

## Dear SEACOR Island Lines Customer,

Flat Racks are used for carrying oddly shaped and oversize loads such as machinery, cables, drums, metal sheets and steel coils, heavy vehicles, timber and forest products, or construction materials of different kinds. We feel it is necessary to review the information and guidance for the loading and lashing of cargo onto our flat racks:

- Ensure grouped items such as pipes and lumber are strapped as bundles.
- Cargo should be positioned on the flat rack to ensure suitable weight distribution, both along length and width so that the main area of gravity is not too far 'off-center'.
- Strap every bundle and level of bundles when you place two on top of each other.
- Over-width cargo and respective blocking and bracing materials should not be stowed within 30 cm (12") of the corner posts of a flat rack as this would increase the potential of damages by hitting other containers or structures as it is transported.
- Weight distribution: Flat racks are designed to carry heavier and more concentrated loads than standard equipment. The main strength of a flat rack lies in the two bottom rails; therefore cargo must either rest on these rails or have weight transferred to the rails by cross timbers. Although a maximum payload is marked on each flat rack, the maximum weight the unit can carry is also dependent on the length of the cargo actually resting on the rails. The maximum payload can only be utilized when the cargo is spread over the entire length of the flat rack's bottom rails.
- Only half of the payload is permitted for very short cargo.
- Antislip material: Any contact of metal to metal should be avoided. Wood dunnage or similar antislip materials (rubber) should be placed between cargo surfaces made of metal material and the flat rack bottom rails. Using anti-slip material with a high friction coefficient decreases the number of lashings required.
- Lashing eyes: While SEACOR Island Lines' flat racks are fitted with numerous lashing eyes (D rings) with a capacity of 8000 pounds, please keep this in mind if you are close to the limit to add additional points of lashing to distribute the tie down capacity.
- Web lashings require edge protection on sharp corners.
- Do not mix different lashing materials such as wires and web lashings on the same cargo, at least for securing in the same lashing direction.
- Different materials have different elasticity and create unequal lashing forces. Knotting in web lashings should be avoided as their breaking strength would be reduced by at least 50%.
- Turnbuckles and shackles should be secured, so that they do not spin open.

# Flat Rack Loading Guidelines

- The strength of a lashing system is indicated by different names like breaking strength (BS), lashing capacity (LC) or maximum securing load (MSL).
- For chains and web lashings, the max securing load is considered to be 50% of the breaking strength. The manufacturer will provide you with linear 'BS / MSL' for direct lashing like cross lashings and / or system 'BS / MSL' for loop lashings.
- Please keep in mind that poor lashing angles, sharp edges or uneven horizontal lines will reduce the effectiveness of the lashing mechanisms.
- Securing cargo in length direction can be achieved by blocking and bracing with timbers or by a lashing system. Timber bracing is more common when cargo is crated; the heavier the cargo, the stronger the bracing needs to be. Blocking should be braced against corner posts. Unpacked cargoes with suitable lashing points can be secured in length direction more effectively with direct lashings and in such cases no further bracing is necessary.
- Securing in transverse direction: For securing against transverse and tipping forces, the best recommended lashing method is securing with cross lashings. This requires lashing eyes on the cargo for direct lashing systems. The preferred lashing method for cargo without lashing eyes is the (half) loop lashing, also called Clashing system. Every lashing must be installed in pairs, with one half of the pair starting and returning to the same side. The other half of the pair starts and returns from the opposite side.
- Friction or 'over the top' lashings are not recommended as this system does not prevent transverse motion; they are however acceptable especially for extra-wide cases.
- The number of lashings has to be increased when these have poor angles, several levels or when there are different materials that don't provide a consistent pressure on the lashing or that creates voids of no pressure on edges other than of the materials.



Example of loop lashing pulling in opposite direction.



Please note the Strap Assembly capacity that is being used.



Secured load: Should have multi-level strap lashings, bottom with chain binders and top with straps. Please note the cargo on each pallet is also lashed through the pallet.



Properly strapped multilevel load.