



Slings, Rigging and Lifting Equipment



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1. INTRODUCTION

This guide manual defines the requirements for the selection, registration, inspection, care and use of lifting and load restraint equipment other than hoists.

Note: For electric hoists requirements refer to Engineering Standard CSBP-ES-14-403-21

2. DEFINITIONS

2.1 LIFTING EQUIPMENT

Lifting equipment is a general term used to describe the various items of equipment including pull lifts, chain blocks, tirlors, winches, webbing slings, wire rope slings and chain slings used in rigging and lifting tasks involving a load suspended from or pulled by the equipment.

2.2 LOAD RESTRAINT EQUIPMENT

Load restraint equipment items are rigging item such as webbing straps, chains, load binders, chain tensioners, ropes, etc that are used to secure a load prior to movement of a vehicle (including but not limited to utilities, trucks, and forklifts) or to secure a load onto a pallet.



**LOAD RESTRAINT EQUIPMENT IS NOT DESIGNED FOR,
AND SHOULD NEVER BE USED FOR LIFTING LOADS**

2.3 CLASSIFICATIONS OF EQUIPMENT ITEMS

Individual items of lifting and load restraint equipment fall into two categories as follows.

2.3.1 Major Lifting and Load Restraint Equipment items

Major lifting and load restraint equipment items are defined as uniquely identifiable items to which an individual identification number can be allocated. It is expected that these items will either be

- mechanical devices that require some servicing, or
- may be subject to high rates of wear, or
- are relatively expensive to replace, or
- have a somewhat specialised function not provided by other available equipment.

The history of these items will be monitored on an individual basis.

The following items are regarded as "major" lifting equipment items and must have an individual identification number allocated.



Slings, Rigging and Lifting Equipment



- a. Webbing slings, wire rope slings and chain slings with a safe working load (SWL) rating greater than 400kg.
- b. Load restraint equipment items with rated capacity exceeding 400kg.

2.3.2 Minor Lifting and Load Restraint Equipment items

Minor lifting and load restraint equipment items are general rigging and load restraint items that are commonly used in lifting, rigging and load restraint activities but not readily uniquely identifiable. These include small webbing slings, wire rope slings and chain slings, hooks, shackles, swivels, snatch blocks, spreaders, shear legs and similar equipment. It is expected that these will generally be simple items, regarded as consumable, and routinely replaced as required. The history of these items will not be monitored on an individual basis but regular inspection must still be carried out.

Note: "Minor" lifting and load restraint equipment items may be allocated individual identification numbers or be grouped, at the Supervisor's discretion.

2.4 COMPETENT PERSON

A Competent Person is a person who has acquired through training, qualification, experience or a combination of these, the knowledge and skill enabling that person to correctly perform the required task, for example a licensed crane operator, dogman or rigger.

3. OVERVIEW

A register of all lifting and load restraint equipment items shall be maintained for each Business Unit/Area.

Periodic inspection of lifting and load restraint equipment shall be completed by a competent person. Period inspections shall be appropriate to the nature of the equipment and its working conditions, and be performed no less than annually. The personnel using the equipment shall also inspect the lifting and load restraint equipment before each use.

Lifting and load restraint equipment found to be or suspected of being defective, damaged or otherwise not safe to use shall have an Out of Service tag attached and shall not be used.

4. RESPONSIBILITIES

4.1 SUPERVISOR

Supervisors are responsible for ensuring that:

- all lifting and load restraint equipment is registered and that the register is kept up to date
- employees who use lifting and load restraint equipment are trained in the correct use of the equipment
- responsible team members conduct regular inspections of lifting and load restraint equipment



- damaged or faulty lifting and load restraint equipment is repaired or replaced.

4.2 EMPLOYEES

Employees are responsible for:

- inspecting lifting and load restraint equipment before each use,
- ensuring any damaged or defective lifting or load restraint equipment is immediately tagged with an Out of Service tag and taken out of service.
- reporting any damaged or defective lifting or load restraint equipment to the Supervisor

4.3 MANAGERS

Managers are responsible for compliance with procedures and auditing the system annually.

4.4 MAINTENANCE TEAMS

Maintenance Teams are responsible for:

- maintaining a register of all lifting and load restraint equipment,
- inspecting, labelling and registering all new major lifting and load restraint equipment items,
- arranging annual inspections of all lifting and load restraint equipment and recording results.

5. SELECTION AND PROCUREMENT

All lifting and load restraint equipment shall comply with relevant codes and standards as listed in section 12 below.

6. REGISTRATION OF LIFTING AND LOAD RESTRAINT EQUIPMENT ITEMS

6.1 MAJOR LIFTING AND LOAD RESTRAINT EQUIPMENT ITEMS

Each major lifting and load restraint equipment item, as defined in 2.3.1, shall be allocated a unique identification number in the format detailed in Table 1 and Figure 1 below, and shall be individually registered in the Lifting Equipment Register.

On receipt of a new major lifting or load restraint equipment item, the Supervisor - Equipment Support is responsible for the inspection, registration and labelling of the item.

The register shall be kept on the maintenance system, and a record kept for each major lifting and load restraint equipment item. Details to be recorded on the register are:

- Identification Number
- item description,
- manufacturer/supplier and serial number,



- capacity and drop,
- date of purchase,
- user department and location (by the labelling code),
- details of repairs and inspections,
- test history.

6.2 MINOR LIFTING AND LOAD RESTRAINT EQUIPMENT ITEMS

Minor lifting and load restraint equipment items do not require individual identification numbers but shall still be recorded in the register as a group of items so that inspection can be initiated when required. For example, a record such as "D shackles, various sizes" should be entered in the register.

At the Supervisor's discretion, groups of minor lifting and load restraint equipment items may be allocated a single Identification number in the same format as for individual items to allow the group number to be entered in the Lifting Equipment Register, and for the inspection history of the group to be recorded. In this case, the group identification number would use item type "A" in Table 1.

At the Supervisor's discretion, individual minor lifting and load restraint equipment items may be allocated unique identifiers and be registered in the Lifting and Load Restraint Equipment Register in the same manner as for major lifting and load restraint equipment items.

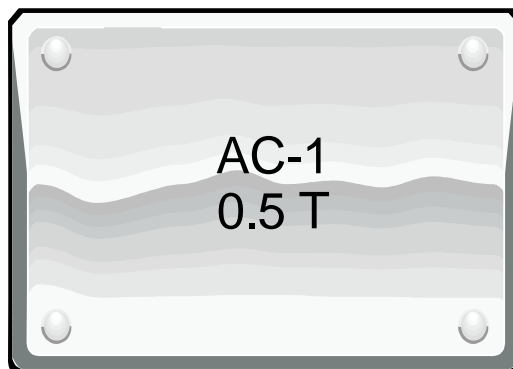
6.3 LIFTING AND LOAD RESTRAINT EQUIPMENT IDENTIFICATION NUMBERS

The identification numbers for lifting and load restraint equipment items shall be as in Table 1 and Figure 1 below.

Where the number has been allocated to an individual lifting or load restraint equipment item, the number shall be securely and durably affixed to the item, ideally by engraving directly onto the body of the item or by securely attaching a metal tag onto which the number has been engraved or stamped.

Departments	Type of Item
A = Ammonia, Ammonium Nitrate, Nitric Acid, Prilling, and Demineralised Water Treatment Plants	BT = Beam Trolley
C = Compounds - Granulating and Liquid Fertiliser Plants	C = Chain Block
D = Fertiliser Despatch	CAL = Come Along
F = Chlor-Alkali and Sodium Cyanide Plants, Industrial Chemical Storage	GC = Girder Clamp
S = Superphosphate Manufacture Plant	P = Pull Lift
W = Store/Supply	T = Tirfor
	W = Winch
	S = Sling or chain
	A = Any other item

Table 1 - Labelling Codes



A	=	Department	-	Ammonia/AN
C	=	Type of Item	-	Chain Block
1	=	Item Number		
0.5 T	=	Safe Working Load / Capacity		

Figure 1 - Labelling Codes Example

Note: For labelling hoists, refer to CSBP Engineering Standards Electric Hoists (CSBP-ES-14-403-21) and Equipment Numbering System (CSBP-ES-14-101-06).

7. PRECAUTIONS

7.1 GENERAL



KEEP WELL CLEAR OF SUSPENDED LOADS. NEVER PASS UNDER OR WORK UNDER A SUSPENDED LOAD.

Take the following precautions when using lifting and load restraint equipment:

- Verify safe working load.
- Check hooks for safety catch operation.
- Ensure freedom of movement before applying loads.
- Do not overload. Never use additional power or leverage on a hand chain or handle.
- Do not throw or drop lifting and load restraint equipment.
- Protect slings and chains from sharp corners.
- Never apply heat to chains or blocks.
- Keep slings clear of any chemical spillage
- Eyebolts are to be thoroughly inspected by a competent person prior to being used to lift equipment such as: electric motors, gearboxes, switchgear and the like; by their eyebolts.
- If there is doubt that the eyebolt is original, it should not be used as a lifting point.

NOTE: The process for using collared eyebolts for lifting can be found in AS 2317

- Always use a watch person when carrying out a lift where the operator of the hoist or crane cannot see the load being lifted. Provide proper communication between watch person and operator.
- Install safety tape and warning signs as appropriate to prevent people passing under suspended load.

7.2 WIRE ROPES AND SLINGS

Wire ropes and slings shall be discarded if any of the following defects are observed following evaluation by a competent person:

- There are signs of stretching.

- The number of broken wires is more than 10 per cent of the total, in one rope lay or in a length equivalent to 8 rope diameters.
- The rope is distorted due to kinking, crushing or core collapse.
- Signs of detrimental corrosion are evident.
- There is damage or distortion immediately adjacent to the termination.
- There is damage to the ferrule on a ferrule-secured eye-terminated sling.
- The thimbles are loose or deformed.

7.3 CHAINS AND CHAIN SLINGS

Chain slings shall be checked to ensure they are clearly marked with the safe working load (SWL), and that safety latches on hooks are fully operable and hammer locks on chain assemblies are secure.

Chain slings shall not be used if the chain or links are:

- worn or corroded,
- deformed, chipped, nicked or cracked, or
- have damaged master links, couplings and attachments.
- Take the following precautions when using chain slings:
 - If a chain has been subjected to shock or impact loads, carefully examine all links before returning the chain to service.
 - Do not overload a chain.
 - Do not use a chain in which the links are locked, stretched or without free movement.
 - Do not hammer a chain to straighten a link or to force a link into position.
 - Do not allow the angle between the legs of a multiple leg sling to exceed 120° (the SWL of a multiple leg sling decreases as the angle between the legs increases).
 - Do not drag a chain from under a load.
 - Do not roll loads over a chain.

7.4 WEB, ROUND AND FIBRE SLINGS



Sisal and other natural ropes are not permitted on CSBP sites.

Take the following precautions when using web, round and fibre slings:

- Before use, visually inspect slings and all attachments for defects. Do not use damaged or defective slings or slings that do not have a manufacturer's tag with I/D No. and/or SWL.
- Avoid shock loads.

- Do not drag slings from under a load. Support the load to allow easy removal of slings.
- Do not apply heat to slings.
- Do not leave slings on lifting hooks when not in use.
- Clean slings and return to storage after use.

Note: Flat synthetic fibre slings shall not be used to raise, lower or suspend a load.

8. INSPECTION

All lifting and load restraint equipment shall be inspected periodically, at least annually and history kept in the JDE Maintenance System. The *Chains, Slings and Hooks Checklist (CSBP-SF1332)* may be used for inspection guidance.

Lifting and load restraint equipment shall be serviced, and tested, by a Competent Person to the manufacturer's specifications. Proof loading, if required, shall be carried out by an authorised organisation.

Note: Attachments and accessories, such as master links, couplings, plate clamps and drum lifters, must be registered and inspected in accordance with this Guide Manual.

Note: If an item of lifting or load restraint equipment is used very frequently, say more often than once each week, then the frequency of inspection should be increased accordingly to ensure that the item is safe for use at all times.

9. DEFECTIVE EQUIPMENT

If a piece of lifting or load restraint equipment is deemed by a competent person to be defective, an Out of Service tag shall be attached to it and the equipment shall be returned to the Supervisor - Equipment Support for repair or replacement. Defective equipment shall be rendered unusable and discarded and the register of Lifting Equipment adjusted accordingly.

10. AUDITING

Process Unit Managers shall conduct an annual audit using the *Internal Audit Checklist - Rigging Lifting Equipment (CSBP-SF1333)* to check compliance with the procedures.

Any remedial corrective actions identified shall be addressed in a timely manner.

11. STORAGE

All lifting and load restraint equipment and accessories must be correctly stored in a clean, dedicated area. All items of equipment should be stored off the ground, and slings stored on frame, categorised by SWL. Chains and wire rope slings should be lightly oiled. Accessories should be stored on a peg board.



12. REFERENCE MATERIAL

12.1 REGULATIONS AND CODES

Occupational Safety and Health Regulations 1996.

12.2 AUSTRALIAN STANDARDS

- AS 1353 - Flat Synthetic Webbing Slings
- AS 1380 - Fibre Rope Slings
- AS 1418.2 - Cranes - Serial Hoists and Winches
- AS 2317 - Collared Eyebolts
- AS 1666 - Wire Rope Slings - Product Specification, Care and Use
- AS 2550 - Cranes - Safe Use
- AS 2741 - Shackles
- AS 2759 - Steel Wire Rope - Use, Operation and Maintenance
- AS 3775 - Chain Slings - Grade T
- AS 3777 - Shank Hooks and Large Eye Hooks - Maximum 60 tonnes
- AS 4344 - Motor vehicles - Cargo restraint systems - Transport chain and components
- AS 4380 - Motor vehicles - Cargo restraint systems - Transport webbing and components
- AS 4497 - Roundslings - Synthetic Fibre - Product Specification, Care and Use

12.3 RECORD KEEPING TABLE

RECORD IDENTIFICATION		STORAGE	STORAGE	INDEXING	RETENTION	AUTHORISED	DISPOSAL
Form No.	Document Title	MEDIA	LOCATION	METHOD	PERIOD	DISPOSER	METHOD
CSBP-SF1332	CHAINS, SLINGS AND HOOKS CHECKLIST	PAPER	Area Planner	Equip. Type	12 months	Team Maintenance Planner	Waste Paper Bin
CSBP-SF1333	INTERNAL AUDIT CHECKLIST	PAPER	Area Planner	Date	12 months	Plant Engineer	Waste Paper Bin