

## INTER PLANT STANDARD – STEEL INDUSTRY



IPSS

### SAFETY GUIDELINES FOR OPERATION OF MANUAL / PENDANT ELECTRIC HOISTS

IPSS: 1-11-018-15

Corresponding IS does not exist

## 0 FOREWORD

0.1 This Inter Plant Standard, prepared by the Standards Committee on Personnel Safety Appliances & Procedures, IPSS 1:11; with the active participation of the representatives of all member steel plants and associated organizations in the field, was adopted in February, 2015.

## 1 SCOPE

1.1 To define general safety precautions to be taken when operating pendant operated electric hoists, including applying the load, moving the load, and training requirements.

## 2 PROCEDURE

2.1 General Safety Precautions Injury to operators and other human beings which might lead to death.

2.1.1 The business unit or function line management shall designate a competent person to administer a training program for all persons required to use hand-powered hoist systems. The training shall include, but not be limited to, the following:

- Recognition and use of hoist types, such as pullers, hand-powered chain hoists and winches, pendant operated electric hoists and wire rope hoists.
- Recognition and use of trolley types, such as plain, geared, and monorail types, such as bridge and jib cranes.

### 2.2 Testing of Hoists including wire ropes

All hoists are to be tested as per Indian Standard IS:2365 :1977 and IS:807 :2006, by the supplier, during commissioning. The test record is to be maintained by the owner department. Hoists must also be tested thoroughly, on annual basis, by qualified persons and test record is to be documented and maintained by the owner department.

Winch operated hoists are to be tested, by a competent engineer, prior to commissioning for

a) full-capacity grouting and

- b) Strengthening of the snatch block i.e. the size and stiffening of the connected structural member, size of the welding and size of the lug, against the resultant force on the snatch block.

The competent person certified by the statutory authority, after being fully satisfied with this requirement, shall permit to use the winch.

2.3 **Inspection at the start of the electric hoist, before the hoist is used in each shift**

Each day or shift, inspect the following items before using the hoist:

- a. Spring Clip must be present on hook to prevent lifting cable or chain from slipping out of hook
- b. Locking mechanism in winch is to be inspected to ensure locking against unwanted fall.
- c. Brake mechanism: Check with load to demonstrate that the brake is not slipping.
- d. Load chain: Visually check for worn, broken and, cracked links, chain distortion or stretch.
- e. Check for grit or other foreign matter that may be carried into the hoist mechanism. Check the chain for proper lubrication.
- f. Hooks: Check for cracks or deformation; and check the bottom hook for free-swiveling action and the condition of the safety latch.
- g. Wire rope: Check for kinks, cuts, broken strands, bird caging, fraying or abrasions.
- h. Lever handle: Check for straightness. A bent lever is a positive indication of the hoist having been overloaded.
- i. Limit Switch: Check whether limit switches are operating.
- j. Overall physical condition of the winch.

**CAUTION:**

- If any damage or malfunctions are noted in the daily inspection of items, the operator shall not operate the hoist, and shall immediately advise the supervisor so that corrective action can be taken. The operator shall put “out-of-order” tag on the hoist at that time. If the hoist is tagged with an “out-of-order” sign, the operator shall not operate the hoist.
- If corrective action has not been completed by the end of the shift, the operator shall advise the operator or operators on the next shift that

corrective action is required on the hoist and verify that the hoist is tagged with an out-of-order sign and record the checked problems in the log book.

## 2.4 Check points before Operating Hoists

- a. The hoist operator shall be familiar with all operating controls of the hoist and be instructed in the operations to be performed. Instructions shall include, as applicable, the warnings on the hoist.
- b. General hoist practices are listed in the operator's portion of the manual provided by the hoist manufacturer.
- c. If damage or any deficiencies are observed, the operator shall lock out / tag out the equipment and report the problem to line management.
- d. The operator shall not operate any hoist that bears a —**"DO NOT OPERATE"** sign.
- e. Only qualified persons may adjust or repair hoists.
- f. Hoist chains or cables shall not be used as a ground for welding; and a welding electrode shall not be touched to the chain or cable.
- g. Hand-operated chain hoists shall be operated only with chain-power, with no more than one operator per chain.

## 2.5 Procedure for applying the Load

- a. Bring the hoist directly over the load.
- b. Lower the load hook such that it can be attached directly to the load, the slings, or any other device used to rig the load.
- c. The hoist rope or chain shall not be wrapped around the load.
- d. The load, sling(s), or other lifting device should be fully seated in the saddle or bowl of the hook.
- e. Make sure that the hook latch is not supporting any part of the load or the slings or device used to attach the load to the hook.
- f. Verify that the weight of the load to be lifted does not exceed the rated load capacity of the hoist. A hoist overload-limiting device shall not be used to measure the weight of the load.
- g. Slack should be taken out of the hoisting chain(s) and slings, if used, before attempting to lift the load.
- h. The load should be lifted only a few inches and stopped to check:
  - That the load is properly balanced;

- That slings, if used, are properly positioned;
- That load or sling is seated in the saddle, base, or bowl of the hook; and

That the hoist holding brake stops and holds the load before continuing with the lift.

## 2.6 Procedure for moving the Load

- a. The operator shall not engage in any activity, which will divert his attention while operating the hoist.
- b. The operator shall respond only to signals given by the designated person. However, the operator shall obey any Stop signal given at any time by anyone in the work area.
- c. The hoist operator shall not lift or lower any load until all personnel, including himself, are clear of the load; and the operator shall ensure the load and hoist will clear all obstacles before moving or rotating the load. The operator shall avoid swinging the load hook or any load.
- d. The operator shall slowly engage powered hoists with the load, avoiding any unnecessary or quick inching or reversals of direction. The load shall not be lifted more than a few inches until it is well balanced in the sling or lifting device. The operator shall correctly align any switches or interlocks to ensure smooth transitions.
- e. Each time a load approaching the rated capacity of the hoist is handled; the operator shall check the hoist brake by lifting the load just clear of the floor. The operator shall continue the lift only after verifying the proper operation of the braking system.
- f. When operating wire rope hoists, the load shall not be lowered below the point where less than two wraps of wire rope remain on the hoist drum.
- g. The hoist operator shall not move loads over people standing in the area or over hazardous or critical equipment.
- h. Personnel shall not be carried on hoist hooks or loads.
- i. Monorails used for hoists shall be equipped with end stops to prevent —over travel or disengagement of the hoist from the monorail.
- j. Check the alignment of the monorail periodically.

## 2.7 Procedure for parking the Load

- a. The operator shall not lower a load with the hoist until the operator and all other personnel are clear of the load and the path of the load.

- b. The operator shall verify that the load will clear all obstacles before lowering the load.
- c. Care shall be taken not to damage slings when removing them from under a load.
- d. The hoist operator shall not leave a suspended load unattended unless specific safety precautions have been activated.
- e. The hoist load block should be positioned and stored above head level when the hoist is not in use.

**2.8 Checking, Corrective & Preventive Action**

- a. Any incident/accident occurring during such work shall immediately be informed to Safety Department, Fire Brigade, First Aid Stations.
- b. Departmental In charge shall ensure implementation of above procedure through periodic interaction with Manager/Operators/Contractors and review of work permits system records.

**2.9 Records**

Inspection record is to be maintained by the concerned department and the test certificate is to be updated annually.

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