Crane Inspection Guide

a general guidance for container vessel cargo crane inspections conducted on through MATE©

version 2019.1
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Introduction

This document serves to provide a better understanding on how to classify observations made during inspection of the cargo cranes on container vessels, which inspections are conducted through MATE®.

During the thousands of condition surveys we have had carried out over the years, using a large number of external surveyors, we discovered it is often difficult to qualify the extent of defects. This guide is intended to provide background on how to rate observations and whether these observations are acceptable or not.

Please be advised this is only a guide; also the writers of this document are not completely objective. Nonetheless it will show a large number of examples which may assist you in shaping your views.

A topic which is especially open to subjectivity, is that of corrosion, which accordingly is one of the main issues dealt with in this document. The main question to answer, which is not always easy, is when corrosion has reached a stage that it is no longer acceptable.

Although this may depends on the perspective of the inspection and client, in this document we have attempted to find a common viewpoint, as much as possible in line with industry accepted practice.

Most commonly it can be reasoned that, once corrosion starts to become visible, maintenance should be considered. The sooner corrosion is arrested, the easier it is to correct it, using relatively simple methods such as brushing and painting. Once corrosion has reached stages of excessive corrosion or even wastage, repairs become more complicated and costly. Especially on cargo cranes corrosion should not be allowed to become excessive, as the negative consequences of possible failure of a crane can be significant.

In this respect we have divided corrosion into four (4) stages, where stage 3 and 4 are outside acceptable limits.

**Stage 1: superficial**

In this stage there is only superficial, often atmospheric rust evident, which can easily be brushed off. The rust development, having a light brown colour, does not affect the strength or functionality of the structure and maintenance can be done by the crew whilst the vessel is in operations.

**Stage 2: progressing**

There is development of rust, often of darker colour. Incidental small, loose rust/paint scales are found in way of the object which have parted from the item, but this is limited. Action is required to arrest the corrosion in order to avoid aggravation. Normally maintenance can still be done by the crew as part of the normal maintenance regime.

**Stage 3: excessive**

There is development of rust which is dark brown discoloured. Loose rust scales are present on / in way of the structure. Maintenance has become more extensive and time consuming and if the rust is spread over a large area, shore assistance or employment of additional crew may be needed.

**Stage 4: wastage**

Material is lost, and the functionality of the structure is adversely affected. The structure may be wasted and/or holed and laminar corrosion is evident. Maintenance has become extensive and time consuming and is likely to require shore assistance when spread out over a large area.
Pedestal

Superficial corrosion along pedestal edge

No corrosion

Superficial corrosion along pedestal edge

Progressing corrosion along pedestal edge
Pedestal

Excessive corrosion along pedestal

Excessive corrosion along pedestal edge

Excessive corrosion along pedestal

Excessive corrosion along pedestal edge
Jib

Superficial corrosion on jib

Superficial corrosion on jib

No corrosion

Progressing corrosion on jib
Jib

- Jib with (localised) excessive corrosion
- Jib cross beam with excessive corrosion
- Jib with spots of excessive corrosion
- Excessive corrosion along jib
- Jib with excessive corrosion (also on pedestal and slewing ring)
- Heavy indentation on jib top plate near pivot point
Jib fittings

Jib grating supports with progressive corrosion

Jib end sheave with progressive corrosion

Jib, sound condition

Wire jumpers bent but sound
Jib fittings

- Jib with local excessive corrosion
- Jib end sheave with excessive corrosion
- Excessive corroded cable protection piping
- Distorted wire jumper
- Lifting eyes on jib with excessive corrosion
- Excessive corroded grating support
Jib mounting, hinges and luffing cylinders

Luffing cylinders sound, no corrosion

Limited corrosion on jib / luffing cylinder mounting

Luffing cylinders with spot corrosion

Luffing cylinders sound, no corrosion

Progressive corrosion on jib mounting
Jib mounting, hinges and luffing cylinder

- Jib pivot point / hinge pin with excessive corrosion
- Jib hinge with excessive corrosion (also on slewing ring)
- Luffing cylinder mounting with excessive corrosion
- Excessive corrosion on jib mounting point
- Excessive corrosion on jib mounting
Luffing cylinders with excessive corrosion

Excessive corrosion on jib mounting
Rigging, wires and hook

- Crane top wire sheave, sound
- Wire drum with minor, progressing rust
- Block in good condition and safety latches operational
- Block fair and safety latches operational
Rigging, wires and hook

- Wire with corrosion
- Wire dry, lacking grease
- Wire sheave with excessive corrosion
- Wire sheave with corroded edges
- Block with excessive corrosion
- Safety latches inoperable
Exterior fittings, ladders, handrails

Ladders and access sound

Ladder with some progressing rust

Topside handrailing sound

Handrailing with superficial corrosion

Minorly damaged/deformed ladder safety ring
Exterior fittings, ladders, handrails

- Excessive corrosion on external platform supports and railing
- Excessive corrosion / wastage on pedestal ladder
- Wastage on emergency escape platform / grid
- Excessive corrosion on topside handrail
- External ladder with excessive corrosion and distorted.
- Topside handrailing with wastage
Excessive corrosion on handrail at the base of the jib
Operator's cabin

Operator’s cabin with superficial corrosion

Operator’s cabin with superficial corrosion

Operator’s cabin with superficial corrosion

Interior, sound
Operator’s cabin

Operator’s cabin exterior with excessive corrosion

Operator’s cabin exterior with excessive corrosion (and one inoperative flood light)

Cabin structure excessively corroded / local wastage

Inside view: cabin structure wasted

Floor window obscured

Dirty side windows
Crane machinery

Sound hoses, couplings coated

Anti-corrosion tape on slewing motor couplings

Superficial corrosion on valve block

Progressive corrosion on valve block

Hoses sound, shiny appearance not related to leakage because there is no dripping of oil
Crane machinery

- Hydraulic hoses stained and with paint
- Slewing motors with excessive corrosion
- Excessive corrosion on valve block
- Excessive corrosion on valve block
- Hydraulic hoses worn
- Oil drips adhering on pump
Crane interior

Crane interior, clean and safe

Pedestal entrance, some stored items but not obstructing (passage to ladder is free)

Progressing corrosion on entrance deck
Crane interior

- Interior and ladders with excessive corrosion
- Interior platform, dirty
- Pedestal entrance with objects obstructing passage
- Pedestal entrance with objects obstructing passage
- Objects in pedestal structure obstructing passage
- Intermediate crane platform, oily and slippery