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## Cranes and Lifting Gear Safe Working Practices

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### BACKGROUND

Cranes are by their very nature, dangerous to work with, and dangerous to work near. The main dangers stem from poor maintenance, mishandling of equipment and lack of care by those working with or near cranes and lifting machines.

### LEGAL REQUIREMENTS

The safety measures required in the operation of cranes and lifting gear are laid down in the Shifting Operations and Lifting Equipment Regulations 1998.

There are a number of legal requirements which can be briefly summarised as:-

- all parts must be of good construction, free from defects and properly maintained;
- before a crane is used for the first time it must be thoroughly examined and tested by a competent person and a certificate obtained which specifies the safe working load;
- this safe working load (usually shown as SWL) must be clearly marked on the crane, and no crane should be loaded beyond this limit;
- no person is allowed to work on the wheeltracks within 20 feet of a crane - similarly no one is allowed to work under a crane where they might be struck, unless effective steps are taken to warn them;
- every part of the crane must be thoroughly examined every 12 months or more frequently;
- a register must be kept giving particulars of the tests, dates of examinations, defects found and steps taken to remedy them;
- the crane operator should carry out weekly inspections for defects.

### TYPES OF CRANE

The three most common types of cranes in use are the electric overhead travelling (EOT) crane, the mobile crane and the tower crane. There are various types of mobile crane such as the self-propelled, lorry-mounted, crawler-type, and rail-type. Many accidents take place on, or near, the EOT crane, particularly to workers engaged on maintenance work. Some hazards to look out for are:-

- people working on the wheeltrack may be struck by a crane on the same, or adjacent, track;

- people working on a moving EOT crane may be trapped in places of limited clearance;
- people carrying out their duties above floor level may be struck by an EOT crane or by the load carried;
- tools or equipment may fall from an EOT crane and cause injury to people working below;
- people working on an EOT crane may fall to floor level; and
- workers may come in contact with live electric conductors.

### CRANE DRIVERS AND TRAINING

With the various types of mobile cranes, the most important safety factor is the skill of the crane driver. As the mobile crane becomes more complex, drivers must have a greater degree of skill than in the past. Drivers are now expected not only to drive the crane safely but to carry out such tasks as erecting the jib and attend to the joist and derrick ropes. They also have to fit the correct balance weight, correct load radius indicator and set the automatic safe load indicator. All this requires special training, because an untrained crane driver is an unsafe crane driver. Training courses will vary, but should include some of the following points:-

- **controls** - drivers must be fully familiar with the controls of the crane;
- **signals** - drivers must know the code used in the workplace, and must understand that signals should be accepted only from the slinger responsible for the lift, except in cases of emergency when a signal to stop is given;
- **misuse** - drivers must be aware of misusing the crane, and avoid shock loads, fast slewing, and lifting loads they cannot see without a signaller. The overwind limit switch should not be used for controlling normal hoisting motions - this device is a safeguard, and is not intended to be used as part of the operating mechanics; and
- **ground** - drivers must be able to make a sound assessment of the grounds on which they are operating, so that they will know when there is a risk of overturning because of the slope or subsidence.

The importance of training crane drivers, applies equally to tower crane drivers though many accidents with tower cranes comes from faulty installation.

### LIFTING TACKLE

Due regard must be paid to the importance of chains, ropes and other lifting tackle such as slings, rings, hooks and swivels. Lifting operations regulations state that these items must be of good construction, sound material and adequate strength, and that the lifting gear must be tested and examined by a competent person, who should issue a suitable certificate. Other details are:-

- tables of safe working loads must be posted in the tackle store and in prominent positions in the works - these tables need not cover any gear which has the safe working load marked on it;
- no chain, rope or lifting tackle may be used for any load exceeding the safe working load;
- chains, ropes and lifting tackle must be thoroughly examined by a competent person every three months;
- wrought iron gear must be periodically annealed, or effectively heat treated by some other method; and
- a register must be kept giving particulars, for each item of gear, of the test certificate, dates of thorough examinations, defects found and steps taken to remedy them, the dates of annealing or other heat treatment (where appropriate).

### **OTHER FACTORS**

There are many other requirements for lifting gear in various regulations, but there are four important things to look for:-

- all lifting gear should be obtained from reliable manufacturers;
- lifting gear must have been tested and thoroughly examined by a competent person before being used;
- if the safe working load is not marked on the gear, this information must be given in tables to which the slinger can easily refer; and
- the use of home-made or improvised gear is dangerous and illegal, unless it has been tested and thoroughly examined by a competent person.

### **SAFETY CHECKS**

- Has the crane driver been properly trained?
- Is the person's eyesight good enough for the job; has their sight been tested and when?
- Is the safe working load (SWL) of the crane clearly indicated, both for slinger and crane driver?
- Are there adequate, safe ways of entering and leaving for the crane driver?
- Cranes must be thoroughly examined every 12 months.
- Is lifting tackle properly stored and tested? Are the results of the tests available for inspection?
- Mobile cranes should not be operated on unstable ground or near excavations – unless they are safely shored up.
- Slinger and banksmen should be experienced, competent well trained persons.

Maintenance must be carried out regularly and tests undertaken by responsible members of management. A good standard of housekeeping must be maintained at all times.