Guideline

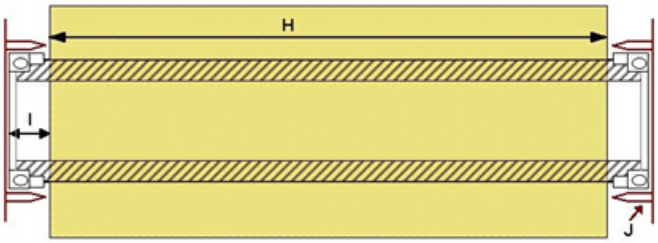
A Guide for the Loading and Lashing of Cargo on Hapag-Lloyd Flatracks

This guide serves as information and guidance for stuffing and securing of cargo on Hapag-Lloyd flatracks. It contains only basic requirements, which may differ from cargo to cargo. In case of questions please contact Hapag-Lloyd Special Cargo Department at: special.cargo@hlag.com

In the interest of the crew, handlers and vessel safety Hapag-Lloyd reserves the right to inspect flatracks prior to loading and to refuse acceptance in cases where stowage and/or securing does not meet SOLAS requirements or is not deemed safe.

Stuffing: Cargo should be positioned on the flatrack to ensure suitable weight distribution, both along length and width so that the main area of gravity is not too far "off-centre".

Over-width cargo and respective blocking and bracing materials should not be stowed within 30 cm (12“) of the corner posts of a flatrack as this prevents the flatracks from being loaded under deck. Any such cargo would have to be loaded on deck at additional cost.



No.	Explanation	20’Flat	40’Flat
H	Max. allowed length for overwidth cargo	550 cm	1160 cm
I	Min. distance to flatracks outer end	30 cm	30 cm
J	Cell guides of the vessel under deck		

It is important to ensure that out of gauge measurements are accurate and include the lashing equipment. Incorrect declaration can result in miss-rating and shortshipment. The width of the floor is less than the container's outer width (244 cms; 96"); therefore cargo might overlap the floor of the flatrack, but still be in-gauge. Only those parts of the cargo or lashing materials which overlap a virtual horizontal line between the outer edges of the corner posts need to be counted as over-wide.

Welding: Any kind of welding, drilling holes or modifying flatracks structure is strictly prohibited.

Weight distribution: Hapag-Lloyd flatracks are designed to carry heavier and more concentrated loads than standard equipment. The main strength of a flatrack 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 flatrack, 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 flatrack’s bottom rails.

Only half of the payload is permitted for very short cargo; i.e. resting on about 1m of length only. Please check with your Hapag-Lloyd representative for specific requirements and/or bedding advice.

Bedding: Any bedding must be laid out across the flatrack and needs to reach the main girders. Heavy weights are not allowed to be solely placed on the wooden floor of the flatrack. Cargo is to be positioned on the flatrack with its centre of gravity in the middle of the flatrack, lengthwise and across.

Antislip material: Any contact of metal to metal should be avoided. Wood dunnage or similar anti-slip materials (rubber) should be placed between cargo surfaces made of metal material and the flatrack bottom rails. Using anti-slip material with high friction coefficient decreases the number of lashings required.

Lashing eyes: Whilst Hapag-Lloyd flatracks are fitted with numerous lashing eyes (D rings) with a capacity of 5000kgs, please keep in mind that leased equipment might have reduced strength.

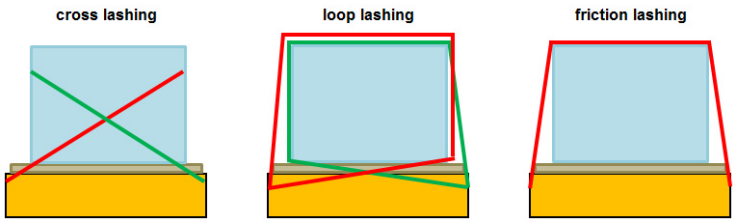
Hapag-Lloyd upgraded flatracks with serial numbers “HLXU or FANU 368..., 668... and 868...” have stronger lashing eyes with a diameter of about 30mm and higher lashing strength, although they require use of shackles / special hooks with wide opening or use web lashings directly.

Lashing in general: All cargo must be secured by using materials which are suitable for the size, construction and weight of the load. In this context, kindly observe points noted below:

- 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.
- 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 bear in mind that poor lashing angles, sharp edges or small radii will reduce the figures/tolerances indicated.

Securing in length direction: 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. For calculation purposes use the “linear MSL” figures. The preferred lashing method for cargo without lashing eyes is the (half) **loop lashing**, also called C-lashing 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.

For calculation purposes use the “system MSL” figures provided by the manufacturer of the lashing material. **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.

Lashing calculation: As a recognised "Rule of Thumb" the number of lashings on each side of the cargo multiplied by the “linear or system MSL” must be higher than the weight of cargo. This is valid for optimum lashing system. The number of lashings has to be increased when these have poor angles, are bend around narrow radii (wire) or when there are other aspects of less than optimal lashing methods.

Lashing example: A wooden case of 18 tons is to be secured with web lashings capable of 8500daN (8.5 tons) system breaking strength (BS) and a loop lashings system. In this case the “system MSL” will be 4.25 tons. When dividing cargo weight of 18 tons by 4.25 tons, the resulting figure is 4.2. - rounding-up, it means that as minimum 5 pairs of loop lashings are required on each side for a total of 10 lashings.

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