

Dear Customer.

Hapag Lloyd AG / Flat Rack Securing Inspection.

Following a number of recent incidents where flat rack containers have failed cargo securing inspection at the port of exit, we would like to offer some guidance to customers with regards to Hapag Lloyd AG's Flat Rack Securing Inspection process.

It is the load point's responsibility to ensure cargo on flat racks is loaded and secured adequately for sea transport, and it is Hapag Lloyd AG policy to inspect **all** loaded flat rack containers presented for shipment prior to loading on board a vessel.

It is well documented that the stresses placed on cargo lashings and bracings during the sea voyage far exceed those experienced during land transportation.

As a result, Securing Inspections are carried out in the interests of the cargo, and cargo interests, as well as SOLAS (Safety Of Life At Sea) / Health and Safety regulations in mind.

The most common problems encountered during flat rack securing inspections are:-

- Insufficient timber chocking from cargo to the end frames of the flat.
- Worn/old lashings used and lashing secured to incorrect lashing points.
- No protection for lashings over sharp edges / acute angles.
- Cargo loaded metal on metal with no anti-slip material between the metal contacts.
- Cargo weight not spread out to the side girders of the flat rack/weight unevenly distributed.
- Mixed Lashings used i.e. Wires and Span Sets / belts - this is not allowed.

Some examples of common securing errors can be seen overleaf, and we also attach a copy of Hapag-Lloyd AG's flat rack Loading Guide.

Should a flat rack fail its inspection, Hapag Lloyd AG where possible, will assist in obtaining costs to carry out remedial work on behalf of the Shipper. Written confirmation of acceptance of charges must be obtained from Shipper prior to any works being carried out, but the Shipper also has the right to arrange remedial work himself and re-present the container for further inspection after the work has been carried out.

In summary, we carry out mandatory inspections on all flat racks presented for shipment, and this letter is intended to inform you of the most common causes of inspection failures, which we hope, will assist you to alert your riggers at point of loading. It is in our joint interests to reduce the frequency and associated costs of inspection failures to achieve safe and secure through transport.

We appreciate your co-operation.

For customers loading steel sheets, we have a separate guide available.

Please note that for Canadian/US railway on-carriage, nylon belts are not accepted.

If you have cargo that will not 'shrink' during the voyage, then you can also use steel bands, wires or chains.

NOTE - Flatracks Moving By Rail via Canada and Cross-Border

All flat racks arriving in Canada for movement by rail are inspected by either CNR or CPR prior to their acceptance of movement.

Inspections apply to either in gauge or out of gauge cargo.

All flat racks must be blocked and braced to the standards established by the American Association of Railroads (AAR) which represents North America's freight railroads.

- The shipper is responsible to ensure that the blocking and bracing of the cargo conforms to carriage provisions within SOLAS (Safety of Life At Sea) and The American Associations of Railroads (AAR).
- Any additional charges incurred for the failure to adhere to the above will be for the account of the cargo.
- Minimum costs for additional blocking and bracing would be \$750 per 20' FR and \$1000 per 40' FR.
- Cargo will not be railed pending acceptance of costs for any required re-blocking/bracing mandated by the rail provider.



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

Weight distribution. In contrary to the floor loadings of the standard container the flats are constructed to carry heavier weights. However, the cargo has to be placed onto the flat side girders. The maximum load depends on the length the cargo resting on the main girder and the payload of the flats. The maximum payload can only be utilized if the cargo is spread over the whole length of the flat rack's base. Only half of payload is allowed for very short cargo, for example standing on about 1m length only. Please check with Hapag-Lloyd for specific requirements.

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

Antislip material. Any contact of metal to metal is not permitted. Any cargo sitting on the side girders must be segregated by rubber, wood or similar anti-slip materials.

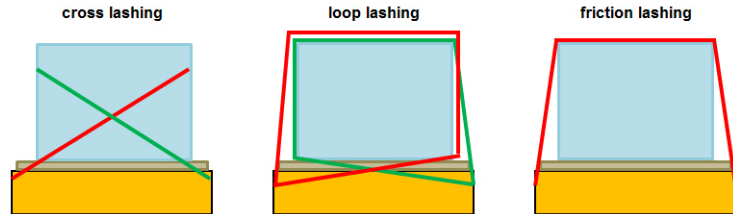
Lashing eyes. Lashing eyes on Hapag-Lloyd flat racks have in general a diameter of 24mm with a capacity of 5.000kgs. Leased equipment might have reduced strength. Lashing points on flat series hlxu/fanu 368..., 668... and 868... have lashing eyes with stronger diameter of about 30mm. Here the lashing capacity might be higher, but normal hooks will not fit. In this case please add shackles, use stronger hooks or use one way nylon belts going around the lashing bars directly.



Lashing general. All cargo must be secured using materials suitable for the size and weight of the load. Nylon belts require edge protection on sharp edges. Don't mix different lashing materials like wires and nylon belts to the same cargo, at least for securing in the same lashing direction. Different materials have different elasticity and take forces after different elongation. Knotted belts are not allowed, because breaking strength is reduced by 50%. Turnbuckles should be secured, so that they don't spin open. The strength of a lashing can be given by different names like breaking strength (BS), lashing capacity (LC) or maximum securing load (MSL). For the most materials the LC or MSL is 50% of the BS. For a lashing calculations the MSL reduced by safety factors should be used. This is called calculated strength (CS).

Lashing lengthwise. Securing cargo in length direction can be done by blocking and bracing or by lashing. Timber bracing are normally used when cargo is packed in cases. The heavier such cargo is, the more stronger the bracing needs to be. Blocking by square timber must reach the corner post or other solid parts of the flats end wall. Unpacked cargoes which have lashing eyes can be secured in length direction much easier by direct lashings. Then no further bracing required.

Lashing crosswise. For securing against sliding and tipping different lashing methods are possible. The best, recommended lashing method is securing with cross lashings. But for this method, lashing eyes are required at the cargo.



are the friction lashings. But this method is not recommended as cargo might move sideward below the lashing. The preferred lashing method is the loop lashing, also called c-lashing. In this case each lashing prevents the movement to one side directly. Every lashing must be installed in pairs, starting at opposite sides.

Lashing calculation. The following empirical formula can be given: the number of lashing multiplied with the calculated strength must be higher than weight of cargo. This is valid for optimal installed lashings. The numbers of lashings need to be increased when the lashing have bad lashing angle, when they are bended around narrow radii (wire) or when there are other aspects of not optimal lashing methods.

Lashing example. Wooden case with 18t cargo weight. As lashing material are used nylon belts with breaking force 7.5kN. The MSL is then 3,75kN, the lashing capacity (MSL/1,5) is then 2,5t per lashing. 18t cargo weight divided by 2,5t CS = 7,2 lashings required. Therefore minimum 8 lashings need to be installed as loop lashing, 4 lashings from each side.

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

Other points. Over width cargo is to be stowed at least 30cm (12") away from the outer ends of the flat allowing flats to be loaded under deck. Also the blocking must not cause over within this distance.

| No. | Explanation | 20'Flat | 40'Flat |
|-----|---|---------|---------|
| H | Max. allowed length for over wide cargo | 550cm | 1160cm |
| I | Min. distance to flat racks front end | 30cm | 30cm |
| J | Cell guides of the vessel under deck | - | - |

It is important that out of gauge measurements are accurate and include the lashing equipment. Incorrect declaration can result in short-shipment. The width of the floor is less than the container outer dimensions. Therefore cargo might overlap the flat racks floor, but might not have over width. Only all parts of the cargo or lashing material which overlap a virtual horizontal line between the corner posts need to be counted as over wide.

In the interest of the vessel safety, Hapag-Lloyd will inspect the flat racks prior loading to main line vessel.

This packing guide is for your information and guidance prior to loading. He contains only basic requirements, which may differ to specific cargo. In case of questions please contact Hapag-Lloyd Special Cargo Department: isop@hlag.com