

CRITERIA FOR THE ACCREDITATION OF INSPECTION BODIES PERFORMING INSPECTION OF THE LIFTING EQUIPMENT AND LIFTING GEAR IN ZIMBABWE

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1. PURPOSE AND SCOPE

The purpose of this document is to define criteria for the accreditation of Independent Inspection Bodies performing in-service inspections of lifting equipment and lifting gear used in Zimbabwe, after installation and prior to being put into service.

The scope of activity of in-service inspection for which accreditation is granted may be described in the accreditation schedule as Powered Lifting Equipment, Manual Lifting Equipment or Lifting Gear as defined in Section 2.3; 2.4 & 2.5 of this publication or by reference to the specific type of lifting equipment (e.g., tower cranes, etc.).

Inspection Bodies accredited under this publication provide one or more of the following services:

- a) Pre-commissioning inspection
- b) Development of schemes of in-service inspection;
- c) In-service inspection of equipment to detect actual and potential defects and judgements on the significance of such defects for continued safe use;
- d) Reporting the result of the in-service inspection, specifying any remedial action and/or recommendations;
- e) Inspection during or following remedial action; and
- f) Commenting on the suitability of, and any changes necessary to, inspection methods/schemes of in-service inspection.

2. DEFINITIONS

2.1 Approved Independent Inspection Authority

Company approved by the regulatory authority as an independent inspection authority.

2.2 Lifting Equipment Inspector

A person who, with the aid of specialized knowledge or equipment or after such investigations, tests, sampling or analyses as he/she may consider necessary, and whether for reward or otherwise, renders a service by making special findings, purporting to be objective findings, as to:

- a) the safety or risk to health of any personnel, work, article, substance, plant or machinery, or any condition prevalent on or in any premises; or
- b) whether any particular standard has been or is being complied with:

- with respect to any work, substance, article, plant or machinery, or
- with respect to work or a condition prevalent on, or in any premises, or
- with respect to any other matter, and
- by issuing a certificate, stating such findings, to the person to whom the service is rendered.

2.3 **Lifting Gear Inspector**

A person who with the aid of specialized knowledge or equipment or after such investigations, tests, sampling or analyses as he/she may consider necessary, and whether for reward or otherwise, renders a service by making special findings, purporting to be objective findings, as to:

- a) Any item used to connect a load to the lifting equipment but which is not in itself a part of the load or the equipment, such as Chains and Wire Ropes, Webbing Slings, Rings, Links, Hooks, Shackles, Eye Bolts, Swivels, Blocks, Snatch Blocks, Clamps, Beams, Scaffolding Gear, etc. or
- b) The question of whether any particular standard has been or is being complied with and issues a certificate, stating such findings, to the person to whom the service is rendered.

2.4 **Lifting Equipment**

Any lifting machine, driven by manual or mechanical power that is able to pull, raise, lower or suspend loads, and includes the supporting structure and all plant, equipment and gear used in connection with such a machine, such as but not limited to:

- a) Cranes (tower, mobile, overhead cranes, Pipe layer crane, pedestal cranes loader crane etc.);
- b) Runway Beams, Monorails, All Pad Eyes, Gin Poles and Gin Wheels;
- c) Winches, Hoists (air and electric), Crabs, Tirfor Hoists;
- d) Chain Blocks, Wire Rope Pulling Machines, Lever Hoists, Trolleys;
- e) Mobile Elevating Working Platforms (MEWP);
- f) Industrial lift trucks such as Forklifts, Self-Loader and Side Booms; and
- g) Lifting Jacks (pneumatic, hydraulic and mechanical 'screw').

This excludes continuous mechanical handling devices (i.e., conveyors).

2.5 Lifting Accessories or Lifting Gear

Any item used to connect a load to the lifting equipment but which is not in itself a part of the load or the equipment, such as Chains and Wire Ropes, Webbing Slings, Rings, Links, Hooks, Shackles, Eye Bolts, Swivels, Blocks, Snatch Blocks, Clamps, Beams, Scaffolding Gear, etc.

2.6 Lifting Equipment Classifications (excluding elevators)

- **Class A1: Powered Lifting Equipment**
Lifting equipment - including attachments for fixing, anchoring or supporting equipment - that operate by means of motive power (e.g. electric, hydraulic or pneumatic or other powered means), such as cranes, winches, goods hoists, etc.
- **Class B1: Manual Lifting Equipment**
Lifting equipment - including attachments for fixing, anchoring or supporting equipment - that operate solely by means of the operator without any powered assistance - such as manual chain block / lever block, jacks, trolleys etc.
- **Class B2: Lifting Gear**
Gear used for connecting loads to lifting equipment such as slings, hooks, beams, ladders, stairways, scaffolds, D-shackles, eye bolts, swivels, blocks, snatch blocks, clamps, etc.

2.7 Designated Area

Area specified by the Local Authority for specific activities in the Local Authority's area of jurisdiction.

2.8 Inspection

Examination of a product, process, service or installation or their design and determination of its conformity with specific requirements or, on the basis of professional judgment, with general requirements.

2.9 Regulatory Authority

Authority which is legally charged with the enforcement of the requirements of legislation that relates to LIFTING EQUIPMENT and lifting gear.

2.10 Verification

The act of reviewing, inspecting, testing, checking or otherwise determining and documenting whether items, process, services or documents comply with specific requirements.

3. GENERAL REQUIREMENTS

The approval of an Independent Inspection Authority in Zimbabwe by the Accreditation Body shall be conditional upon the following:

- 3.1 The inspection body shall be a registered legal entity with its own company certificates of registration.
- 3.2 The inspection body's registered office(s) shall be in a designated area.
- 3.3 The inspection body shall have the appropriate equipment to cover the respective scope of inspection activities. The equipment for inspection shall include, but limited to, a vernier caliper, radius gauge, magnetic yoke, steel rule, hammer, center punch, and for proof load testing a crane scale, weights (solid or water bags), a distance laser meter.
- 3.4 The inspection bodies shall have legal access to information for up to date information on appropriate inspection methods and codes.
- 3.5 The inspection body shall develop and maintain operating methods and procedures to cover its scope of inspection activities.

The following is a list of some of the standards, codes and regulations used in the inspection of lifting gear:

- a) ISO 9927-1 specifies the regular inspections to be carried out on cranes as defined in ISO 4306-1.
- b) ISO 4306-2 establishes a vocabulary of terms and definitions relating to the basic types of self-powered mobile cranes and ISO 4306-3 establishes a vocabulary of the most commonly used terms in the field of cranes.
- c) ISO 12482-1 aims at ensuring that the design constraints of the intended use of a crane are clearly identified and to define actions to be taken when the crane has been used over a period of time and has approached these constraints to ensure a new safe working period.
- d) ISO 12478-1 establishes guidelines on the general requirements necessary for the preparation and presentation of maintenance manuals for cranes.
- e) ISO 4309 specifies the examination and discard criteria for wire rope.
- f) ISO 4310 specifies the tests and procedures to be followed in order to verify that a crane conforms to its operational specifications and is capable of lifting its rated loads.

- g) ISO 9373 specifies the principle requirements for instruments and measurement systems of test loads, distances, time and other relevant parameters when testing cranes and related equipment.
 - h) ISO 14518 establishes standard methods for composition and measurement of test loads. It also provides standard methods and procedures for application of test loads during tests of cranes.
 - i) ISO 15386 specifies tests and test procedures for verification of the manufacturers specified operational performance and the capability of lifting rated loads.
 - j) ISO 11662-1 specifies a test method for determining the maximum capacity of a mobile crane to counterbalance loads applied on its hook block. The test is applicable for cranes whose capacity to support loads is based on its static resistance to overturning.
 - k) BS 7121-2-1:2012 Code of practice for the safe use of cranes, Inspection, maintenance and thorough examination.
- 3.6 The inspection body personnel who undertake inspections shall have the appropriate technical and professional qualifications and experience as outlined in clause 4.
- 3.7 The organization shall be accredited as an inspection body by a recognized accreditation body.

In assessing the inspection body's competence, the above criteria and the requirements of ISO/IEC17020 shall apply. The accreditation process shall include a pre-assessment and initial assessment stages and once accredited, periodic assessments once a year with a re-assessment of its total activities being undertaken once every 5 years.

4. PERSONNEL QUALIFICATIONS, TRAINING AND EXPERIENCE

The categories of qualifications, training and experience for the various classes of equipment are specified in the table below.

SCOPE OF WORK	QUALIFICATIONS, TRAINING & EXPERIENCE
CLASS A1	a) National Diploma in Mechanical/Electrical or equivalent
	b) 3 years' experience working for a company doing Lifting Gear and lifting Machinery Inspections
	c) Certificate of Training in lifting gear Rigging and Inspection through a recognized training authority recognized by the Regulatory Authority.
OR	

	a) National Crafts Certificate in Mechanical/Electrical Engineering or equivalent
	b) 5 years' experience working for a company doing Lifting Gear and lifting Machinery Inspections
	c) Certificate of Training in lifting gear Rigging and Inspection through a recognized training authority by the Regulatory Authority.
CLASS B1 & B2	a) 'O' Level Certificate (at least 5 Subjects, English, Mathematics & Science included)
	b) Certificate of Training in lifting gear Rigging and Inspection through a recognized training authority by the Regulatory Authority.
	c) 5 years experience working for a company doing Lifting Gear inspections.
DESIGN VERIFICATION	BSc. Degree in Mechanical / Electrical Engineering? HND or Equivalent

5. REFERENCES

- ISO 9927-1: Cranes - Inspections - Part 1: General
- ISO 4306-2: Cranes — Vocabulary — Part 2: Mobile Cranes
- ISO 4306-3: Cranes — Vocabulary — Part 3: Tower Cranes
- ISO 12482-1: Cranes — Condition Monitoring — Part 1: General.
- ISO 12478-1: Cranes — Maintenance Manual — Part 1: General.
- ISO 4309: Cranes — Wire Ropes — Care and Maintenance, Inspection and Discard
- ISO 4310: Cranes — Test Code and Procedures.
- ISO 14518: Cranes — Requirements for Test Loads.
- ISO 11662-1: Mobile Cranes — Experimental Determination of Crane Performance — Part 1: Tipping Loads and Radii.
- BS 7121-2-1: Code of practice for the safe use of cranes. Inspection, maintenance and thorough examination.
- ISO/IEC 17020: Conformity assessment — Requirements for the operation of various types of bodies performing inspection.
- ILAC P15/05 - Application of ISO/IEC 17020 for the Accreditation of Inspection Bodies.

APPENDIX - AMENDMENT RECORD

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