Lifting and Handling features

Status **Work in Progress**

Topics for discussion

- What type of components do we expect to have to casket when extracting?
- What type of certification do we need for lifting equipment? Fixed lifting points are excepted?
- What need do we have for standardised components in this field?

Section Intro

Links

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All replaceable modules or sub-assemblies require lifting for transport, installation and replacement in the remote handling area.

Fixed lifting bails

The preferred solution is to install fixed lifting bails on the modules where possible. This avoids special lift fixtures and helps to minimise the maintenance task time. Tapped holes for attached threaded eye-bolts are not preferred due to it requiring specialised remote handling tooling to insert and remove the eye-bolt.

Add lifting adapters

Dimensioning factors

Regardless of lifting solution, the design strength analysis shall be based on the worst loading case. This means when the lift is applied abnormally. A design safety factor of two or more is recommended for all lifting bails and fixtures.

Provide the required access space around the lifting bail for ease of crane hook engagement.

Design rigid lifting bails to ensure stable engagement between the bail and the crane hook.

The module lifting bails should be designed for a 5 tonne hook.

Visibility

Ensure that the lift point is visible to the remote handling operator during hook engagement and disengagement.

Lifting type and location

The lifting location should be designed for a single point lift. All degrees of freedom shall be gradually constrained as described in ESS-0042943. The lift point shall be located over the module centre of gravity. If required, the lift point shall be adjustable during the installation phase to accommodate changes in the CoG (added cables or other alterations).

Single point lifts that require no special rigging are preferred where possible, but if a module is configure so its centre of gravity is abnormally offset, then multiple point lifting may be necessary.

Design lifting bails for straight vertical hoisting. In general, good practice crane operations apply a vertical force, only when lifting a load.

Example designs

Table 1 - Lifting bail dimensions

Capacity (tonnes)	A MIN (mm)	B MIN (mm)	C MAX (mm)
1			
2			
5			
10			
20			

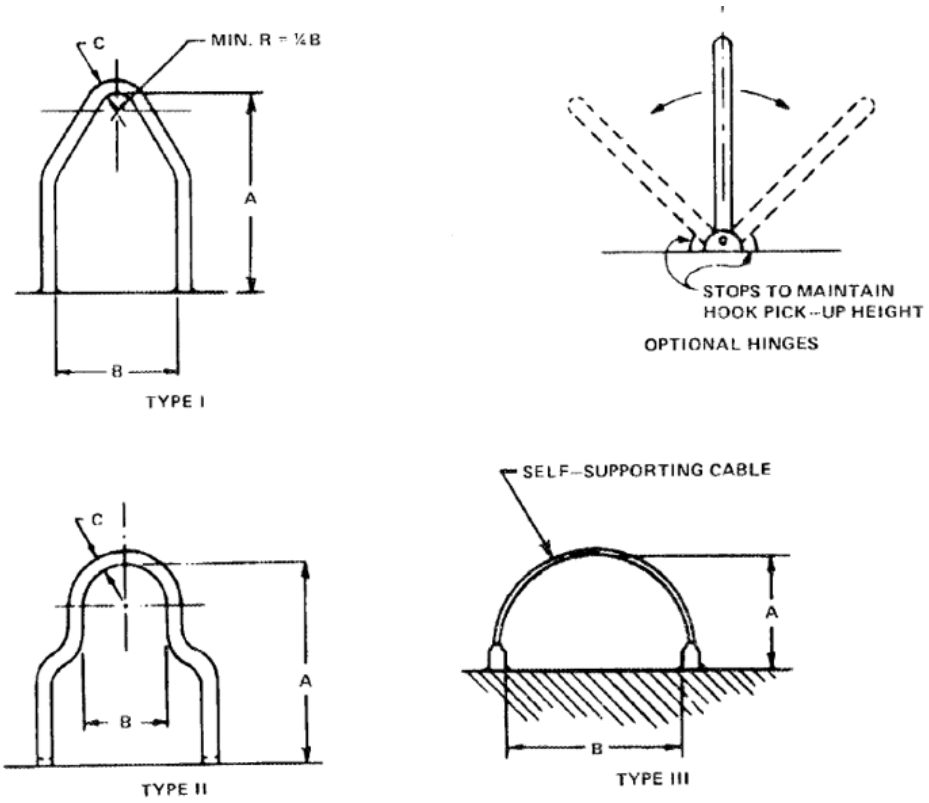

Figure 1 - Lifting bails

Standard components

Lifting bails

Table 2 - Standard lifting bails

Weight	Description	Model number	Illustration

Complete assemblies

Table 3 - Complete assemblies standard parts

Weight	Description	Range	Model number	Illustration

Related Articles

References

Contributors

Related JIRA issues