

PROCEDURES AND MINING METHODS VARY THOUGHOUT THE MINING INDUSTRY.

THE FOLLOWING LESSON PLAN SERVES AS A GUIDE ONLY  
AND M PROPS (PTY) LTD CANNOT BE HELD RESPONSIBLE  
FOR THE INCORRECT INTERPRETATION THEREOF.

## LESSON PLAN

<b>COURSE TITLE</b> : TEMPORARY SUPPORT MECHANICAL PROP	<b>LESSON TITLE</b> : YIELDING CAMLOK PROP
<b>REFERENCE</b> :	<b>LAST REVISION DATE</b> : 02-03-2015

<b>INSTRUCTIONAL SEQUENCE</b>	<b>SKILLS / KNOWLEDGE / KEY POINTS</b>	<b>FACILITATION METHODOLOGY TECHNIQUES AND AIDES</b>	<b>COURSE REFERENCE</b>
<b>OBJECTIVE</b>	The trainee must show his ability to <b>install and remove</b> a Camlok Prop safely and according to mine standard.	Trainer to discuss.	M Props (Pty) Ltd Lesson Plan Standard.
<b>INTRODUCTION</b>	To ensure that people are working in a <b>safe and supported area</b> at all times.	Trainer to discuss.	M Props (Pty) Ltd Lesson Plan Standard.
<b>PURPOSE OF A CAMLOK PROP</b>	To be used as <b>temporary support</b> in the mining operation where permanent support has yet to be installed and where potentially unsafe situations may be recognized. Camlok Props can be used as additional support.	Trainer to explain and discuss.	M Props (Pty) Ltd Lesson Plan Standard.
<b>DESCRIPTION</b>	The <b>Camlok Prop</b> consists of the following components: <ul style="list-style-type: none"> <li>• <b>head</b> (flat, loadspreader, Tri-head)</li> <li>• <b>inner tube</b></li> <li>• <b>outer tube</b></li> <li>• <b>adjusting pin, chain and collar</b></li> <li>• <b>yield pipe</b></li> <li>• <b>pre-stressing / remote release handle and cam assembly(Greasebox)</b></li> <li>• <b>footplate</b></li> <li>• <b>corrosion indicator</b></li> <li>• <b>Remote Release Sling.</b></li> </ul>	Trainer to demonstrate a Camlok Prop and explain all components.	M Props (Pty) Ltd Lesson Plan Standard.

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<b>PRECAUTIONS BEFORE USE</b>	<ul style="list-style-type: none"> <li>• Check rotation of <b>camshaft in Greasebox</b>.</li> <li>• Check <b>pre-stressing handle</b> for operating condition, straightness and locking cable.. Ensure that <b>remote release hook</b> is open.</li> <li>• Check <b>tubes</b> for damage.</li> <li>• Check that <b>setting pin and chain are intact</b>.</li> <li>• Check <b>head</b> for damage.</li> <li>• Observe extent of <b>available yield</b> by monitoring <b>score lines</b> on <b>yield pipe, unscored yield pipe</b> represents available yield <b>replace</b> if insufficient.</li> <li>• Observe extent of deterioration of <b>corrosion indicator</b> and discard Camlok Prop if corrosion indicator has disintegrated.</li> </ul>	Trainer to demonstrate ability to assess the Camlok Prop and recognize damage to the Camlok Prop	M Props (Pty) Ltd Lesson Plan Standard.

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<b>TOOLS / ACCESSORIES FOR INSTALLATION OF CAMLOK PROP</b>	<p>Ensure necessary tools are available:</p> <ul style="list-style-type: none"> <li>• Appropriate length <b>pinch bar</b>, with gasket.</li> <li>• <b>Water hose</b>.</li> <li>• 2kg <b>hammer</b> (to flatten footwall).</li> <li>• <b>Spade</b>.</li> <li>• <b>PPE</b> (gloves, hard hat, gum boots, earplugs and goggles).</li> <li>• Ensure sufficient stock of <b>Remote Release Slings</b>.</li> <li>• Ensure sufficient assortment of <b>Camlok Props</b> in store to suit varying conditions.</li> </ul>	Trainer to demonstrate tools and discuss.	M Props (Pty) Ltd Lesson Plan Standard.
<b>PREPARATION OF INSTALLATION SITE FOR CAMLOK PROPS</b>	<ul style="list-style-type: none"> <li>• Water down to allay dust and expose fractures in hangingwall.</li> <li>• Examine hangingwall for faults, dykes, joints or slips, slabbing, loose rocks and any other features that result in a friable and dangerous hangingwall.</li> <li>• Sound the hanging with a pinch bar.</li> <li>• Mark position for installation of Camlok Prop. (Blasting certificate holder only).</li> <li>• Clean footwall to solid at installation position of Camlok Prop.</li> </ul> <p><b>NB: If abnormal conditions dictate installation of a Camlok Prop on loose rock, a) the prop could dislodge and b) serious injuries may occur. Under these conditions it is imperative that the Camlok Prop be installed on a large flat timber slab and regularly inspected.</b></p>	Trainer to stress the importance of the NB and to demonstrate and discuss this operation. Trainees to practice under supervision	M Props (Pty) Ltd Lesson Plan Standard.

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<b>INSTALLATION OF CAMLOK PROP (STOPING)</b>	<ul style="list-style-type: none"> <li>• Place <b>Camlok Prop</b> below <b>mark indicated</b> on hangingwall.</li> <li>• Ensure <b>cam indicator</b> is in down position and <b>pre-stressing handle</b> vertical with <b>safety cable</b> installed.</li> <li>• Rotate <b>head</b> to best support hangingwall fractures.</li> <li>• Position Camlok Prop <b>90° to hangingwall</b>.</li> <li>• Ensure <b>adjusting pin</b> (chain side) is pointing in direction of remote release.</li> </ul> <p><b>NB: Release of Camlok Prop may be hampered should above procedure not be adhered to.</b></p> <p><b>NB: Ensure down dip side clear of workers when installing Camlok Props.</b></p> <ul style="list-style-type: none"> <li>• Extend <b>inner tube</b> until <b>head</b> contacts hangingwall.</li> <li>• Insert <b>adjusting pin</b> into lowest appropriate hole.</li> <li>• Ensure that <b>adjusting pin</b> has penetrated through both holes in <b>inner tube</b>.</li> <li>• <b>Rotate adjusting collar</b> and position head as <b>close to the hangingwall as possible</b>.</li> </ul> <p><b>NB: Ensure that all adjusting pins (chain side) face in the direction of remote release.</b></p> <ul style="list-style-type: none"> <li>• Remove safety cable from pre-stressing handle.</li> <li>• Rotate <b>cams</b> using <b>pre-stressing handle</b> until <b>Camlok Prop</b> is pre-stressed. Operators foot may be used to pre-stress prop to maximum. (Do not jump on pre-stressing handle).</li> </ul> <p><b>NB: Operator to observe hangingwall during installation procedure.</b></p> <ul style="list-style-type: none"> <li>• Return <b>pre-stressing handle</b> to vertical position and install safety cable.</li> <li>• Install required number of <b>Camlok Props</b> using the above procedure.</li> </ul> <p><b>NB: Use of an aid is recommended when installing Camlok Props.</b>  <b>NB: Never strike Camlok Prop to inspect or remove. Use hand or foot pressure only.</b></p>	Trainer to demonstrate and trainees to practice under supervision.	M Props (Pty) Ltd Lesson Plan Standard.

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<b>INSTALLATION OF CAMLOK PROP (STOPPING)</b>	<ul style="list-style-type: none"> <li>• <b>Camlok Props should be installed according to mine standards (refer to support layouts and any special instructions)</b></li> <li>• <b>Consult Rock Engineering Department for support layouts and or responsible Mine Official.</b></li> </ul> <p><b>NB: Additional Camlok Props to be installed if area contains geological features</b></p>		
<b>INSTALLATION OF CAMLOK PROP (DEVELOPMENT &amp; HIGH AREAS)</b>	<ul style="list-style-type: none"> <li>• Position <b>Camlok Prop</b> below mark indicated on hangingwall, if present.</li> <li>• Extend <b>inner tube</b> until <b>head</b> contacts hangingwall.(Utilization of the <b>inner tube lifter</b> is <b>recommended</b>).</li> <li>• Insert <b>adjusting pin</b> into lowest appropriate hole.</li> <li>• Ensure that <b>adjusting pin</b> has penetrated through both holes in <b>inner tube</b>.</li> <li>• <b>Rotate adjusting collar</b> and position head as <b>close to the hangingwall as possible</b>.</li> </ul> <p><b>NB: Ensure that adjusting pin (chain side) is pointing in direction of remote release.</b></p> <ul style="list-style-type: none"> <li>• Remove safety cable from pre-stressing handle.</li> <li>• Rotate <b>cams</b> using <b>pre-stressing handle</b> until <b>Camlok Prop</b> is pre-stressed. Operators foot may be used to pre-stress prop to maximum.</li> </ul>	Trainer to demonstrate and trainees to practice under supervision.	M Props (Pty) Ltd Lesson Plan Standard.

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<b>INSTALLATION OF CAMLOK PROP (DEVELOPMENT &amp; HIGH AREAS)</b>	<p><b>NB: Operator to observe hangingwall during installation procedure.</b></p> <ul style="list-style-type: none"> <li>• Return <b>pre-stressing handle</b> to vertical position and install safety cable.</li> <li>• Install required number of <b>Camlok Props</b> using the above procedure.</li> </ul>		
<b>REMOVAL OF CAMLOK PROP (STOPING)</b>	<ul style="list-style-type: none"> <li>• Inspect working area and ensure permanent support is installed to mine standard prior to removing Camlok Props.</li> <li>• Remove all persons and materials from working area.</li> <li>• Commence removal of Camlok Props in accordance with mine standard.</li> <li>• Ensure use of appropriate length of <b>Remote Release Sling</b> to remove Camlok Props. (Refer to mine standard).</li> <li>• Remove safety cable from pre-stressing handle.</li> <li>• Engage <b>pre-stressing handle</b> in <b>gear</b> ensuring handle points away from position of remote release at 45° to the prop.</li> </ul> <p><b>NB: If pre-stressing handle does not point away from operator, remote release (from a safe position) will not be possible.</b></p> <ul style="list-style-type: none"> <li>• Attach <b>Remote Release Sling loop</b> to <b>pre-stressing handle hook</b> and <b>pigtail</b> to <b>chain link</b> closest to <b>adjusting pin</b>. Ensure secure attachment of <b>pigtail</b>.</li> <li>• Operator to move to a safe supported area.</li> <li>• Grip <b>Remote Release Sling handle</b> and take up slack. Do not wrap sling around hand or arm. This allows operator to discard if abnormal occurrence takes place.</li> <li>• Ensure firm footing.</li> <li>• Pull <b>Remote Release Sling</b> sharply to release Camlok Prop. <b>Pre-stressing handle</b> will rotate towards operator until hitting footwall. <b>Loop</b> on <b>sling</b> will unhook from <b>pre-stressing handle hook</b>. (Remote Release Sling now only attached to pin)</li> </ul>	<p>Trainer to explain and discuss equipment, PPE, tools &amp; accessories.</p> <p>Trainer to demonstrate and trainees to practice under supervision.</p>	<p>M Props (Pty) Ltd Lesson Plan Standard.</p>

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<b>REMOVAL OF CAMLOK PROP (STOPPING)</b>	<ul style="list-style-type: none"> <li>• Pull <b>sling</b> again to withdraw <b>adjusting pin</b> allowing <b>inner tube</b> to drop down.</li> <li>• <b>Camlok Prop</b> can be guided to fall towards the operator by further pulling <b>Remote Release Sling</b>.</li> <li>• Continue pulling Camlok Prop to place of safety.</li> <li>• Remove all <b>Camloks</b> using above procedure.</li> <li>• Store in safe place.</li> </ul> <p><b>NB: Always observe Camlok Prop whilst removing, for signs of danger.</b></p> <p><b>NB: If the Camlok Prop does not remote release, examine the area for potential hangingwall failure and do not attempt to remove prop or re-enter the area prior to re-accessing and making the area safe. Camlok Props may only be remote released from a safe distance.</b></p>		
<b>REMOVAL OF CAMLOK PROP (DEVELOPMENT &amp; HIGH AREAS)</b>	<ul style="list-style-type: none"> <li>• Inspect working area and ensure permanent support is installed to mine standard prior to removing Camlok Props.</li> <li>• Remove all persons and materials from working area.</li> <li>• Commence removal of Camlok Props in sequence according to mine standard.</li> <li>• Ensure use of appropriate length <b>Remote Release Sling</b> for removal of long props. (Minimum 5m or in accordance with mine standard).</li> </ul> <p><b>NB: Using a short stopping Remote Release Sling on a long prop could result in serious injuries whilst removing a long Camlok Prop.</b></p> <ul style="list-style-type: none"> <li>• Engage <b>pre-stressing handle</b> in <b>gear</b> ensuring handle points away from position of remote release at 45° to prop.</li> </ul> <p><b>NB: If pre-stressing handle does not point away from operator, remote release (from a safe position) will not be possible.</b></p>	<p>Trainer to explain and discuss equipment, PPE, tools &amp; accessories.</p> <p>Trainer to demonstrate and trainees to practice under supervision.</p>	<p>M Props (Pty) Ltd Lesson Plan Standard.</p>



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**ACKNOWLEDGEMENT OF RECEIPT**

FOR THE YIELDING CAMLOK PROP **PROPS** REV 2015  
**LESSON PLAN**

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(MINE)

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(RECEIVED BY)

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(DATE)

\_\_\_\_\_  
(SIGNATURE)

ISSUED ON BEHALF OF M PROPS (PTY) LTD

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(NAME)

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(DATE)

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(SIGNATURE)

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