protection, during Hot Work 	<ul style="list-style-type: none"> • Rail Industry Safety Induction (RISI) • Manual Handling Training • Electrical Safety Awareness • Implement Control Signal Blocking (CSB) and No Authority Required (NAR) (Supervisor) • General Induction for Construction Work in NSW (Green Card) • Network Rolling Stock Maintainer (NRM) • Competent in the use of this SWI 	Hot Work permit as required
Tools and equipment required <ul style="list-style-type: none"> • Hand Tools • Portable Lighting • Wooden Chocks • Timber Blocks • Pony Bogie Fitting tools 			

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<ul style="list-style-type: none"> • Type A Pony Bogie • Type A Heavy Duty Pony Bogie • Type B Pony Bogie • Millennium Pony Bogie • Oscar Pony Bogie • Hydraulic Oil Displacement Jack 120, 90, 60, and 12 Tonne • Hydraulic Line Control Console • Hydraulic Pump • Hydraulic Lines • Adequate lighting 	
<p>IF CONTROL MEASURES ARE NOT SUITABLE AND MAJOR CHANGES ARE NEEDED, CONDUCT A RISK ASSESSMENT AND DEVELOP NEW CONTROLS ACCORDING TO SMS-06-PR-0104 WORKPLACE RISK MANAGEMENT.</p>	
	<p>Note</p> <ul style="list-style-type: none"> • Pre work brief and task risk assessment. Ensure a pre-work brief and task risk assessment is undertaken and documented with all team members involved in the work activity. If any new/additional team members arrive any time later they must be briefed before they commence work. If the work process has to change from the process originally briefed to the team stop work, re-assess any/all risks and re-brief the team. • Ensure all team members have been briefed on the site protection measures.
	<p>Warning: The following warnings apply throughout this SWI:</p> <ul style="list-style-type: none"> • <i>Failure to comply with these procedures could result in serious injury, electrocution, damage to property, or the failure of RailCorp services, power, and signalling or communication systems.</i> • <i>The determination that the status of the 1500 Volt Overhead Wiring is dead is only to be made by an Authorised Traction Live Line Worker or an Authorised Officer (Mains). If you are unable to confirm the status always assume it is live. refer to: SMS-11-GD-0244 Personnel Certifications – Electrical Authorisations.</i> • <i>The jacking of vehicles presents a serious entrapment hazard. Under no circumstances are you to place any part of your body near or under moving equipment, to do so could result in serious injury or death. Therefore employee's involved with jacking activities should have a clearly identified escape path in the event of an unexpected jack/train movement.</i> • <i>Whenever "Stop" is called out by any person carrying out this procedure all work must cease immediately. Investigate as to why "Stop" was called. No work is to proceed until the "All clear" is given by the Rail Emergency Train Recovery Unit (RETRU) supervisor.</i> • <i>This task requires considerable manual handling. Where possible use manual handling aids and/or seek assistance by way of team lift. Use a firm grip, keep back straight, bend knees and avoid twisting, bending or overreaching refer to: SMS-06-GD-0001 Guide to Manual Handling.</i> • <i>This task may be conducted on uneven surfaces (such as ballast) that represent Slip, Trip and Fall hazards. Use Hazard controls in accordance with SMS-06-SW-0487 Entering Trains from Ballast and SMS-06-SW-0488 Climbing out of Trains onto Ballast.</i> • <i>Working under trains may have head strike hazards. To prevent injury wear head protection and where necessary place padding over sharp protrusions, refer to: SMS-06-GD-0323 Personal Protective Equipment.</i>

Pony Bogie – Safe Fitting**Warning:**

- Use adequate lighting under the train.
- If any equipment is damaged do not use it. Tag the equipment out, in accordance with SMS-06-PR-0173 Plant and Equipment Lock-out Tag-out, and notify your Line Manager as soon as practicable.
- Look out for dangerous fauna such as snakes and spiders especially when working in the warmer months in remote areas. Failure to thoroughly check the immediate environment for hazards could lead to serious injury or death.
- All non-essential rail personnel and members of the public must be kept at least 10 metres clear of the work location.
- Ensure pantographs are lowered and isolated, by undertaking a visual inspection in accordance with SMS-06-SW-0838 Pantograph Raising and Lowering.
- Ensure all pantographs are lowered in accordance with SMS-06-SW-0838 Pantograph Raising and Lowering. **Visually check** that the pantographs are lowered. Do not simply rely on the pantograph air pressure gauge, this will not guarantee that the pantographs are lowered. Failure to confirm that pantographs are lowered correctly may lead to serious **INJURY** or **DEATH**.

**Note**


The nature of the work outlined in this SWI requires a considerable amount of heavy equipment to be moved manually from a truck to a rail track. Therefore refer to: SMS-06-GD-0001 Guide to Manual Handling.

Always comply with the following minimum requirements in addition to other directives in this SWI:

- Always park the RETRU vehicle as close as possible to the rail vehicle being worked on, to minimise equipment carrying distances.
- Use lifting aids when moving equipment.
- Use assistance by way of team lift when moving equipment.
- When lifting, use a minimum of:
 - 2 persons for all Jacks.
 - 4 persons for the motor pump unit and the reservoir unit.
 - 6 persons for all beams.
- Any lifting gear found to be worn, damaged or outside its periodic inspection date during is to be fitted with an out-of service tag, in accordance with SMS-06-PR-0173 Plant and Equipment Lock-out Tag-out. Such tagged gear is not to be re-used until certified as fit for use by an approved provider.
- It may be necessary to fill surface depressions and potholes or place mats or other artificial surfaces to prevent pick and carry cranes from tilting whilst travelling.
- Maintain inspection and test records in accordance with SMS-16-SR-0057 Inspection and testing and SMS-16-SR-0057 Inspection and testing.

**Warning:**

To prevent equipment failure before using any type of lifting gear, always ensure that the lifting gear has had a visual inspection and has been certified as fit for use and is within its inspection date.

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Job/Site Planning	<p>Follow all worksite procedures, e.g. Inductions and pre-work briefings:</p> <ul style="list-style-type: none"> • Ensure a pre-work brief is undertaken and documented with all team members involved in the work activity. If any new/additional team members arrive at a time they must be briefed before commencing work. If the work process has to change from the process originally briefed to the team stop work re-assess any all risks and re-brief the team. • Ensure all team members have been briefed on the site protection measures. • Determine if the incident you are attending involves vehicles containing Hazardous Goods or Dangerous substances. If the incident involves rail vehicles carrying dangerous goods or hazardous substances, do not proceed until the “All Clear” is given by the NSW Fire Brigade HAZMAT unit. • Inspect the immediate environment to ensure it is safe for work e.g. inadequate lighting, loose materials, chemical spills, housekeeping, sharps, glass and dangerous fauna. • Ensure the path to the work site is clear of any slip, trip and fall hazards before moving any equipment. • Inspect the vehicle(s) to be re-railed to determine if there are broken earth return axle straps or other exposed electrical conductors. • Ensure there are safe escape paths for employees in the event of any unexpected jacking/train movement.
	<p>Note</p> <p>PPE must be maintained correctly and in good condition. Always use PPE in accordance with <u>SMS-06-GD-0323 Personal Protective Equipment</u>.</p> <p>Users are to inspect PPE for:</p> <ul style="list-style-type: none"> • Signs of deterioration, cracks or distortion. • Excessive scratches (on eyewear). • Missing/damaged components. • Expiry date.
Determining the Criteria for Isolation of the 1500 volt Overhead	<ul style="list-style-type: none"> • The RETRU Supervisor must consult with the Authorised Traction Live Line Worker or an Authorised Officer (Mains) on site to determine if the 1500 Volt Overhead Wiring is to be isolated before any work can commence, refer to: <u>SMS-11-GD-0244 Personnel Certifications – Electrical Authorisations</u>. • Whenever practicable, overhead wiring is to be isolated and re-railing performed under an electrical permit. Where isolation is not practicable, an assessment must be conducted and work performed in accordance with Requirements for re-railing when OHW remains live. Situations that require electrical permits <u>SMS-06-FM-0582 Electrical Permit to Work</u> are specified in Section 7.1 of <u>SMS-06-GD-0268 Working Around Electrical Equipment</u> document.

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Requirements for rerailing when OHW remains live

THIS ASSESSMENT MUST BE PERFORMED

RETRU Supervisor and Authorised Traction Live Line Worker or an Authorised officer (Mains) Determine approach distance of the vehicle to live 1500V overhead wiring during re-railing

Consider:-

- The maximum lift of jacks – NOT the intended range of movement
- Movement of conductor due to wind, movement of adjacent trains, sagging due to hot weather
- Other factors which may cause the overhead to bounce or move closer to the vehicle

Is the approach distance **1 metre** or more?

Yes

No, It will be less than 1 Metre

Is the approach distance **300mm** or more?

Yes

No, It will be less than 300mm

Will approach distance be **150mm** or more?

Yes

No, It will be less than 150mm

Power must be removed and permit issued

THESE REQUIREMENTS MUST BE IN PLACE

The RETRU observer or supervisor must

- be in a position to have a clear line of sight to the overhead and vehicle
- have a clear and agreed system of communication to stop the lift.

NOTE: An observer is not required if flat top wagons are being re-railed and the approach distance will be 3 metres or more

- ✓ All Pantographs must be lowered and isolated in accordance with SMS-06-SW-0838 Pantograph Raising and Lowering
- ✓ RETRU Supervisor must observe approach distance during lifting or appoint and instruct observer

- ✓ All Pantographs must be lowered and isolated in accordance with SMS-06-SW-0838 Pantograph Raising and Lowering
- ✓ The opposite bogie of vehicle must be on track and in electrical contact with rails
- ✓ The traction return path must be checked and be unbroken
- ✓ RETRU Supervisor must observe approach distance during lifting

- ✓ All Pantographs must be lowered and isolated in accordance with SMS-06-SW-0838 Pantograph Raising and Lowering
- ✓ The opposite bogie of vehicle must be on track and in electrical contact with rails
- ✓ The traction return path must be checked and be unbroken
- ✓ The electrical safety aspects must be supervised by an Authorised Traction Live Line Worker or an Authorised officer (Mains)
- ✓ RETRU Supervisor and authorised officer determine who will observe approach distance during lifting




PRE-WORK BRIEF MUST INCLUDE THESE POINTS

- ✓ Every part of the vehicle must always be more than 1 metre from the live overhead
- ✓ Verify pantograph isolation
- ✓ State who the observer is
- ✓ State how they monitor the approach distance
- ✓ State how they will stop the lift
- ✓ What to do if lift is stopped

- ✓ Every part of the vehicle must always be more than 300mm from the live overhead
- ✓ Verify pantograph isolation
- ✓ Verify bogie position and traction return path
- ✓ State who the observer is and how they will monitor the approach distance
- ✓ State how they will stop the lift
- ✓ What to do if lift is stopped

- ✓ Every part of the vehicle must always be more than 150mm from the live overhead
- ✓ Verify pantograph isolation
- ✓ Verify bogie position and traction return path
- ✓ State who the observer is and how they will monitor the approach distance
- ✓ State who the Electrical officer is, what they will be doing and how they will issue instructions
- ✓ State how the observer or electrical officer will stop the lift
- ✓ What to do if lift is stopped

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Check	Visually inspect that the pantograph(s) has been lowered from the overhead power supply.
 <p>Warning</p> <p>Ensure all pantographs are lowered in accordance with SMS-06-SW-0838 Pantograph Raising and Lowering Visually check that the pantographs are lowered. Do not simply rely on the pantograph air pressure gauge, this will not guarantee that the pantographs are lowered. Failure to confirm that pantographs are lowered correctly may lead to serious INJURY or DEATH.</p>	
Preparation for Fitting Pony Bogies	<ul style="list-style-type: none"> Follow all worksite procedures, e.g. Inductions and pre-work briefings. Maintain inspection and test records in accordance with SMS-16-SR-0057 Inspection and testing and SMS-05-SR-0027 Records management. Ensure all team members have been briefed on the site protection measures. Determine if the incident you are attending involves vehicles containing Hazardous Goods or Dangerous substances. If the incident involves rail vehicles carrying dangerous goods or hazardous substances. Do not proceed until the "All Clear" is given by the NSW Fire Brigade HAZMAT unit. Inspect the immediate environment to ensure it is safe for work e.g. inadequate lighting, loose materials, chemical spills, housekeeping, sharps, glass and dangerous fauna. Clear the path to the work site of any slip, trip and fall hazards before moving any equipment. Chock the bogie wheels of the wagon or vehicle to be worked on with the designated chocks. The Supervisor is to check that: <ul style="list-style-type: none"> The vehicle is secured and chocked before any lifting task is attempted. The bogie is fixed to the vehicle. If not, secure the bogie to the vehicle with chains sufficient to prevent the separation of bogie and vehicle during the fitting of the pony bogies. Before jacking any vehicle, inspect all wooden chocks, hydraulic jacks, hydraulic hoses and fittings, the air compressor, pneumatic hoses and the vehicle loading crane for any damage or leaks. Ensure Lock-out, tag-out procedures are undertaken refer to: SMS-06-PR-0173 Plant and Equipment Lock-out Tag-out.
 <p>Note</p> <ul style="list-style-type: none"> If freight wagon king and queen castings have become separated by the incident, they must be realigned or made safe before proceeding further. 	
 <p>Warning</p> <ul style="list-style-type: none"> Failure to securely chock the wheels may result in movement of the vehicle leading to serious injury or death. Failure to inspect all wooden chocks, hydraulic jacks, hydraulic hoses and fittings, the air compressor, pneumatic hoses and the vehicle loading crane for any damage or leaks, may cause equipment failure resulting in serious injury or death. Refer to: SMS-06-SW-0839 Compressed Air - Safe Use 	
Unload and position lifting equipment	<ul style="list-style-type: none"> Start the air compressor and check for leaks or malfunctions. Unload the jacking equipment selected by the Supervisor, refer to: SMS-06-SW-0944 Vehicle Loading Crane. Visually inspect all equipment to be used for damage or leaks. Ensure the equipment does not have any out of service tags and that the equipment is within its maintenance test date. Remove the required hydraulic hoses and other equipment. Remove the appropriate pony bogie components required, for assembly on the track. Switch off the truck air compressor when equipment unloading is completed. Should the hydraulic pump be required at the work site, the motor and pump section must first be separated from the hydraulic oil reservoir section before transporting them. The 2 separated units can then be transported to the work site, using the special cradle that is in the truck, in accordance with the manual handling note above.

Pony Bogie – Safe Fitting**Note**

- If the hydraulic pump unit is required to be carried a reasonable distance then the motor and pump section must first be separated from the hydraulic oil reservoir section.

**Warning**

- *Keep all parts of the body clear of suspended loads and clear the intended travel path of any trip hazards before lifting and moving any equipment.*
- *Keep fingers clear of cables when operating the vehicle loading crane.*
- *High pressure air may penetrate the skin causing **air bubbles to form in the blood stream** resulting in seriously injury and/or death, ensure you always wear eye and hearing protection as well as protective clothing. For the purpose of PPE, refer to: SMS-06-GD-0323 Personal Protective Equipment. With reference to high pressure air and general use refer to: SMS-06-SW-0839 Compressed Air - Safe Use.*
- *The compressor is noisy. Always wear hearing protection to prevent hearing damage. Refer to: SMS-06-SW-0839 Compressed Air - Safe Use.*

Fitting the pony bogie

- Check to see if the brake gear is required to be removed. If so, this must be done prior to lifting in order to enable the safe fitment of the pony bogie.
- The Supervisor shall select the lifting points and the hydraulic jacks necessary for a safe lift.
- Select packing timber for use and position this material as required to stabilise the Hydraulic Jacks.
- Check and securely connect all hydraulic hoses to their correct receptacles.
- Check the vehicle is secured with Oregon chocks.
- Assemble the pony bogie components on the track (Fig.1), P 7 of 9.
- Position the assembled pony bogie under the vehicle (Fig.2), P 8 of 9.
- Ensure all personnel are kept clear of the vehicle being lifted.
- The Supervisor shall ensure that hydraulic displacement jacks, chocks, packing timber and any other lifting equipment are positioned correctly under the rail vehicle **before** the lift is commenced (Fig 3), P 8 of 9.
- Lift the vehicle.
- When vehicle is lifted sufficiently high enough, position the selected pony bogie under the damaged rail vehicle wheels.
- Lower the damaged wheel set onto the pony bogie (Fig.4), P 8 of 9
- The Supervisor shall confirm that:
 - All trammelling is completed depending on the type of pony bogie being used.
 - The bogie is installed correctly before any movement of the vehicle takes place.
- In the case of an A type Bogie fitment, a person is required to work underneath the vehicle. In all such cases timber packing must be placed under the vehicle while the Bogie is being fitted.

**Fig. 1**

Pony Bogie – Safe Fitting

Fig. 2



Fig. 3



Fig. 4

**Note**

- Should any hot work be required, a risk assessment must be carried out and all permits and authorities gained before any work is commenced in accordance with SMS-06-PR-0329 Hot work Procedure.

**Warning**

- The removal of brake gear can require considerable manual handling always use assistance by way of team lift with this task and work in accordance with manual handling training.*
Never use hydraulic equipment which is found to be leaking. Hydraulic fluid that escapes under pressure can blind personnel or penetrate the skin causing serious injury or loss of a body part due to poisoning and even cause death.
Tag-out any hydraulic equipment found leaking or faulty and report to your supervisor, refer to: SMS-06-PR-0173 Plant and Equipment Lock-out Tag-out.

Pony Bogie – Safe Fitting**Note**

Pony Bogie Manual Handling Information.

When using the following pony bogies, a minimum of 4 people are required to lift the pony bogie wheel sets in to position under a vehicle:

- **A type** Pony Bogie.
- **A Heavy** type Pony Bogie.
- **B type** Pony Bogie.
- **Millennium**.
- **Oscar**.

Further assistance is required when placing saddles on wheel sets using type A pony bogies and A Heavy Pony Bogies.

During the fitting process, the pony bogie wheels must be trammelled at each side, to ensure their alignment to prevent any derailments and/or damage when the vehicle is underway.

Equipment Removal and Housekeeping

- Turn off the hydraulic pump by turning off the fuel supply to the engine.
- After confirming they are depressurised, disconnect all hydraulic hoses and refit all protective caps and tag-out, refer to: SMS-06-PR-0173 Plant and Equipment Lock-out Tag-out.
- Dismantle the pump motor from the sump unit before transporting it.
- Transport all of the equipment carefully, using assistance and manual handling aids back to the truck.
- Conduct a post work inspection for any damage that may have occurred to equipment during its use. If damaged equipment is found, tag - out and report it to your Line Manager as soon as practicable, refer to: SMS-06-PR-0173 Plant and Equipment Lock-out Tag-out.
- Restart the compressor and, using the vehicle loading crane, carefully return all of the equipment to its correct storage position. For information on compressed air refers to: SMS-06-SW-0839 Compressed Air - Safe Use.
- Secure the equipment.
- Shut down the compressor and secure the hoist. For information on compressed air refers to: SMS-06-SW-0839 Compressed Air - Safe Use.
- Check the work area is clear of all equipment, tools and all rubbish is removed.

**Warning**

- *Always wear protective gloves during clean up to prevent hand injury.*
- *Keep fingers clear of cables when operating the vehicle loading crane.*

Notification

Notify the Line Manager (supervisor or foreman) of completion, as required.

Additional Controls

If you identify additional hazards and / or controls relevant to this SWI, notify your Line Manager as soon as practicable, so they can be noted and used to continuously improve this document.

Other controls may be necessary, depending upon the work being carried out. Refer to relevant SWIs.