








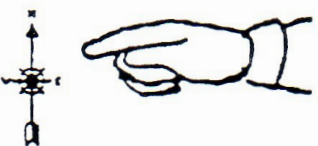



# **AL-Mahaba Oil Services**



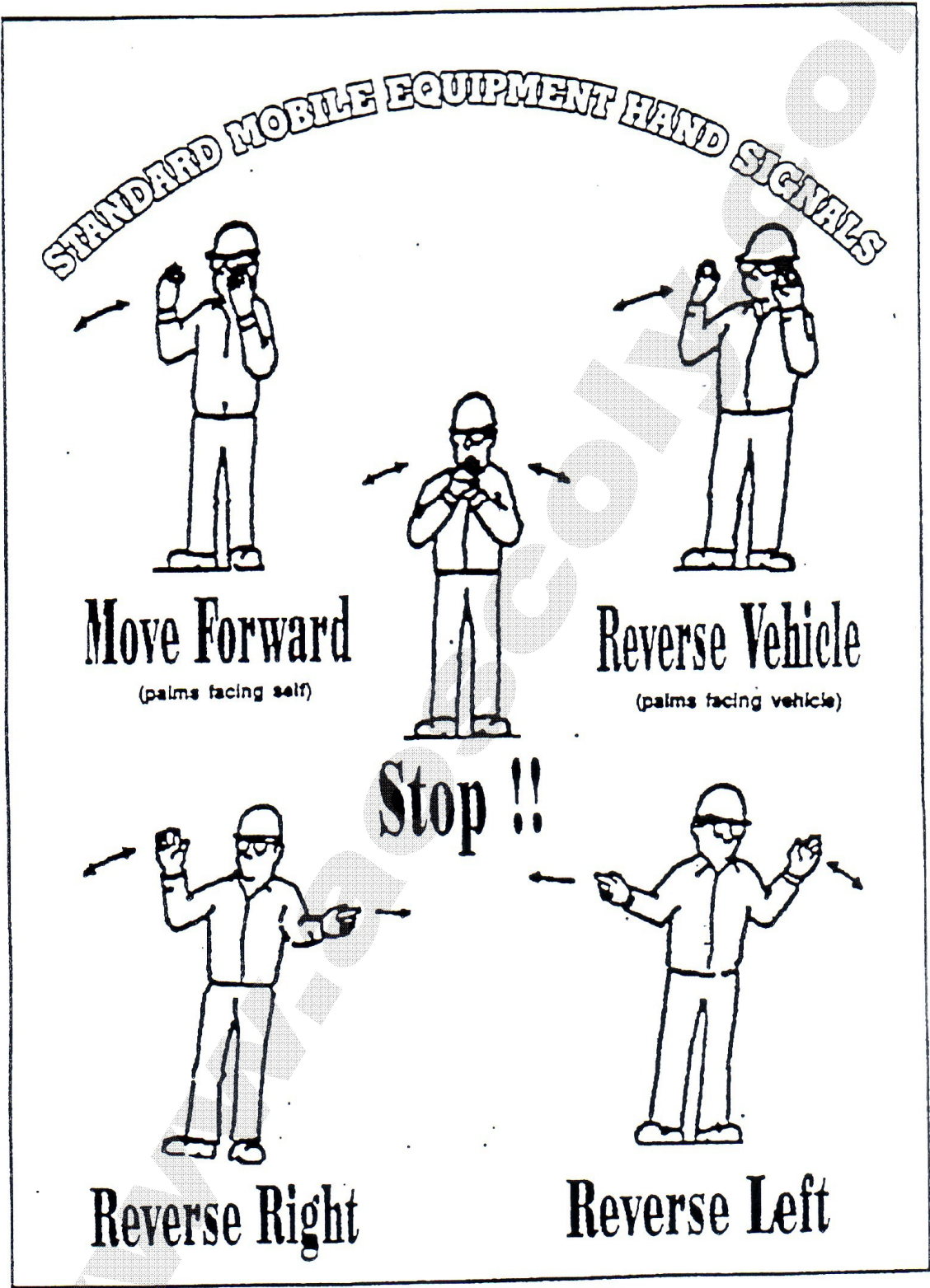
## **CRANES & SLINGS**

### STANDARD CRANE SIGNALS

From time to time you will be required to give signals to a crane operator for safe movement of suspended loads. Below is a picture depicting "Standard Crane Signals". Study these and use them when requiring crane movement.

<p><b>LOAD UP</b></p> 		<p><b>LOAD UP SLOWLY</b></p> 	
<p><b>LOAD DOWN</b></p> 		<p><b>LOAD DOWN SLOWLY</b></p> 	
<p><b>ROTATE CRAB</b></p> 		<p><b>DIRECTION OF TRAVEL BRIDGE OR TROLLEY</b></p> 	
<p><b>AUX. HOIST</b></p> 	<p><b>MAIN HOIST</b></p> 	<p><b>STOP</b></p> 	

<p><b>LOAD UP</b></p>  <p>1</p>	<p><b>LOAD DOWN</b></p>  <p>2</p>	<p><b>LOAD UP SLOWLY</b></p>  <p>3</p>	<p><b>LOAD DOWN SLOWLY</b></p>  <p>4</p>
<p><b>BOOM UP</b></p>  <p>5</p>	<p><b>BOOM DOWN</b></p>  <p>6</p>	<p><b>BOOM UP SLOWLY</b></p>  <p>7</p>	<p><b>BOOM DOWN SLOWLY</b></p>  <p>8</p>
<p><b>BOOM UP LOAD DOWN</b></p>  <p>9</p>	<p><b>BOOM DOWN LOAD UP</b></p>  <p>10</p>	<p><b>EVERYTHING SLOWLY</b></p>  <p>11</p>	<p><b>USE WHIP LINE</b></p>  <p>12</p>
<p><b>USE MAIN LINE</b></p>  <p>13</p>	<p><b>TRAVEL FORWARD</b></p>  <p>14</p>	<p><b>TURN RIGHT</b></p>  <p>15</p>	<p><b>TURN LEFT</b></p>  <p>16</p>
<p><b>SHORTEN HYDRAULIC BOOM</b></p>  <p>17</p>	<p><b>EXTEND HYDRAULIC BOOM</b></p>  <p>18</p>	<p><b>SWING LOAD</b></p>  <p>19</p>	<p><b>STOP</b></p>  <p>20</p>
<p><b>CLOSE CLAM</b></p>  <p>21</p>	<p><b>OPEN CLAM</b></p>  <p>22</p>	<p><b>DOG EVERYTHING</b></p>  <p>23</p>	







## **MONORAILS & JIB CRANES – IDENTIFICATION OF CAPACITIES**

Each supervisor audit the monorails and cranes, in its area, and ensure that the devices "be plainly marked with sufficient information so as to enable the Operator of the device to determine the maximum rated load the device is capable of lifting under any operating condition". The "Hoist Capacity Identification", clarified that the support beams as well as the hoist mechanism must be marked with the capacity.

The location of the marking will normally be on the web of the beam, when accessible. However in the case of jib cranes, we have elected in some cases to apply the marking to the column that supports the jib.

## **SLINGS – INSPECT ION**

Before a sling is used, the following conditions must be looked for and their effect on the condition of the rope evaluated:

- Broken wires.
- Worn out wires – less than 2/3 of original diameter.
- Corrosion.
- Extensive abrasion.
- Penning.
- Pitting.
- Kinking.
- Crushing.
- Cutting.
- Unstringing.
- Bird-caging.
- Damaged ferrule – or broken wires at ferrule.
- Out of roundness.
- Excessive clearance between stands.
- Heat damage.

The inspection should start as the sling is picked up and continue the length of the sling as it is being hooked up.

Slings found to be defective should be set aside and identified with yellow paint. Later when defective sling is disposed of they should be cut or burned in half.

## **DO NOT OVERLOAD A SLING**

The safe working loads or rated capacities for had been calculated using a Safety Factor of 5, which is the accepted standard of the wire rope industry. This safety factor was chosen to allow for the loss of strength in the sling due to wear and corrosion of the wires, bending and shock loads, etc., and due to the fact that slings are usually subjected to rougher treatment than is normally given wire rope. To be safe the sling user should adhere strictly to the safe working loads.



## **EFFICIENCIES OF VARIOUS HITCHES**

In many cases we have found that the change in efficiency (and consequently the Safety Factor in the same load is being lifted) when a sling is used in two or more different hitches is not properly realized by the sling user. The most common hitches for the single rope sling are the vertical leg, choker and basket types, when a sling is used as a choker, the Safe Working load is reduced to 75% of the Safe Working load of a vertical lift. When the same sling is used as a basket hitch, the Safe Working load is 150% of that of a vertical lift. It is important, therefore, for each of his slings that the customer knows the Safe Working load for each hitch the intends to use.

## **KEEP LEG ANGLES WITHIN PROPER LIMITS**

For two, three, and four leg slings, the smaller the leg angle (with the horizontal), the smaller the Safe Working Load. For example, as the leg angles decrease from 90° to 30°, the Safe Working Load decrease by 50%. It is wise, therefore, to keep leg angles as large as possible.

## **STRADDLE THE CENTRE OF GRAVITY**

Sling with equal legs should straddle the center of gravity of the load. If this is not the case, one leg will be subjected to more than its share of the load, the Safety Factor in this leg will decrease to a dangerous level, and the load will probably rotate with very serious results. Factor in this leg will decrease to a dangerous level, and the load will probably rotate with very serious results.

## **AVOID BENDING THE SLING AROUND SHARP EDGES**

Probably more slings have had to be removed from device because they have been cut, kinked or crushed while bent around sharp edges than for any other reason. This type of abuse can usually be eliminated or at least decreased considerable. If the sling must be wrapped around sharp edges, it can often be protected by means of corner saddles, burlap padding, or wooden blocking. In many cases a basket sling, where the wire rope is being kinked by the load, can be replaced by a multiple leg sling using hoods or other fittings to come in contact with the sharp edges. If sharp bends are necessary, a sling made with a more flexible rope will resist kinking better. When using a very flexible rope, however, it is particularly important to protect the smaller wires from the cutting action of sharp edges.

## **IMPORTANT**

Once a sling is kinked, it should be removed from service immediately because the possibility of failure, if used, is very great.

## **AVOID SHOCK LOADING**

Lifts with wire rope sling should be slow and steady to avoid shock loads or momentary overloads which could break or kink the rope. A shock load on a wire rope is sometimes great enough to overcome the Safety Factor allowed when the rated capacity is calculated.

The stresses in wire rope caused by shock loading are understood less than those of any other type. To be safe in wire rope sling operations, shock load **MUST** be avoided.



### **AVOID MOVEMENT BETWEEN LOAD AND CABLE**

The load should never be allowed to slide along the wire rope during a lift. The rope becomes damaged very easily with this type of abuse. If possible, the load should also never be lowered on a sling.

### **INSPECT SLINGD REGULARLY**

Only by inspection can it be determined when a sling should be removed from services. Slings should be checked for broken wires along the length of the sling, and at the fittings, kink, crushed strands, wear on outer wires, corrosion, rope distortion, and damaged fittings. If the sling has deteriorated to any extent it should be discarded. It is only as strong as its weakest section. In some cases the fittings can be salvaged and used in the new replacement slings.

### **STORE SLINGS IN A CLEAN DRY PLACE**

When not in use, wire rope slings should be stored in an area which is free from dust and corrosive elements. Dust and moisture can penetrate into the body of the rope and cause abrasive wear and corrosive nicking of the inner wires. The extent of these abuses can never be estimated by inspection. Finally **HANG UP SLINGS WHEN THEY ARE NOT IN USE**. Many slings are damaged by running over them with equipment such as fork-lift trucks or by placing heavy objects on them.

### **WIRE ROPE SLINGS ARE COMPLEX MACHINES**

In conclusion, we would remind the workers that wire rope slings are complex machines with many moving parts. Each part, whether it is wire, a fiber core or a fitting, is designed and manufactured to interact precisely with the other parts. Wire rope slings must be properly cared for if they are expected to function efficiently and give good service.