HASLIN

# Manage Mobile Cranes & Lifting Operation Procedure

## SEQ-PR-077

### Document Revision Control

| Document History | | | |
|---|---|---|---|
| Revision | Description of Amendments | Revised By | Date |
| 1 | Update to Haslin's new branding | George Jedelsky | 08/06/2016 |
| 2 | Update to Haslin's new branding | George Jedelsky | 14/11/2016 |
| 3 | Updated Lifting Equipment and Inspection | Jeremy Wallis | 23/6/17 |
| 4 | Clarifying methodology and use of form 068 | Jeremy Wallis | 8/9/17 |
| 5 | Updated Frequency Table and Section 14 Lifting Clutches | Jeremy Wallis | 12/9/17 |
| 6 | Overhead Powerlines Permit | Jeremy Wallis | 16/10/18 |
| 7 | Definition of Routine, Non-Routine Lifts | Jeremy Wallis | 8/6/22 |
| 8 | Workboxes, Crane inspection, training | Clare English | 20/07/2023 |
| 9 | Aligning terminology, adding Prohibited lifts | Kate Pollack | 04/08/2025 |
| **Document Approval** | | | |
| Revision | Approved By | Signature | Date |
| 1 | Colin Woods | | 08/06/2016 |
| 2 | Colin Woods | | 14/11/2016 |
| 3 | Colin Woods | | 23/6/17 |
| 4 | Colin Woods | | 8/9/17 |
| 5 | Colin Woods | | 12/9/17 |
| 6 | Colin Woods | | 16/10/18 |
| 7 | Colin Woods | | 8/6/22 |
| 8 | Tim Kelly | Tim Kelly | 20/07/2023 |
| 9 | Tim Kelly | Tim Kelly | 04/08/2025 |

| \Review Panel | |
|---|---|
| Name | Position |
| Tim Kelly | Business Development Manager |
| Iain Johnston | Quality Manager |
| Kate Pollock | QLD Safety Manager |
| Andrew Lynam | Environmental Manager |
| Jelmer Sanders | NSW Safety Manager |
| | |

## Table of Contents:

# 1. Purpose

This procedure describes the how to identify, assess and control risks associated with mobile cranes and lifting operations in accordance with the Hierarchy of controls.

Elimination of the risk must be sought in the first instance, but if not reasonably practicable to eliminate, all effort must be made to minimize the risk. Good practice and correct lifting methods can move large objects efficiently, safely and reduce manual handling operations. Incorrect lifting methods however, can lead to major accidents and fatalities. The process of carrying out correct and safe lifting operations involves a range of requirements, which must be considered during the planning of any lifting operation.

# 2. Definitions

**Lift Study** - A crane lift study is a detailed engineering analysis of a complex lift. It provides a visual representation of the planned lift. It will cover setup and configuration of the crane, as well as where it needs to travel. It also covers details about rigging and ground bearing pressure.

**Lift Plan** - A lift plan encompasses risk assessments, method statements and other relevant information such as drawings, schedules and photographs. It is a site-specific document outlining everyone's roles in the lifting operation to ensure a lift is carried out successfully.

**Routine Lift** - A lift can be categorised as a routine lift if it is repetitive in nature and involves loads that are similar in shape, size and weight, i.e., multiple lifts of similar items. The underlying principle is that the risks involved in a routine lift are already known and mitigated.

**Non-Routine Lift** - A non-routine lift refers to lifting operation that is complex, carried out for the first time or lifting close to the lifting capacity of the crane. For example, a tandem "tilt-up" operation (i.e., lifting using two or more cranes to tilt a long structure from horizontal position to vertical) is a complex non-routine lift. It will require a detailed risk assessment and engineering method before the lift is carried out.

**Work-Box** - a personnel carrying device designed to be suspended from a crane to provide a working area for a person elevated by and working from the device

# 3. Procedure

## 3.1. Identify and Assess Work Conditions and Tasks

**Accountability: Project Manager**

- Identify the work conditions or tasks associated with mobile cranes and lifting operations.
- Assess the risk of the tasks.

Refer to Procedure: Risk management SEQ-PR-001

## 3.2. Identify Training and Competency Requirements

**Accountability: Project Manager**

Identify the training and competency requirements, using AS 2550.1 Crane, hoist and winches - Safe use, Safe Work Australia General Guide for Cranes.

## 3.3. Identify Controls

**Accountability: Project Manager**

- Determine if the controls nominated in the Project Risk Register can be used otherwise, identify other controls that will apply using: AS 2550.1 Crane, hoist and winches - Safe use.
- Advise the Project Engineer where the control identified in the Project Risk Register cannot be applied.

## 3.4. Include Controls in Work Methods Statement

**Accountability: Project Engineer and Site Engineer**

- Identify the job steps, hazards, risks and risk controls relevant to the construction area and mobile crane and lifting operations performed on site.
- Include training and competency requirements in the Safe Work Method Statement.
- Consult the crane crew during the development of the Safe Work Method Statement.
- Refer to SEQ-PR-001 Risk Management Procedure section 6.14 for further information on Safe Work Method Statements.

### 3.4.1. Identify Lift Assessment Requirements

**Accountability: Project Engineer and Site Engineer, Crane Operator (Rigger/Dogman)**

- Identify the lift category and apply the required assessment requirement.

| Lift Category | Assessment Requirement | | |
|---|---|---|---|
| **Load Details** | **Lift Study** | **Lift Plan** | **SWMS only** |
| Gross load between 15Ton–50Ton & under 90% crane capacity - non-Routine lifts | | Yes | |
| Gross load below 15Ton or using Hiab truck – Routine lift | | | Yes |
| **Crane Set-up** | | | |
| Crane on a suspended platform or over critical infrastructure or services | Yes | | |
| Crane track or outrigger pad/s close to embankment or excavation[1] | Yes | | |
| Special lift devices (e.g., bespoke gantry systems, climbing jacks, strand jacks, derricks) | Yes | | |
| Land based cranes on barges[2] | Yes | | |
| Crane on unproven or reclaimed ground | | Yes | |
| Crane on firm assessed ground[3] | | | Yes |
| Crane Exclusion Zones | | | Yes |
| **Crane Operation** | | | |
| Lifting with single crane and two [2] winches | Yes | | |
| More than two [2] cranes | Yes | | |
| Where any part of the Crane/load could encroach overhead powerline safe approach distance | Yes | | |
| Two [2] crane lifts involving complex manoeuvre and / or pass out operations | Yes | | |
| Simple two [2] crane lifts (e.g. lift and lower) | | Yes | |
| Complex manoeuvres (single [1] crane) | | Yes | |
| Congested areas | | Yes | |
| Standard Crane Set-up | | | Yes |
| **Rigging and Loading** | | | |

| | | | |
|---|---|---|---|
| Custom designed / bespoke rigging | Yes | | |
| Workboxes | Yes | | |
| Precast Tilt up Panels | Yes | | |
| Complex Rigging | Yes | | |
| Pre-Cast elements (excluding tilt up) | | Yes | |
| Demolition (including pile removal)[4] | | Yes | |
| Loads with no engineered lift points or lifting method is difficult to sling | | Yes | |
| Loads with OEM approved lift points or slinging method | | | Yes |
| Simple rigging arrangements (including spreader bars and lifting beams) | | | Yes |

| **Prohibited Lifts**<br>Haslin Constructions does not permit the following lifting operations under any circumstances. These prohibitions are in place to reduce the risk of catastrophic failure and ensure compliance with relevant WHS legislation and Codes of Practice: |
|---|
| Lifts exceeding 90% of the crane's rated capacity (load chart) |
| Unplanned or ad hoc tandem lifts or multi-crane lifts **(any lift involving more than one crane must be formally engineered and pre-approved)** |
| Super lifts or lifts requiring super lift (luffing jib, fly jib, or counterweight enhancements) configuration **not engineered and pre-approved** |
| Lifting over energised high-voltage services or powerlines |
| Out-of-chart lifts**, including any lifts outside of the crane's specified load radius, configuration, or rated lifting capacity** |
| Lifting with uncertified, damaged, or uninspected lifting equipment or gear |
| Lifts where the load weight is unknown or cannot be verified |
| Blind lifts without proper load control, tag lines, or spotters in place |

### 3.4.2. Ground Conditions and Surrounding Area

1. Minimum clearances between closest edge crane support and Zone of influence:

   - For compact ground = at least equal to the depth of the excavation (1:1 rule)
   - Non compacted, loose or backfilled ground = twice the depth of the excavation (2:1 rule).

2. Where land-based cranes are to be used on barges the crane must be de-rated accordingly and barge checked by Naval Architect for suitability. Dynamic Amplification Factors are to be applied to the gross lifted load in accordance with marine lifting standards. Alternatively, a Naval Architect may be engaged to determine accurate dynamic amplification factors based on specific conditions.
3. Assessment of ground conditions for routine lifts is to be completed by the work crew prior to lifting. For non-routine lifts — or where crane size or ground loading may present additional risk — a geotechnical engineer must assess the ground conditions prior to lifting. Dynamic effects on crane, rigging and load must be considered in all piling related activities.

   Compile following documentation and certificates:

   - SWMS
   - Permit to work (Working at Heights Only e.g. man basket)
   - Overhead Powerlines Permit
   - Risk assessment
   - High Risk Work License for:
     - Crane operator or
     - Rigger/Dogger.

- Lift Plan (plans must clearly record load details, crane details, lifting gears details, type of crane/machine used lifting methods and calculations, maximum outrigger load for specified configuration) Use SEQ-FM-068 Crane Lift Plan or crane contractor template.
- Lift Study where required as indicated in table 3.4.1 will include Lift Plan and additional information (details of the crane configuration, load and rigging components, rigging study, ground condition, weather condition, written operational sequence, signalling requirements, site obstructions, drawings, have to be approved by competent person)

- Refer to AS 2550.1 Crane, hoist and winches - Safe use and Safe Work Australia General Guide for Cranes.

## 3.5. Crane Lifted Work Boxes

Plant specifically designed to lift and support people while they work should be used if they need to access an elevated work area. This can include scaffolding and elevating work platforms.

If it is not possible to use plant specifically designed to lift people, a crane-lifted work box may be used to help workers perform minor work for a short amount of time. A risk assessment must be completed establishing that the use of a workbox is safer than all other alternative means, and the structural adequacy of the landing area has been established and the landing area is clear. In such circumstances, a safe work method statement and lift study must be developed and implemented for the operation. SEQ-FM-042 Crane Workbox Permit must be completed prior to commencing Work.

An Emergency Rescue plan must be completed and attached to SEQ-FM-42 Crane Workbox Permit prior to works commencing.

### 3.5.1. Work Box Requirements

Crane work boxes require plant design registration with the regulator and must undergo an annual engineering inspection.
Crane-lifted work boxes should:

1. have the working load limit, tare mass and design registration number clearly marked e.g. on a data plate
2. have sides not less than 1 metre high
3. have fall-arrest anchorage points
4. be correctly tagged
5. have lifting slings supplied to be attached to the lifting points by hammerlocks or moused shackles
6. have a safety factor for each suspension sling of at least eight for chains and 10 for wire rope
7. where provided, a door is to be inward opening only and self-closing with a latch to prevent unintentional opening, and
8. first aid boxes to be provided with outward opening doors for ease of access, but doors are to be self-closing with automatic latches.

### 3.5.2. Crane Requirement

If a crane is to lift a work box the crane should:

1. where practicable, be equipped with a secondary back-up system that will prevent the load from falling if the primary lifting device fails
2. have a minimum rated capacity of at least twice the total load of the workbox and its contents at the maximum radius for the task to be performed and not less than 1000 kg

3. be fitted with an upper hoist limit—anti-two block—that stops operation of the hoist, luff and telescope functions of the crane or be designed so two-blocking cannot damage part of the crane or lifting gear, and
4. have levers and foot pedals fitted with a constant pressure system so crane motion stops immediately after the operator removes pressure from the controls.

If the crane is fitted with a free fall facility, this function should be positively locked out to prevent inadvertent activation when lifting a work box.

Where a crane has a brake acting directly on the drum, the braking efficiency of the hoisting drive train should be tested by hoisting and holding a load:

- equivalent to the line pull of the hoist winch, or
- not less than twice the maximum hoisted load.

If the crane will be used to lift other loads the test should be repeated before re-lifting the work box.

During operation of the crane with a work box the line pull of the hoist winch should not exceed that used in the test.

### 3.5.3. Using crane Lifted work Boxes

Crane-lifted work boxes do not provide a level of safety equivalent to properly erected scaffolding, elevating work platforms and other specifically designed access systems.

However, using a crane-lifted work box does provide a higher level of safety than using fall-arrest systems as the primary control measure.

To help make sure people in a crane-lifted work box are safe:

- the work box must be securely attached to the crane
- full body fall-arrest harnesses should be worn at all times
- harnesses should be attached to fall-arrest anchorage points in the work box or to the main sling ring above the heads of the workers
- directions to the crane operator should only be provided from the workbox by a person holding a dogging or rigging licence
- the crane must not travel while suspending a work box
- workers remain substantially inside the work box while it is lifted or suspended, and
- emergency retrieval arrangements are put in place before the lift so workers can safely exit the work box in the event of crane failure.

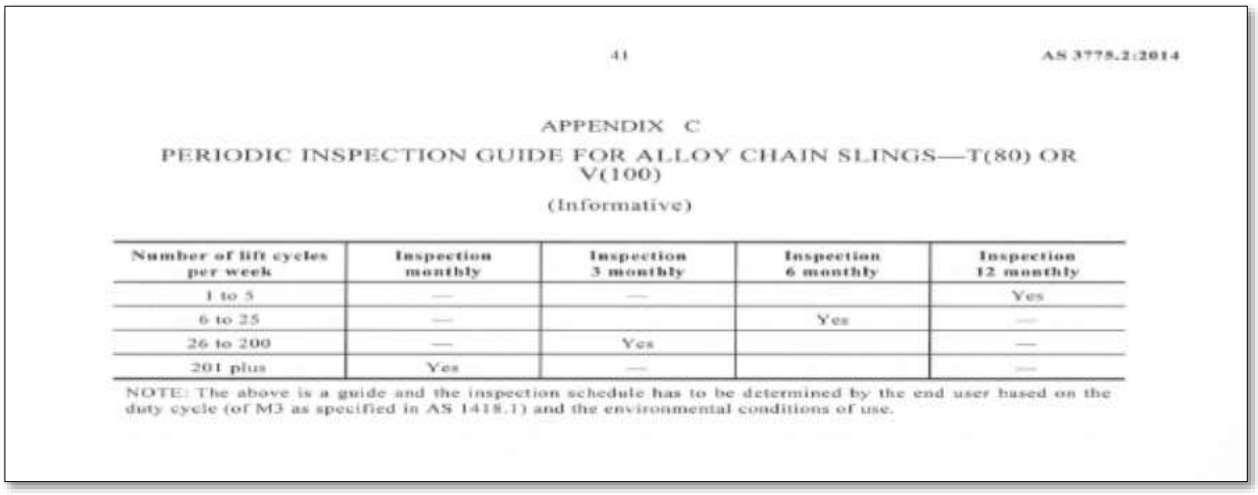
## 3.6. Lifting Equipment

All lifting equipment shall comply with following frequency inspection Table 1:

Table 1:

| Item | Frequency | Record | Responsibility | Standard / Guideline |
|---|---|---|---|---|
| Lifting Devices Slings, Chains, Hooks, Shackles, Clutches Wire Ropes | Slings, Chains, Hooks, Clutches and Shackles before each use, inspection for wear, nicks, twisting and tears. If sever wear, tag missing and SWL or WLL is not visible discard, or tag out to repair.<br>**Chains Slings refer to Table 2 of this Procedure for tagging frequency & Appendix A and B**<br>a) After manufacture.<br>b) When damaged and when load bearing components have been replaced.<br>c) When it is missing its tag.<br>Lifting Clutches tested and identifiable tag every 12 months | Contractors Lifting Gear Register, Lifting Register SEQ-FM-027 | Plant operator, Suitably qualified person, Competent person, Sub Contractor, WHS Rep, HSEQ Manager, Site Manager, Project Manager | AS 2741 Appendix B, AS 1353 Section 9, AS 4990 Section 16.2, AS 2321 section B9, AS 3775.2 Section 9 & Appendix C Work Cover Dogman Guide Part 2 Lifting Gear, AS 4497.2 AS 3850.1:2015 Section C2.6 |

Table 2:



41 AS 3775.2:2014

APPENDIX C

PERIODIC INSPECTION GUIDE FOR ALLOY CHAIN SLINGS—T(80) OR V(100)

(Informative)

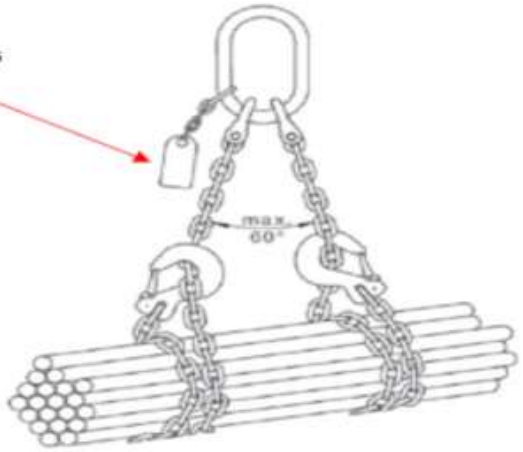
| Number of lift cycles per week | Inspection monthly | Inspection 3 monthly | Inspection 6 monthly | Inspection 12 monthly |
|---|---|---|---|---|
| 1 to 5 | — | — | | Yes |
| 6 to 25 | — | | Yes | — |
| 26 to 200 | — | Yes | | — |
| 201 plus | Yes | — | | — |

NOTE: The above is a guide and the inspection schedule has to be determined by the end user based on the duty cycle (of M3 as specified in AS 1418.1) and the environmental conditions of use.

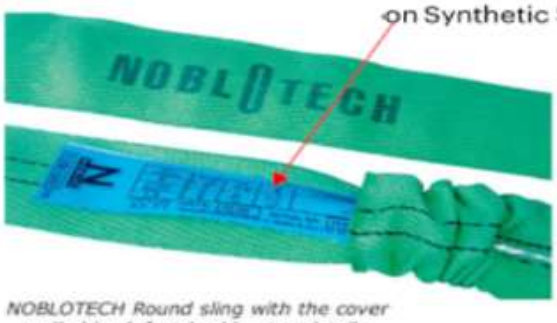
### 3.6.1. Identifiable Tags on Chains, Slings, Hooks, Clutches and Shackles


Identifiable markings on Chain Slings

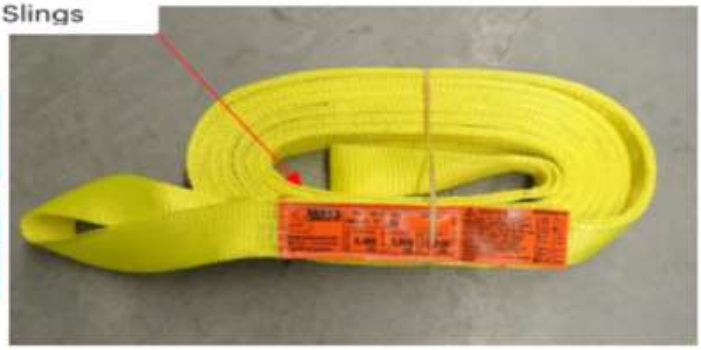
Note: 90 and 120 angles are no longer allowed when reeving a load and therefore are not applicable on tags.




Identifiable markings on Synthetic Slings

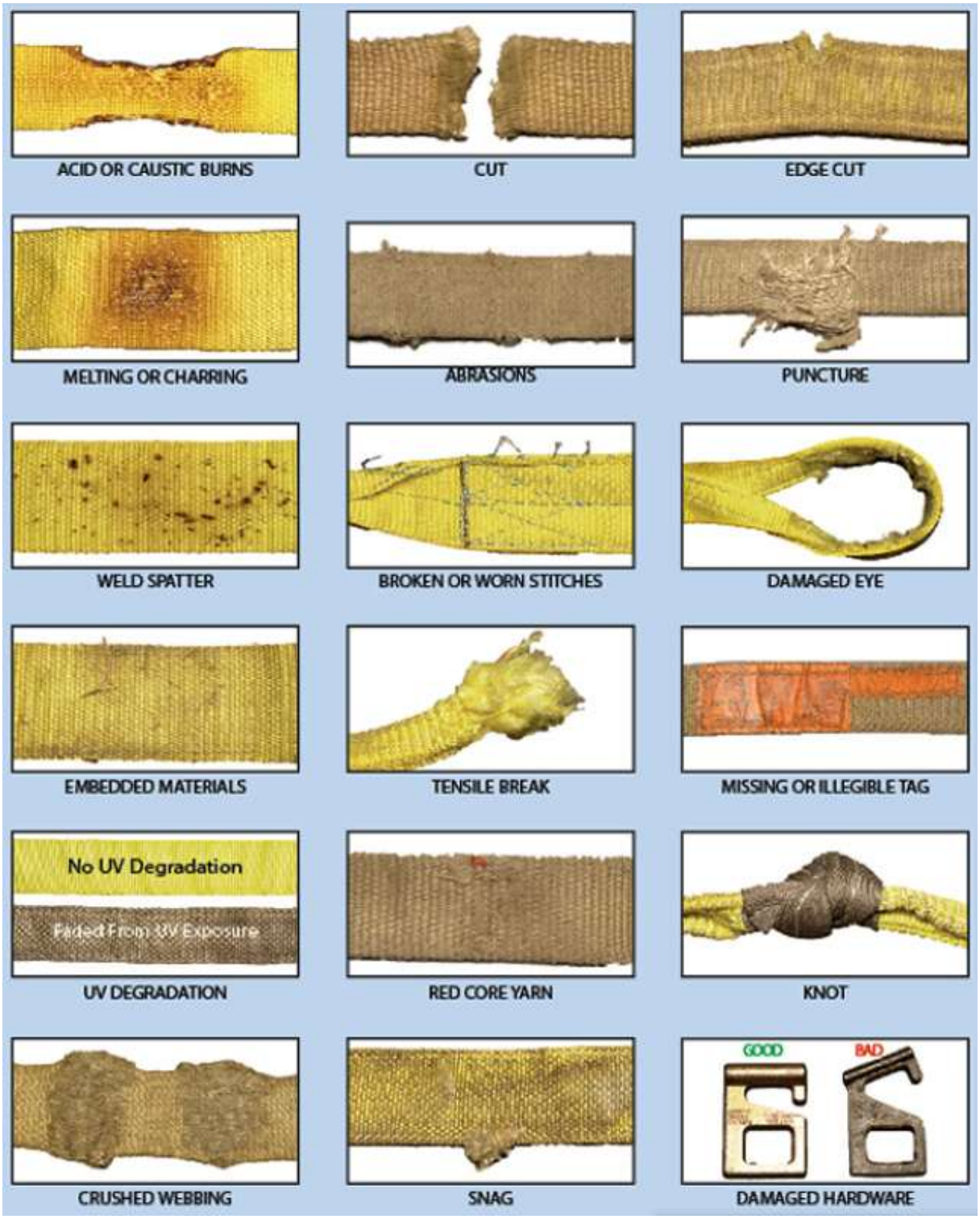



NOBLOTECH Round sling with the cover pulled back for checking tag details



Identifiable markings on Hooks and Shackles


**WARNING** If any damage such as the following is visible, the sling shall be removed from service immediately. Photos depict examples of sling damage, but note they are extreme examples provided for illustration purposes only.




ACID OR CAUSTIC BURNS


CUT OR DAMAGED YARNS


BUNCHED OR WADDED YARNS


MELTING OR CHARRING


MISSING OR ILLEGIBLE TAG


FIBER OPTIC
(Lack of light transfer - Sling Fails)

DISTORTED HARDWARE


KNOTS

EXTERNAL WARNING INDICATOR
4 CHECK FAST® EWI PRESENT
(Sling passes 4 Check Fast® Criteria)


YARN VISIBILITY


BROKEN STITCHES


EWI MISSING
(Sling fails 4 Check Fast® Criteria)


EMBEDDED MATERIALS


SNAGS / PUNCTURES


TATTLE TAIL MISSING
(Sling fails)

## 4. Swift Lift Clutches Section 2.6 of AS 3850.1:2015

**Section 2.6 of AS 3850.1:2015**

Prior to each use, inspections of the lifting clutches shall be conducted to check for wear and deformation to supplier's specification. A proof test using a load equal to 1.2 times the WLL shall be conducted and recorded for each lifting clutch at intervals of not more than 12 months commencing from the date of first use.

Each clutch shall be permanently marked with the following information:

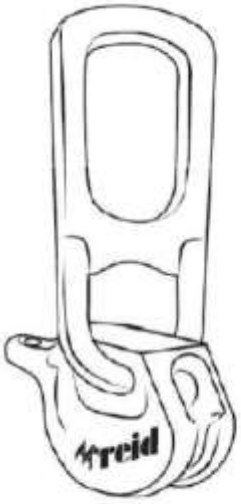
(i) A unique identifier (traceable to the proof tests).

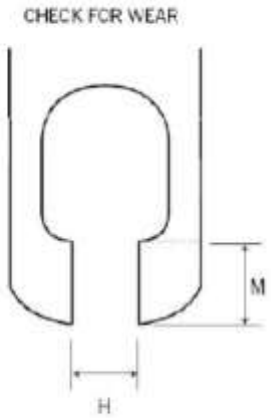
(ii) The manufacturer's symbol or name.

(iii) Its WLL or compatible anchor identifier.

*C2.6 Suitable identification of lifting clutches may be by permanent marking on the clutch itself or attachment of a durable tag.*

*Following visual inspection of the lifting clutch, if there are any safety concerns, a proof test and a fluorescent magnetic particle should be conducted.*




| Size | H max (mm) | H min (mm) |
|---|---|---|
| 1.3 | 13 | 5.5 |
| 2.5 | 18 | 5.5 |
| 5.0 | 25 | 8.0 |
| 10.0 | 32 | 12.0 |
| 20.0 | 46 | 18.0 |
| 32.0 | 58 | 24.0 |

## 4.1. Commence Work

**Accountability: Site Manager, Supervisor or Subcontractor Supervisor**

- Ensure that all workers have signed onto the relevant Lift SWMS.
- Ensure all controls identified in the Lift documentation are in place, before work commences.
- Conduct a pre-start briefing and ensure all workers sign onto the Pre-Start Form.

Refer to Project Safety Management Plan.

## 4.2. Monitor Work

Accountability: Project Manager, Engineer, Crane Operator (Rigger/Dogman) Safety Coordinator or delegated person

Establish a documented system to ensure regular monitoring is conducted on the tasks. Include as a minimum:

- Daily supervisor inspections
- SWMS Compliance

Inspections of plant equipment used in accordance with the instructions provided by the manufacturer.

Conduct SEQ-CL-009 Task Inspection to ensure compliance and the ongoing effectiveness of the control measures.

- Task Inspections
- Competent Person(s)

Persons who have been appointed or been given the responsibility for planning lifting operations should have sufficient technical, practical and theoretical training, knowledge and experience of the work they are likely to safely plan /assess the lift.

They shall:

- Be capable of identifying the hazards and risks associated to lifting operations within their area of work or the environment where the lifting operation will take place.
- Be able to select the correct lifting equipment for the work. Understand the characteristics of the lifting equipment they are selecting and the nature of the work it will be carrying out.
- Carry out and document risk assessments (lifting operation) or site surveys; have the ability to communicate their findings to those involved in and affected by the lifting operations.
- Be able to create method statements or lifting plans and implement safe systems of work for lifting operations.

Where appropriate seek additional support and expertise including the use of external specialists to assist them with the planning of lifting operations.

Responsible Person = Project Manager, Engineer, Crane Operator (Rigger/Dogman) or delegated person

## 4.3. Crane Inspection, Maintenance and Registration

Prior to commencing on site, the project team must ensure evidence of the following maintenance and registration criteria has been submitted and approved:

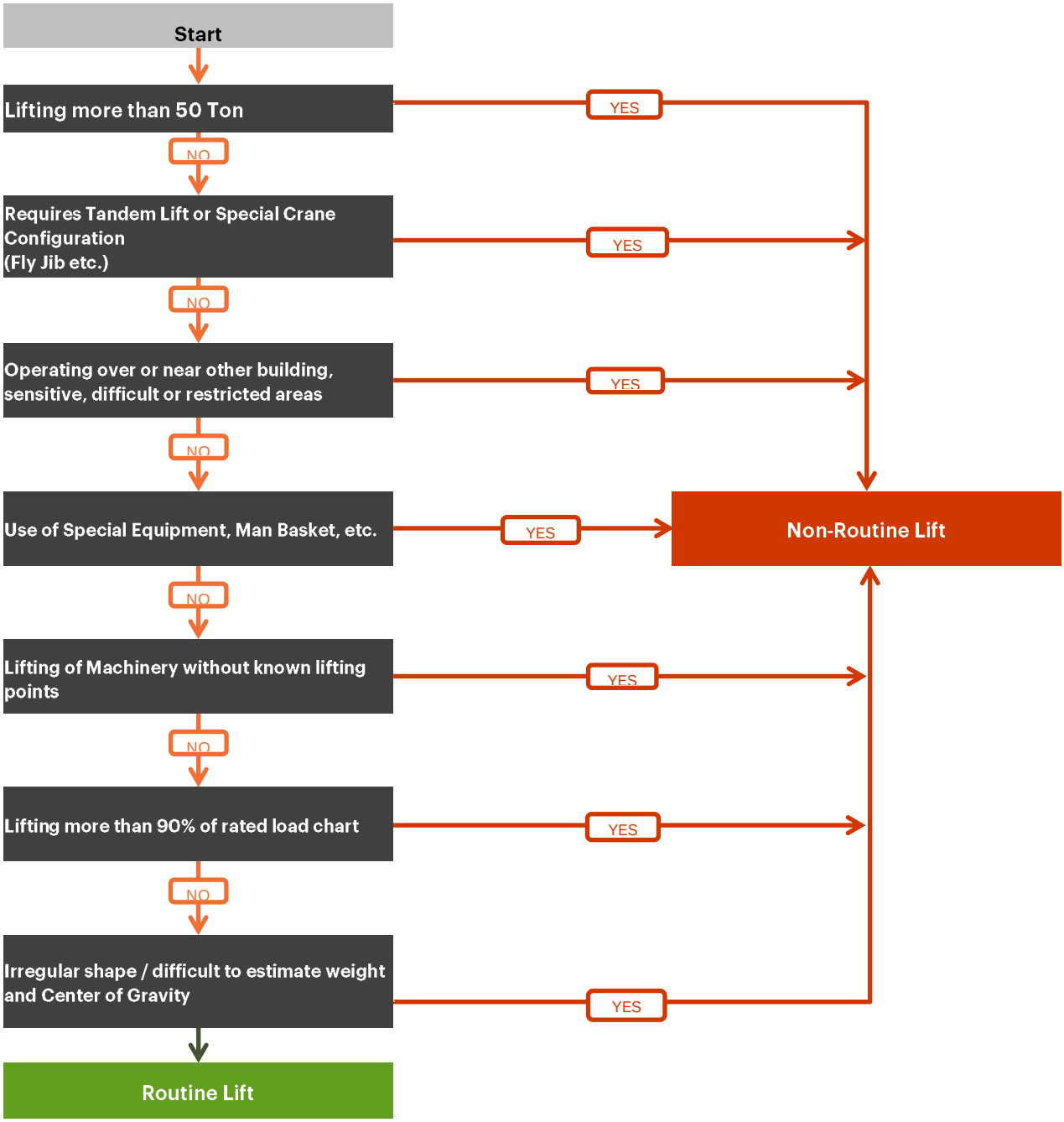
- **Routine inspection and maintenance** - Regular inspection, maintenance and repair are to be carried out in accordance with the manufacturer's instructions or those of a competent person. For inspections, if this is not practicable, they must be completed at least annually.

- **Annual Inspection** - Regular inspections must be carried out in accordance with the manufacturer's instructions or those of a competent person or, if this is not reasonably practicable, annually.
- **Major Inspection -** A major inspection must be completed for registered mobile and tower cranes. Non-registrable mobile cranes and bridge and gantry cranes should have a regular 'major' inspection completed so that they continue to be safe to operate. If it is not reasonably practicable to inspect a crane according to either of these, you should inspect the crane at least every 10 years from the date the crane was first commissioned or registered, whichever was first.
- **SafeWork Registration/ Design Registration**

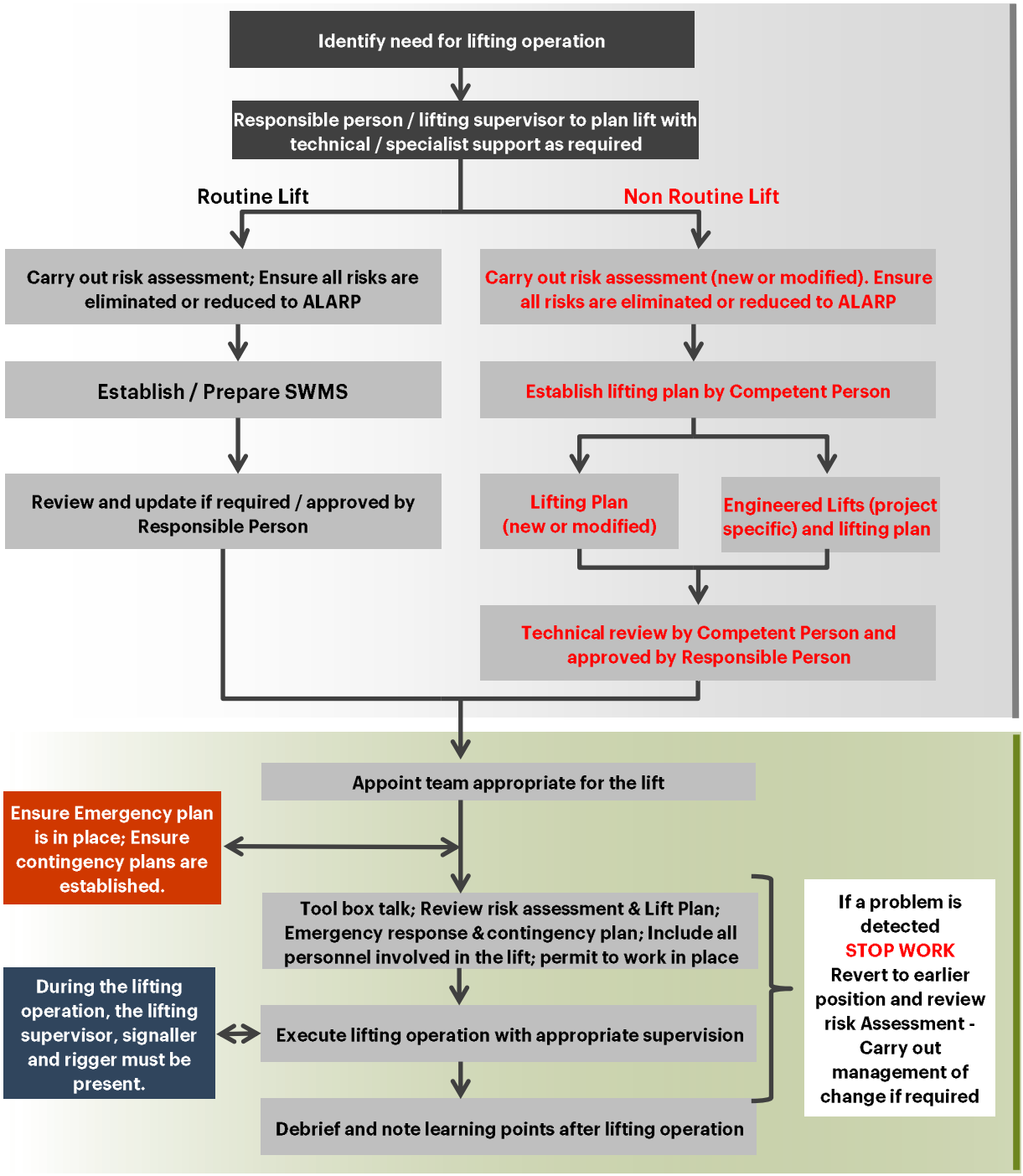
Daily Operational Prestart inspection must be completed by the operator prior to each shift. The operator must report any defects to their supervisor and ensure prompt remediation.

## 5. Flow Charts

Flow Chart for Identification of Routine or Non-Routine Lifting Activities



Planning and Execution of Routine and Non-Routine Lifts



## 6. Training

Haslin shall provide training in hazard identification, risk assessment and control for personnel to carry out the tasks and will ensure all operators are provided with initial training on the operation and maintenance of equipment. A record of all operator training provided to employees is recorded in their relevant proficiency or in their personnel records.

Training and competency requirements must be completed in accordance with the SEQ-PR-069 Training and Competency Procedure and SEQ-RG-002 Skills Matrix.

## 7. Relevant Templates, Forms and Checklists

SEQ-FM-068 Crane Lift Plan

SEQ-FM-065 Overhead Powerlines Permit

SEQ-FM-042 Workbox Permit