

**Memo to:** Offshore container manufacturers and owners  
**Memo No:** 2018-05  
**From:** Container governance unit  
**Date:** 2018-07-17  
**Prep. By:** O-UO

**Copied to:**  
DNV GL Offshore container and portable offshore unit certification offices

### **Guidelines for stacking guides on Offshore containers**

These guidelines are interpretations of the requirements for protruding parts that are shown in DNVGL 2.7-1 - quotes in parentheses are taken directly from the referenced standard.

#### **Ref. [1] 4.1.3 Protruding parts and top protection**

“Pad eyes may protrude above the top level of the container frame (see also [4.4.1]).

Stacking fittings and guides and other structures that protrude above the top of the container frame shall be designed and located such that they may not catch on structures on the ship or on other deck cargoes during lifting operations, and be designed such that the risk of damage to other containers or cargoes from these is minimized. They shall also be designed such that damage to the stacking fittings does not cause damage to the pad eyes.

#### **Guidance note 2:**

Particular attention should be given to avoiding the risk of catching in openings in the bulwarks of supply vessels.”

In recent years there have been several accidents and near accidents due to stacking guides or other top protrusions snagging on ship structures or other containers and deck cargo. In particular such incidents have occurred on the new generation of supply vessels with high plate bulwarks instead of the traditional tube bulwarks.

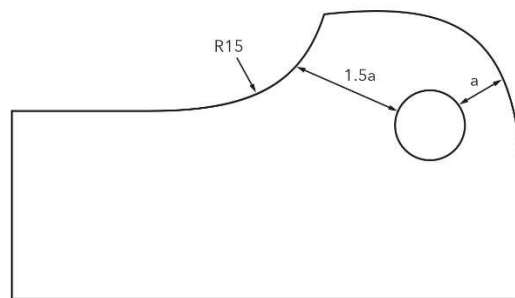
Plate bulwarks have many escape openings or “safety havens” along their length. Stacking guides and other top protrusions may snag in these openings when containers are lifted. This may result in overload of a crane located on a platform, or in the worst case, pulling the crane overboard. It may also cause damage to the container or lifting set.

As a result of these accidents some oil companies have implemented various restrictions on containers with stacking guides or other protrusions on top. DNV GL will approve designs according to the following guidelines, but can of course not guarantee that all approved designs will be acceptable to use without restrictions by all operators globally.

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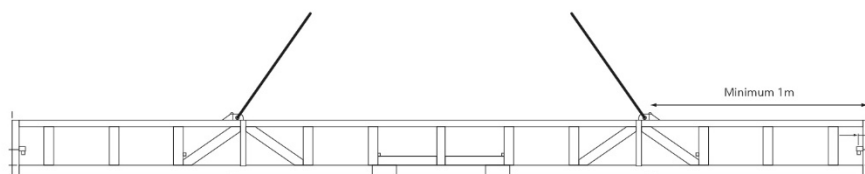
1. Stacking guides should preferably be designed so that they do not create a snagging hazard. Stacking guides that do not create a snagging hazard may be located where it is most practical.
2. Stacking guides that create a snagging hazard should preferably be located between or inside the padeyes/lifting set.
3. Stacking guides should never protrude outside the sides of a container.
4. Protrusions on top of containers may also be impacted by other containers. Ref. [1] 4.1.3 also includes a requirement that they shall be designed such that damage to the stacking fittings does not cause damage to the pad eyes.

The figure below shows a common stacking guide/pad eye solution that does not create a snagging hazard.



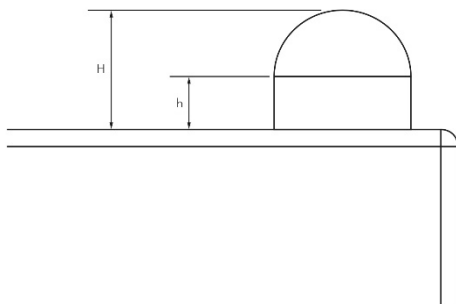
A horizontal impact on the stacking guide from the outside may initiate cracks in the pad eye. Stress concentrations in the notch should be minimized by having a good radius, and sufficient distance between the notch and the shackle pin hole. It is recommended that a radius of at least 15 mm is adopted.

5. Containers that are below 2 m height should not have stacking guides on the corners, or otherwise, outside padeyes/lifting set.
6. On long baskets (below 2 m high), with padeyes located on top rails away from the ends, stacking guides may be placed on the top rail outside the padeyes, provided they are at least 1 m from the ends.

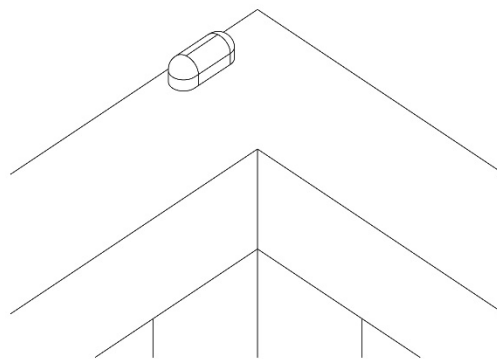


7. If containers are above 2 m high they may have small stacking guides on the corners or on top rails outside the pad eyes/slings. Design of small stacking guides outside pad eyes/slings:
- Should be rounded in longitudinal and transverse directions, as shown in examples below, conical guides are also acceptable;
  - If they are intended to be used for stacking of containers with bottom ISO corner fittings they should be located so that the top container cannot slide horizontally;
  - Minimum height (required for safe stacking):  $H \geq 20 \text{ mm}$
  - Maximum height:  $H \leq 30 \text{ mm}$
  - It is recommended that the lower part has vertical sides:  $h \geq 10 \text{ mm}$
8. Stacking guides placed on top side rails between padeyes or in other protected location may be larger than described in 7, but should be designed to minimize danger of snagging.

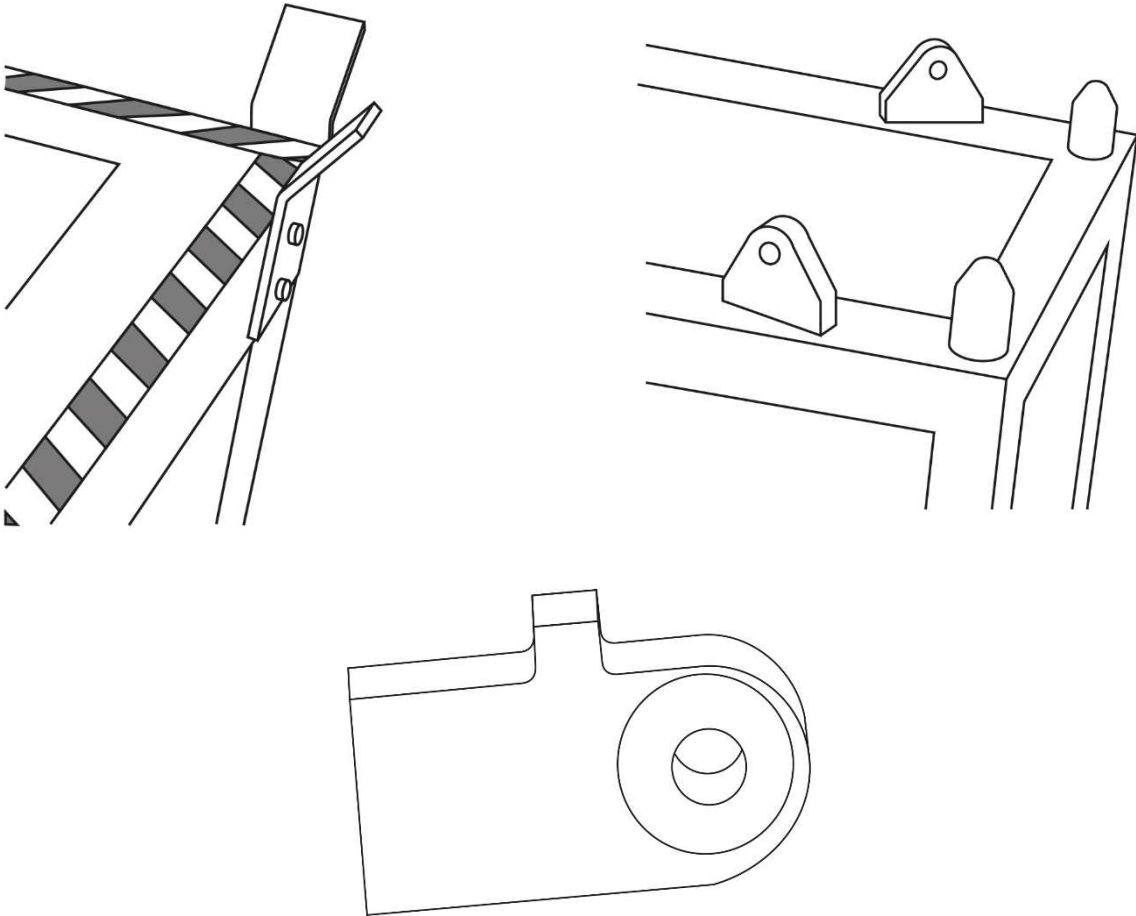
**Examples of acceptable stacking guide designs on containers above 2 m height:**



This guide is intended for stacking of containers with bottom ISO corners:



Examples of unacceptable stacking fitting designs:



**References**

1. DNVGL-ST-E271 2.7-1 Offshore containers, August 2017.

If you have any further questions or comments on this, please do not hesitate to contact us at: [container@dnvgl.com](mailto:container@dnvgl.com).