

To
Owner, Agent and Manager of all Mines.

Safe use of mobile Cranes — Code of practice

A large numbers of mobile cranes are being used for material handling purposes in most of the mine premises. A few fatal and serious accidents have been reported due to unsafe use of such mobile cranes.

In view of the above, a code of practice for safe use of mobile cranes have been framed based on BIS 4573 of 1982 and BIS 13367 (Part I) of 1992. The code of practice is as follows :

1.0 Crane Safety Equipment to be provided with the Crane.

1.1 Automatic Safe load Indicator

An automatic safe load indicator shall be provided to give warning of an approach to the safe working load and a further warning when an overload occurs.

1.2 Load Radius Indicator

A load radius indicator shall be provided which shall be clearly visible to the driver and indicate the appropriate safe working load and radius for whatever configuration of the crane is used.

1.3 Motion Limit Devices/Overload Cut Out Devices

Motion limit devices shall be provided to limit hoisting, derricking, slewing, and boom extending or any other crane motion incase of overload or unsafe operation.

1.4 Audio Visual Alarm during reversing

Effective Audio Visual alarm shall be provided to be actuated automatically whenever the crane is being reversed.

1.5 Machinery Guarding

Effective guards shall be provided for gear wheels, chain drives and revolving shafts, couplings, collar's and set screws or similar moving parts, unless those parts are made safe by design or by position or are effectively guarded by parts of the crane structure.

1.6 Design Parameters of the mobile crane

All parameters should meet the specifications for power driven mobile crane — BIS 4573 of 1982.

- 1.7 Shackles and slings must conform to the relevant Indian Standard. Test Certificates of the shackles and slings shall be maintained along with the other crane records followed by periodical inspection.

2.0 Appointing various Competent Persons

2.1 Supervisor

The supervisor must be trained and experienced to plan the total lifting operation safely. He shall ensure that there is an effective procedure for reporting defects and incidents and that adequate maintenance of the equipment is carried out.

He shall be given authority to stop the operation of the crane whenever he considers that danger is likely to arise should the operation continue.

He shall ensure that the crane is not operated in overloading situation.

2.2 Crane Driver

The Crane driver shall be responsible for the correct operation of the crane in accordance with the manufacturers instruction book and the plan. The crane driver shall at any one time only respond to the signals from one slinger/signaller who should be clearly identified. He shall ensure that the crane is not operated in overloading situation.

2.3 Slinger

The slinger is responsible for attaching and detaching the load to and from the crane hook and the use of correct lifting gear and equipment in accordance with planning of the operation. The slinger shall be knowledgeable enough to use the proper sling at the proper place of the load to be lifted.

2.4 Signaller

The signaller shall be responsible for relaying the signal from the slinger to the crane driver. The signaller may be given the responsibility for directing movement of the crane and load instead of the slinger provided that only one person has the responsibility. The signaller must understand the signal code.

3.0 Personal Safety Equipment

All competent person shall use safety gloves, helmet, safety spectacle, car

defenders during appropriate operation.

4.0 Access and Emergency escape

Safe means of access and emergency escape shall be provided and maintained in good condition.

4.1 For the driving position.

4.2 For Inspection, maintenance, repair, erection and dismantling of crane.

5.0 Boarding the Crane

No person shall be permitted to board a crane without first obtaining the driver's agreement.

6.0 Fire Extinguishers

These shall be provided in all the cabins of the crane. They shall be periodically inspected and renewed as necessary.

7.0 Record keeping

7.1 Records shall be maintained *for* each crane that are sufficient to enable the condition of the crane to be determined and its fitness for further operation to be properly assessed.

7.2. Records shall also include technical information including maintenance Instructions and performance data provided by the manufacturer

7.3. Records of test certificates and all inspections of ropes and brakes shall be maintained. All significant repairs shall also be recorded.

8.0 Proximity Hazards

Consideration shall be given to the presence of overhead electric line or conductors, oil/gas/steam pipe lines, nearby structure etc.

Where any part of the crane or its load can not be kept clear of such hazard, the appropriate authority should be consulted.

9.0 Periodic Checks

Supervisor must ensure that all daily, weekly and monthly checks as recommended by the crane manufacturer are carried out and proper records be maintained.

10.0 Other pre-requisites of the mobile crane

- 10.1. Different configuration of operation like “On TYRE”, “On OUTRIGGER” shall be mentioned in the crane.
- 10.2. Load lifting capacity chart for different configuration like on ‘TYRE’, on ‘OUTRIGGER’, maximum rope tension etc. shall be available with the crane. Load lifting capacity on TYRE shall actually be much less compared to the load lifting capacity on OUTRIGGER as can be seen from the literatures/load charts supplied by the crane manufacturers.

11.0 Stability

- 11.1 **Condition of tipping** : The crane is considered to be at the point of tipping when balance is reached between the overturning moment of the load and the stabilizing moment of the machine at which point addition of any further load will cause imbalance
- 11.2 To avoid toppling of crane, the operator should select correct configuration prior to the operation of the crane like telescopic of boom, slewing of super structures, derricking of boom, lifting of load etc.

12.0 Pick and Carry operation

Normally mobile crane should not be used as a transport equipment. However, where pick and carry operation by the manufacturer of the crane has been permitted, the crane driver shall not exceed the maximum recommended load for pick and carry and he shall keep the load either at over front or over rear as mentioned in the crane configuration and lock the slewing operation.

Minimum ground clearances shall be maintained in such cases so that the carrying load may be guided/supported. The traveling speed of the crane during pick and carry shall be as minimum as possible (within 1 Km to 4 Km per hour) or as recommended during such operation by the manufacturer.

13.0 Training

The competent persons must obtain training for operation and safety in the use of crane in consultation with the crane manufacturer.

Henceforth, the above guidelines may be strictly followed for the use of mobile cranes in mines in the interest of safety.

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