

# Pneumatics (other than braking) System (06): Safe Working

Review date: 09/01/11

Document no.	Work description			
SMS-06-SW-1260	<p>This document describes safe work practices in relation to the maintenance of Train Pneumatics (other than Brakes)</p> <p><b>Scope</b></p> <p>This SWI applies to all work on Train Pneumatic Systems (other than brakes) within RSD</p> <p>This document does not replace technical 'how to' documents such as Engineering Instructions, Manufacturers' instructions etc</p>			
Review date	References			
09/01/11	<ul style="list-style-type: none"> <li>• OHS Act 2000</li> <li>• OHS Regulations 2001</li> <li>• Rail Safety Act 2008</li> <li>• <a href="#">SMS-06-PR-0173 Plant and Equipment Lock-out Tag-out</a></li> <li>• <a href="#">SMS-12-OI-0886 Red Flagging Trains in stabling yards, depots and Maintenance Centres</a></li> <li>• <a href="#">SMS-06-SW-0836 Isolating 1500V DC OH using an Annett Key</a></li> <li>• <a href="#">SMS-06-SW-0837 Isolating 1500v DC OH using a Supplementary Lock</a></li> <li>• <a href="#">SMS-06-SW-0838 Pantograph Raising and Lowering</a></li> <li>• <a href="#">SMS-06-SW-1133 Guard's Emergency Cock Lock-Out</a></li> <li>• <a href="#">SMS-06-SW-0839 Compressed Air - Safe Use</a></li> <li>• <a href="#">SMS-06-SW-0400 Forklift Trucks</a></li> <li>• <a href="#">SMS-06-SW-1162 Portable Work Platform,</a></li> <li>• <a href="#">SMS-06-SW-0264 Portable Ladders, Stepladders and Step Platforms,</a></li> <li>• <a href="#">SMS-06-SW-0487 Entering Trains from Ballast</a></li> <li>• <a href="#">SMS-06-SW-0488 Climbing out of Trains onto Ballast</a></li> <li>• <a href="#">SMS-06-GD-0001 Guide to Manual Handling</a></li> </ul>			
Responsible supervisor	PPE and precautions	Competencies or qualifications	Licences or permits required	
Line Manager	<ul style="list-style-type: none"> <li>• High visibility vest or clothing</li> <li>• Safety Footwear</li> <li>• Gloves, as required</li> <li>• Safety Eyewear, as required</li> <li>• P1 Respiratory Protection, as required</li> <li>• Hearing Protection, as required</li> </ul>	<ul style="list-style-type: none"> <li>• Rail Industry Safety Induction (RISI)</li> <li>• Site specific induction</li> <li>• Electrical Safety Awareness</li> <li>• Competent in the use of this SWI</li> <li>• Competent in the use of relevant technical documents (eg. EI's)</li> <li>• Competent in pneumatics work</li> <li>• Manual Handling Training</li> </ul>	<ul style="list-style-type: none"> <li>• Forklift Certificate of Competency, as required</li> </ul>	
<b>Tools and equipment required</b>				
<ul style="list-style-type: none"> <li>• Red Flag</li> <li>• Personal Locks, Multi-locks (Hasps) and/or Danger tags, as required</li> <li>• Power tools, as required</li> <li>• Hand tools</li> </ul>				
<b>IF CONTROL MEASURES ARE NOT SUITABLE AND MAJOR CHANGES ARE NEEDED, CONDUCT A RISK ASSESSMENT AND DEVELOP NEW CONTROLS ACCORDING TO <a href="#">SMS-06-PR-0104 WORKPLACE RISK MANAGEMENT</a>.</b>				
	<b>Warning</b>	The following warnings apply throughout this SWI:		
		<ul style="list-style-type: none"> <li>• Work carried out in the proximity of forklifts can present a serious crush hazard. Ensure the operator has a clear path to travel and work at all times. Hydraulics can creep so never allow anyone to work beneath lifted equipment. Only trained and competent forklift operators are to drive or otherwise use forklifts. All forklift operation is to be conducted in accordance with <a href="#">SMS-06-SW-0400 Forklift Trucks</a></li> <li>• Contact with blasts of air or dust can cause serious eye injuries. Always wear eye protection when</li> </ul>		

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	<p><i>cutting cocks in and out. Failure to correctly isolate air before commencing work could result in subsequent blast of air or air / dust hazard when disconnecting hoses</i></p> <ul style="list-style-type: none"> <li>• <i>Dust can be hazardous if inhaled. Wear P1 respiratory protection, whenever air may be vented</i></li> <li>• <i>The release of air can generate excessive noise. Wear hearing protection when cutting air in and out to prevent hearing damage</i></li> </ul>
<b>Competency</b>	<p>Staff are to be trained and supervised to ensure they:</p> <ul style="list-style-type: none"> <li>• Transport required parts, tools and equipment to and from the work area using manual aids (such as trolleys, electrical maintenance vehicles) so as to minimise the risk of manual handling injuries</li> <li>• Carry out the tasks in accordance with technical documents (eg. EI's)</li> <li>• Implement necessary controls, in accordance with this document and <a href="#">SMS-06-SW-0839 Compressed Air - Safe Use</a></li> <li>• Work with Line Manager to identify any additional hazards and implement controls in accordance with relevant SWI's and other SMS components</li> </ul>
<b>Place Red Flag</b>	To notify persons that work is being carried out on the train you must place a Red Flag in accordance with <a href="#">SMS-12-OI-0886 Red Flagging Trains in stabling yards, depots and Maintenance Centres</a>
<b>Isolate: Electric Sets</b>	<p>Before carrying out any work on pneumatics, isolation is required to protect from injury or death. The isolation required may vary, depending upon the work, and should be determined in conjunction with line management, however the following is mandatory</p> <p>To protect from the movement of Electric Trains where ever possible</p> <ul style="list-style-type: none"> <li>• Isolate the road, in accordance with <a href="#">SMS-06-SW-0836 Isolating 1500V DC OH Using an Annett Key</a>, and</li> <li>• Lower the pantograph(s), in accordance with <a href="#">SMS-06-SW-0838 Pantograph Raising and Lowering</a>, and</li> <li>• Isolate the guard's emergency cock, in accordance with <a href="#">SMS-06-SW-1133 Guard's Emergency Cock Lock-Out</a></li> </ul>
<b>Visual Verification</b>	Ensure all pantographs are lowered and isolated on all cars in that area, by undertaking a <b>visual inspection/ verification</b> in accordance with <a href="#">SMS-06-SW-0838 Pantograph Raising and Lowering</a>
	<p><b>Warning</b></p> <p><i>Failure to confirm that all pantographs are lowered correctly, by undertaking a <b>visual inspection</b> could lead to serious injury or death.</i></p> <p><i>Always verify that isolation has been achieved and, if in doubt, seek assistance from your Line Manager</i></p>
<b>Isolate: Diesel Sets</b>	<p>Before carrying out any work on pneumatics, isolation is required to protect from injury or death. The isolation required may vary, depending upon the work, and should be determined in conjunction with line management, however the following is mandatory</p> <p>To protect from the movement of Diesel Trains you must always</p> <ul style="list-style-type: none"> <li>• Shut down the engine and apply the park brake</li> <li>• Apply local road isolation (e.g. lock the boom gate, position the stop board and position chocks)</li> </ul>
<b>Isolate Pneumatics &amp; Electrical</b>	The pneumatic system is powered by pneumatic and electrical energy (eg. electricity to compressors). Depending upon the work being carried out, it may be necessary to isolate either or both energy forms. For specifics, see following, in conjunction with relevant technical documents. If in doubt contact your Line Manager before commencing work
	<p><b>Warning</b></p> <p><i>Failure to correctly isolate all energy sources could result in serious injury or death. Always verify that isolation has been achieved and, if in doubt, seek assistance from your Line Manager</i></p>
<b>Carry Out Pneumatic System Work</b>	<p>Once isolation has been put in place, inspect the relevant component(s) and determine the work required</p> <p>Identify any other relevant SWI's (eg. SWI's for relevant tools) that will document hazards and their controls</p> <p>Identify the relevant tools, equipment and parts that will be required</p> <p>Collect identified items from the store and transport to the location using manual handling aids (eg. trolleys, or electrical maintenance vehicles)</p> <p>Where possible, climb in and out of the cars from platforms. If it is necessary to access from floor level or ballast always do so in accordance with <a href="#">SMS-06-SW-1162 Portable Work Platform</a>, <a href="#">SMS-06-SW-0264 Portable Ladders, Stepladders and Step Platforms</a>, or <a href="#">SMS-06-SW-0487 Entering Trains from Ballast</a> and <a href="#">SMS-06-SW-0488 Climbing out of Trains onto Ballast</a></p> <p>Before working on any pneumatic system component ensure no pressurised air is contained therein by bleeding each component</p>

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	<p><b>Warning</b></p> <p>Some pneumatic work has unique hazards and controls. These include...</p>
<u>Compressor Removal &amp; Replacement</u>	<ul style="list-style-type: none"> <li>The compressor is powered by electrical energy. It is necessary to isolate from the overhead power by lowering pantographs and/or isolating the road, in accordance with referenced SWIs, as well as isolating the compressor governor and the compressor synchronising. Once isolation has been applied to the compressor governor and compressor synchronising, apply personal locks, multi-locks and/or tags, in accordance with <a href="#">SMS-06-PR-0173 Plant and Equipment Lock-out Tag-out</a></li> <li>Compressed air contained in the main reservoir must be fully drained, before removing the compressor. Never rely on the check valve to hold the compressed air as if it fails this may result in serious injury to personnel</li> <li>Manual handling when removing side skirts and mounting, as required. Seek assistance as required and ensure correct manual handling techniques, in accordance with your training, are utilised</li> <li>Contact with sharp edges when removing side skirts and mounting, as required. Wear protective gloves to protect from lacerations</li> <li>Contact with hot components. If components are hot, allow them to cool and wear protective gloves</li> <li>Interaction with mobile plant when forklifts are used to remove compressors. (Refer to warning on page 1) and the referenced SWI for additional information on this hazard and its controls</li> </ul>
	<p><b>Note</b></p> <p>Always carry out work in accordance with relevant technical documents (eg. EIs)</p>
Clean Up	Once work is complete, clean up any spills and remove tools, equipment and parts from work area Dispose of rubbish in waste disposal containers / bins
Remove Isolation	Once area is safe, remove all previously applied isolations , in accordance with the referenced SWI
	<p><b>Warning</b></p> <p><i>Only remove your own isolation. The removal of another persons lock and / or tag may result in their injury or death. Offenders will be subject to strict disciplinary action and may be subject to prosecution by the regulator</i></p>
Removing Tags & Flags	Remove Red Flag, in accordance with <a href="#">SMS-12-OI-0886 Red Flagging Trains in Stabling Yards, depots and Maintenance Centres</a>
	<p><b>Warning</b></p> <p><i>Removal of a RED flag or Pld card other than your own may be treated according to Just Culture Policy as a reckless violation of a safety procedure</i></p>
Notify	Notify Line Manager (supervisor or foreman) of completion, as required

## Additional controls

- Other controls may be necessary, depending upon the work being carried out. Refer to relevant SWIs
- If you identify additional hazards and / or controls relevant to this SWI, notify your Safety Facilitator or Line Manager as soon as practicable, so they can be noted and used to continuously improve this document