



## Removing Frozen Clips

### Warning

You cannot undertake this activity in the rail corridor unless you have completed a pre work brief and work site protection plan.

Reference should also be made to the [Protocol for Entering the ARTC Rail Corridor](#) and the [Business Rules for Working in the ARTC Rail Corridor](#)

Minimum Personal Protective Equipment (PPE) requirements must also be met in line with the [Personal Protective Equipment \(PPE\) Work Instruction](#).

|                       |   |                     |  |
|-----------------------|---|---------------------|--|
| <b>Work Activity:</b> | <b>Removing Frozen Clips</b>  |                     | <b>WMS No:</b> AT-WMS-02                         |
| <b>Coverage:</b>      | ARTC employees, and contractors directly managed by ARTC on the Interstate Network Adelaide to Tarcoola Re-rail Project |                     | <b>Version No:</b> 1.0                           |
| <b>Developed by:</b>  | Mal Burrows, Ian Hancock and Sanjeevi Sathianandan  | <b>Approved by:</b> | Brian Green<br><b>Date Approved:</b> 25 May 2017 |

| <i>What are the tasks involved?</i> | <i>What are the hazards and risks?</i>   | <i>What are the control measures?</i>   | <i>Related Documents</i>                           |
|-------------------------------------|--|---|--|
| Plan and Prepare the Work           | Site unsupervised  | A Supervisor and Protection Officer must be on site when there is interaction between mobile plant and train traffic.   | WHS-WI-001 – Work in the rail Corridor             |
|                                     | Location and movement of mobile plant, train traffic not understood. Poor Communication. Untrained personnel | The Pre-Work brief must identify the planned location and movements of mobile plant and train traffic. Determine safe working requirements, check that communications effective, and identify exclusion zones, safe places and all personnel competent. | WHS-WI-002 – Plant and Equipment Loading/Unloading |
|                                     | Unsafe Plant, Machinery and hand tools   | Pre-start inspections, check safe operation and ensure all communications including radios, beacons etc. in working order. Check clip removers, pan pullers, hammers and Pneumatic clip remover in good condition.                                      | WHS-WI-003 – Servicing/Refuelling                  |
|                                     | PPE in poor condition or not available   | Minimum PPE for this activity will be Orange High Visibility clothing, Steel Cap Safety boots, Long sleeves and pants, Safety Glasses, gloves and hearing protection.   |  |
|                                     | Using Chemical agent during pre-removal local inspection   | Previous identified frozen clips to be sprayed where required with chemical agent (rust penetrator/remover) as defined in the MSDS in advance of manual/mechanical removal  |  |



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| Remove clip using hammer     | <p>Manual Handling (using hammer) – repetitive or strenuous work</p> <p>Fatigue and/or dehydration</p> <p>Struck by hammer (Worker)</p> <p>Struck by Hammer (Co-Worker)</p> <p>Struck by flying debris (Clip/broken clip)</p> | <p>Ensure appropriate warm-up and stretching prior to commencement. Select a hammer with a weight appropriate to your size and capacity (<i>recommended 10lbs</i>)</p> <p><b>DO NOT APPLY excessive force</b> – utilize the inertia from hammer weight selected and use a smooth controlled movement.</p> <p>Any defects to the hammer (<i>mushrooming or splitting at handle</i>) must be reported and tool placed out of service until repaired.</p> <p>Ensure that you have secure footing and good balance while using a hammer.</p> <p>Rotate tasks among work crew and ensure adequate rest &amp; hydration during the shift.</p> <p>Immediately advise Supervisor if onset of heat-stress related symptoms are present or observed.</p> <p>Maintain strong task focus at all times.</p> <p>Discontinue if fatigued or clip is suspected to be frozen (<i>see below</i>)</p> <p>Mandatory PPE (<i>including gloves and boots</i>) must be worn to protect feet and ensure good grip and control of hammer in use</p> <p>Always check there is enough clearance from fellow workers when performing work with a hammer before commencement – 10m exclusion zone between workers is safe minimum distance.</p> <p>Maintain minimum 10m exclusion zone*(Up and Down track)</p> <p><b>*Whilst this is the minimum exclusion zone, workers should avoid walking in the 'line of fire' during any stage of the work</b></p> <p>Keep foot at bottom of clip to stop it flying</p> <p>Wear appropriate eye protection at all times in work area</p> | WHS-WI- 006 Manual Tasks |



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| Remove rusty/frozen clip using hammer                            | Manual Handling (using hammer) – repetitive or strenuous work   | <p><b>Single worker :</b><br/>Check exclusion zone is 10m exclusion zone*(Up and Down track) before commencing<br/>DO NOT APPLY excessive force – utilize the inertia from hammer weight selected and use a smooth controlled movement<br/>After 1-2 hammer blows reverse direction to make contact with opposite side – ensure avoiding unnecessary twisting or awkward position, with secure footing and good balance.</p> <p>Wear appropriate eye protection (safety glasses) at all times in work area.</p> <p><b>*Whilst this is the minimum exclusion zone, workers should avoid walking in the ‘line of fire’ during any stage of the work. Should there be a need to cross a line of fire path, hammer work must be ceased.</b></p> <p><b>IMPORTANT:</b> If frozen clip remains intact after this, clearly identify using marker, discontinue using hammer and revert to pneumatic/mechanical clip remover.<br/>Removed clips to be disposed of in drums.</p> |                   |
| Remove rusty/frozen clip using pneumatic/mechanical clip remover | <p>Undetected faults or defects prior to use</p> <p>Struck by flying debris (tool end splitting/metal fragment)</p> | <p>Removal of accumulated material or grease to inspect for loose or worn components<br/>Utilisation of Plant Pre-Start Inspection Checklist daily<br/>Defects or faults to be notified and repaired prior to work commencement (eg. <i>mushroomed tool ends or splitting</i>) – <b>hex head tools must be used where-ever possible as design is highly resistant to splitting.</b></p> <p><b>IMPORTANT:</b> Should it be necessary to use the round head tool, due to increased risk of splitting, the following additional PPE must be worn;<br/>Medium impact rated goggle with half face attachment.</p>  |                   |



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|                                     | <p>Unauthorised or unsafe proximity of person(s) to machine during use</p> <p>Manual Handling – muscular stress/repetitive task (vibration)</p> <p>Pressurised air lines/loss of connection</p> <p>Trip or fall over air hose lengths</p> <p>Exposure to Noise during operation</p> | <p>Operating the pneumatic equipment is done in a team of three, one member operating the Pneumatic hammer, one member on hammer to assist by tapping clip and one member supporting the upright tool guide. All other non-operational personnel to remain outside the line of fire along the rail during use.</p> <p>Ensure regular task rotation among assigned work crew and task specific PPE including gloves at all times.<br/>Team lifting and positioning of equipment as required.<br/>When starting to remove clip the tool bar may jump (miss connect) and requires stabilization by placing tool in tool guide.</p> <p>Ensure regular re-inspection of hoses and connections during normal operation and after periods of inactivity – securing pin must be checked and in good condition.<br/>Check to ensure that lines are de-pressurised prior to removal.</p> <p>Highly visible hose colour (yellow) and sound housekeeping at all times.</p> <p>Suitable hearing protection must be worn at all times by the operator( ear plugs) and persons entering the local worksite area</p> <p><b>IMPORTANT:</b> If any defined area of existing frozen clips encountered resists all reasonable safe attempts to remove using these methods, the section should be discontinued, documented and relevant Delivery Manager advised.</p> |                          |



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| Insert second hand clip using Pan Pullers                | Manual Handling<br>Slips/Falls  | Ensure a stable location and secure footing before proceeding<br>Check surrounds and make sure area is clear of ground level trip hazards to further reduce the risk of falling backwards when using the tool.<br>Pan Puller must be correctly engaged before pulling movement.<br>DO NOT APPLY excessive force – use a smooth controlled movement.<br>Replaced clips to have a firm toe load.  |                          |
| Insert second hand clips using mechanical clip inserter. | Undetected faults or defects prior to use<br><br>Unauthorised or unsafe proximity of person(s) to machine during use<br><br>Manual handling<br>muscular stress/repetitive task<br><br>Exposure to Noise during operation<br><br>Crush/pinch point | Removal of accumulated material or grease to inspect for loose or worn components<br>Utilisation of Plant Pre-Start Inspection Checklist daily<br>Defects or faults to be notified and repaired prior to work commencement<br><br>Spotter (standby resource) from work group to monitor 5 metre exclusion zone during use<br><br>Mechanical aid Must be used to lift mechanical equipment on and off track.<br>Ensure regular task rotation among assigned work crew<br><br>Hear and eye protection must be worn when operating and within 5 metre - minimum 25dB(A) reduction<br><br>When conducting maintenance/changing out jaws on the engine must be switched off and emergency stop engaged. Gloves to be worn as required. |                          |
| Inspect and certify track                                | Unsafe track  | Track Certifier inspects re-clipped area and notifies Protection Officer that track is safe for rail operations.  |                          |



| References   |  |
|--|--|
| <p><b>Standards, Codes of Practice, Guidance:</b></p> <p>Other work method statements as relevant, such as:</p> <ul style="list-style-type: none"> <li>- Air &amp; Power Tools</li> <li>- Manual Tasks</li> <li>- PPE</li> </ul> | <p><b>Plant / Equipment / Tools:</b></p> <p>No specified items other than those listed in this WMS</p> <p>MSDS for chemical Agent on Site</p>  |
| <p><b>Training Requirements:</b></p> <p>Maxim F2111 Rail Clip Remover - Operations Manual<br/>(to be read in conjunction with this WMS)</p> <p>Melville 190 E Clip &amp; PR clip inserter/remover</p>                            | <p><b>Inspection / Testing requirements:</b></p> <p>Daily pre-start inspection prior to use<br/>Routine maintenance in accordance with manufacturer requirements</p> <p>Daily pre-start inspection prior to use<br/>Routine maintenance in accordance with manufacturer requirements</p> |