

**NB**

**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> : HYDRO-CAMLOK PROP
<b>REFERENCE</b> :	<b>LAST REVISION DATE</b> : Feb 2010

INSTRUCTIONAL SEQUENCE	SKILLS / KNOWLEDGE / KEY POINTS	FACILITATION METHODOLOGY TECHNIQUES AND AIDES	COURSE REFERENCE
<b>OBJECTIVE</b>	The trainee must show his ability to <b>install and remove</b> a Hydro-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 HYDRO-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. Hydro-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>Hydro-Camlok Prop</b> consists of the following components: <ul style="list-style-type: none"> <li>• <b>head board</b></li> <li>• <b>outer tube</b></li> <li>• <b>inner tube</b></li> <li>• <b>adjusting pin and chain</b></li> <li>• <b>Hydraulic pre-stressing unit</b></li> <li>• <b>footplate</b></li> <li>• <b>corrosion indicator</b></li> <li>• <b>setting/releasing spanner</b></li> </ul>	Trainer to demonstrate a Hydro-Camlok Prop and explain all components.	M Props (Pty) Ltd Lesson Plan Standard.

## LESSON PLAN

<b>COURSE TITLE</b> : TEMPORARY SUPPORT MECHANICAL PROP	<b>LESSON TITLE</b> : HYDRO-CAMLOK PROP
<b>REFERENCE</b> :	<b>LAST REVISION DATE</b> : Feb 2010

INSTRUCTIONAL SEQUENCE	SKILLS / KNOWLEDGE / KEY POINTS	FACILITATION METHODOLOGY TECHNIQUES AND AIDES	COURSE REFERENCE
<b>PRECAUTIONS BEFORE USE</b>	<ul style="list-style-type: none"><li>• Check <b>Hydraulic pre-stressing unit</b> for damage.</li><li>• Check and clean nozzle.</li><li>• Check that pre-stressing pump is available and operational.</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 deterioration of <b>corrosion indicator</b> and discard Hydro-Camlok Prop if corrosion indicator has disintegrated.</li><li>• Check setting/releasing spanner for damage.</li></ul>	Trainer to demonstrate ability to assess the Hydro-Camlok Prop and recognize damage to the Hydro-Camlok Prop.	M Props (Pty) Ltd Lesson Plan Standard.

## LESSON PLAN

<b>COURSE TITLE</b> : TEMPORARY SUPPORT MECHANICAL PROP	<b>LESSON TITLE</b> : HYDRO-CAMLOK PROP
<b>REFERENCE</b> :	<b>LAST REVISION DATE</b> : Feb 2010

INSTRUCTIONAL SEQUENCE	SKILLS / KNOWLEDGE / KEY POINTS	FACILITATION METHODOLOGY TECHNIQUES AND AIDES	COURSE REFERENCE
<b>TOOLS / ACCESSORIES FOR INSTALLATION OF HYDRO-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>Setting/ Release handles with slings attached</b>.</li> <li>• Ensure sufficient stocks of <b>Hydro-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 HYDRO-CAMLOK PROPS</b>	<ul style="list-style-type: none"> <li>• Water down to allay dust and expose fractures in hangingwall.</li> <li>• Examine hanging wall 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 Hydro-Camlok Prop. (Competent person only).</li> <li>• Clean footwall to solid at installation position of Hydro-Camlok Prop.</li> <li>• Check condition of hydraulic pump, hoses and fittings.</li> </ul> <p><b>NB: If abnormal conditions dictate installation of a Hydro-Camlok Prop on loose rock, a) the prop could dislodge and b) serious injuries may occur. Under these conditions it is imperative that the Hydro-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.

LESSON PLAN

<b>COURSE TITLE</b> : TEMPORARY SUPPORT MECHANICAL PROP	<b>LESSON TITLE</b> : HYDRO-CAMLOK PROP
<b>REFERENCE</b> :	<b>LAST REVISION DATE</b> : Feb 2010

INSTRUCTIONAL SEQUENCE	SKILLS / KNOWLEDGE / KEY POINTS	FACILITATION METHODOLOGY TECHNIQUES AND AIDES	COURSE REFERENCE
<b>INSTALLATION OF HYDRO-CAMLOK PROP</b>	<ul style="list-style-type: none"> <li>• Place <b>Hydro-Camlok Prop</b> below <b>mark indicated</b> on hangingwall.</li> <li>• Ensure that nozzle faces the direction of remote release.</li> <li>• Rotate <b>head</b> to best support hangingwall fractures.</li> <li>• Position Hydro-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 Hydro-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 Hydro-Camlok Props.</b></p> <ul style="list-style-type: none"> <li>• Extend <b>tube</b> until <b>head</b> touches the hanging wall.</li> <li>• Insert <b>adjusting pin</b> into appropriate hole.</li> <li>• Ensure that <b>adjusting pin</b> has penetrated through both holes in <b>tube</b>.</li> <li>• Attach the <b>hydraulic pump hose coupling</b> to Hydro-Camlok prop nozzle.</li> <li>• Rotate hose coupling <b>90° to the left</b>.</li> <li>• Using <b>available hydraulic pump</b>, pressurize Hydro-Camlok prop sufficiently to <b>stand unaided</b>.</li> <li>•</li> </ul> <p><b>NB: Refer to relevant hydraulic pump instruction manual as to the correct procedures that need to be followed pertaining to the pump.</b></p> <ul style="list-style-type: none"> <li>• <b>From a safe area remotely pre-load prop to 12 mpa.</b></li> <li>• Attach setting/release spanner to valve and <b>push to close</b>.</li> <li>• <b>Remove hydraulic pump hose coupling and setting/release handle from installed prop.</b></li> </ul> <p><b>NB: Use of an assistant is recommended when installing Hydro-Camlok Props.</b></p>	Trainer to demonstrate and trainees to practice under supervision.	M Props (Pty) Ltd Lesson Plan Standard.

## LESSON PLAN

<b>COURSE TITLE</b> : TEMPORARY SUPPORT MECHANICAL PROP	<b>LESSON TITLE</b> : HYDRO-CAMLOK PROP
<b>REFERENCE</b> :	<b>LAST REVISION DATE</b> : Feb 2010

INSTRUCTIONAL SEQUENCE	SKILLS / KNOWLEDGE / KEY POINTS	FACILITATION METHODOLOGY TECHNIQUES AND AIDES	COURSE REFERENCE
<b>INSTALLATION OF HYDRO-CAMLOK PROP</b>	<ul style="list-style-type: none"> <li>• Hydro-Camlok Props should be installed according to mine standards (refer to support layouts and any special instructions)</li> <li>• Consult Rock Engineering Department for support layouts and or responsible Mine Official.</li> </ul> <p><b>NB: Additional Hydro-Camlok Props to be installed if area contains geological features.</b></p>		
<b>INSTALLATION OF HYDRO-CAMLOK PROP</b>	<p><b>NB: Operator to observe hanging wall during installation procedure.</b></p> <ul style="list-style-type: none"> <li>• Install required number of Hydro-Camlok Props using the above procedure.</li> </ul> <p><b>NB: Ensure that all adjusting pins (chain side) face in the direction of remote release.</b></p>	Trainer to demonstrate and trainees to practice under supervision.	M Props (Pty) Ltd Lesson Plan Standard.

## LESSON PLAN

<b>COURSE TITLE</b> : TEMPORARY SUPPORT MECHANICAL PROP	<b>LESSON TITLE</b> : HYDRO-CAMLOK PROP
<b>REFERENCE</b> :	<b>LAST REVISION DATE</b> : Feb 2010

INSTRUCTIONAL SEQUENCE	SKILLS / KNOWLEDGE / KEY POINTS	FACILITATION METHODOLOGY TECHNIQUES AND AIDES	COURSE REFERENCE
<b>REMOVAL OF HYDRO-CAMLOK PROP</b>	<ul style="list-style-type: none"> <li>• <b>Inspect working area and ensure permanent support is installed to mine standard prior to removing Hydro-Camlok Props.</b></li> <li>• <b>Remove all persons and materials from working area.</b></li> <li>• <b>Commence removal of Hydro-Camlok Props in accordance with mine standard.</b></li> <li>• Ensure use of appropriate length of <b>Remote Release sling attached to setting/release spanner</b> to remove Hydro-Camlok Props. (Refer to mine standard).</li> <li>• Attach setting/release spanner to valve at <b>45° away from the release position.</b></li> <li>• Attach hook of sling to casting beneath the valve.</li> <li>• Operator to move to a safe supported area.</li> <li>• Ensure firm footing.</li> <li>• Grip <b>Remote Release sling handle attached to setting/release spanner</b> and take up slack. <b>Do not wrap sling around hand or arm. This allows operator to discard if abnormal occurrence takes place.</b></li> <li>• <b>Pull Remote release sling handle resulting in setting/release spanner rotating and opening valve.</b></li> <li>• Open valve will discharge water and de-stress prop.</li> <li>• Using the attached sling, pull prop to a safe supported area.</li> <li>• Remove all <b>Hydro-Camlok props</b> using above procedure.</li> <li>• Store in safe place.</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>	M Props (Pty) Ltd Lesson Plan Standard.

## LESSON PLAN

<b>COURSE TITLE</b> : TEMPORARY SUPPORT MECHANICAL PROP	<b>LESSON TITLE</b> : HYDRO-CAMLOK PROP
<b>REFERENCE</b> :	<b>LAST REVISION DATE</b> : Feb 2010

INSTRUCTIONAL SEQUENCE	SKILLS / KNOWLEDGE / KEY POINTS	FACILITATION METHODOLOGY TECHNIQUES AND AIDES	COURSE REFERENCE
<b>REMOVAL OF HYDRO-CAMLOK PROP</b>	<p><b>NB: Always observe Hydro-Camlok Prop whilst removing, for signs of danger.</b></p> <p><b>NB: If the Hydro-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. Hydro-Camlok Props may only be remote released from a safe distance.</b></p> <p>NB: Never enter unsupported areas after removing Hydro-Camlok Props</p>		
<b>REMOVAL OF HYDRO-CAMLOK PROP</b>	<ul style="list-style-type: none"> <li>• <b>Ensure use of appropriate length Remote Release handles for removal of long props. (Minimum 5m or in accordance with mine standard).</b></li> </ul> <p><b>NB: Using a short stopping Remote Release spanner on a long prop could result in serious injuries whilst removing a long Hydro-Camlok prop.</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>



**ACKNOWLEDGEMENT OF RECEIPT FOR THE  
HYDRO-CAMLOK PROP  
LESSON PLAN**

---

(MINE)

---

(RECEIVED BY)

---

(DATE)

---

(SIGNATURE)

**ISSUED ON BEHALF OF M PROPS (PTY) LTD**

---

(NAME)

---

(DATE)

---

(SIGNATURE)