

LOAD RESTRAINT GUIDELINE

Black Bar: Bundled - Export

Issue 3



1. This guideline applies to:

- Bundled Black Bar, with round, hexagonal or square* cross-section.
- Shotblast, reeled and mill finish.

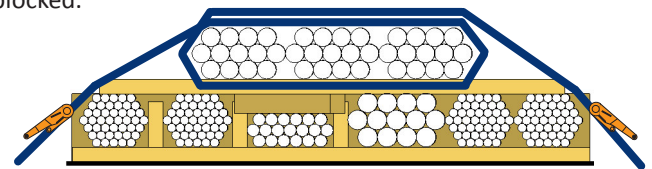
The lowest friction factor for this product on timber dunnage, determined as per EN 12195-1:2010 Annex B.1.2, is $\mu=0.53$.

* Square cross-section product must always be loaded against false headboard or trailer headboard and tailboard to prevent spearing.

2. Essential requirements

- Loads must be built in either a single layer, a pyramid or a rectangular load configuration (see Section 4-1).
- All restraints must be webbing straps with minimum lashing capacity of 2000 daN compliant with EN 12195-2.
- Edge protection must be fitted to all straps in contact with abrasive surfaces and sharp edges incl. steel banding.**
- Dunnage must be a single layer of square section timbers with minimum cross-section of 75 x 75 mm.
- The front ends of the bundles covered by the false headboard must be aligned.
- All vertical gaps between bundles must be either closed or blocked.
- Anti-slip matting applied under base timbers.

** Straps in contact with round cross-section material do not require edge protection providing that there is minimum 300 mm clearance between steel banding and the webbing strap.



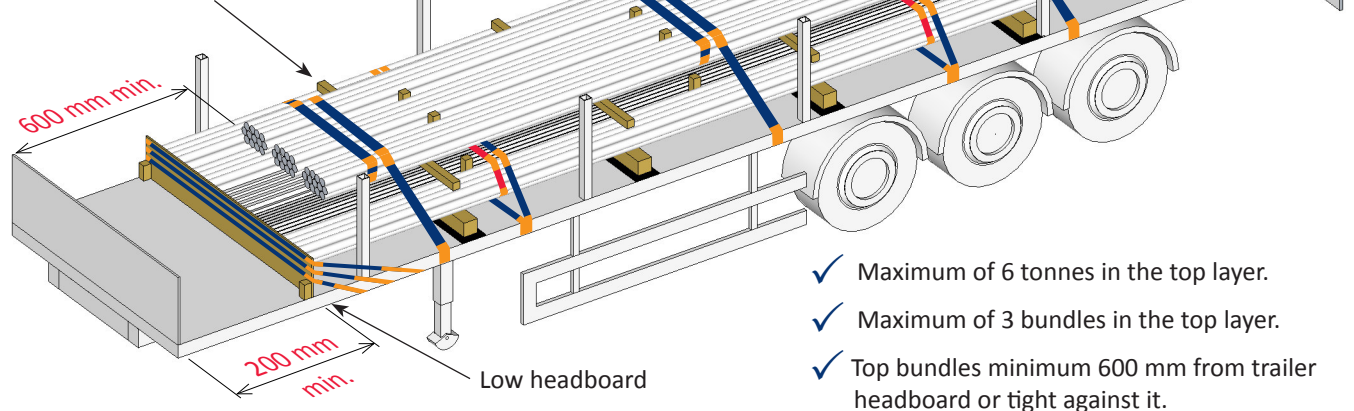
Cross-sectional view of belly-wrap restraint showing ratchet tensioners on both sides. Edge protection omitted for clarity.

3. Overview of road transport restraint systems

3.1 Pyramid load build

- ✓ 2 pairs of **opposing loops** applied to the bottom layer.
- ✓ 3 **belly-wrapped** straps applied to the top layer.
- ✓ False headboard secured with 3 straps.

Full width timbers



- ✓ Maximum of 6 tonnes in the top layer.
- ✓ Maximum of 3 bundles in the top layer.
- ✓ Top bundles minimum 600 mm from trailer headboard or tight against it.

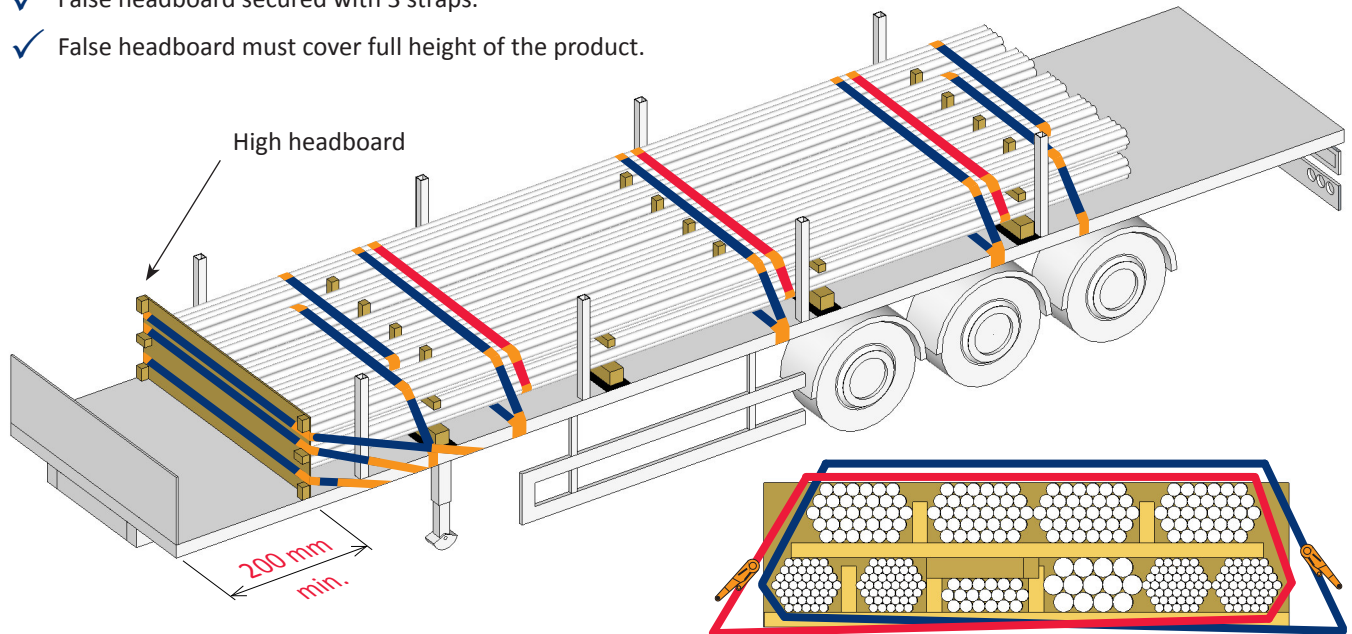
This Load Restraint Guideline is designed and tested to meet the forces specified in EN 12195-1:2010 and VDI 2700 for road and sea transport.

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3.2 Rectangular and single layer load build

- ✓ 2 **belly-wrapped** straps applied to the middle bundles, maximum 3 bundles within a belly-wrap (see Section 5).
- ✓ 3 pairs of **opposing loops** applied to the whole load.
- ✓ False headboard secured with 3 straps.
- ✓ False headboard must cover full height of the product.



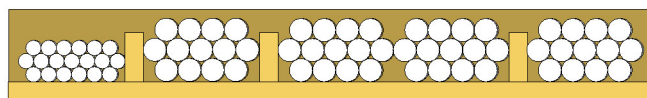
Note: See Section 8 for intermodal requirements.

Cross-sectional view of opposing loop restraint applied to the whole load. Edge protection omitted for clarity.

4. Load build and false headboard straps positioning

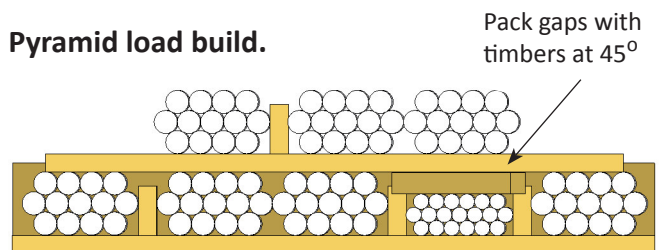
4.1 Load build

Single layer load build.



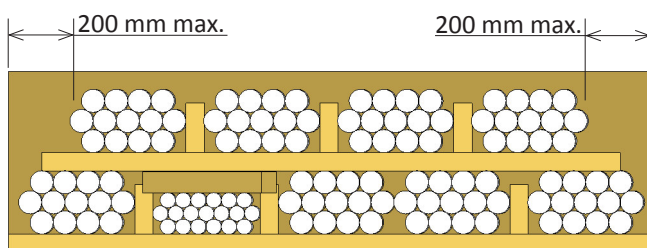
Single layer load build.
Use low headboard.

Pyramid load build.



Pyramid load build - top layer with maximum of 3 bundles.
Use low headboard.

Rectangular load build.



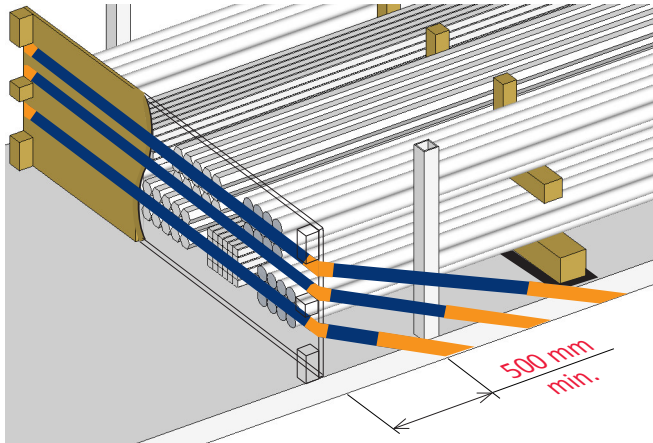
Rectangular load build - top layer with 3 or more bundles.
Use high headboard.

- ✓ Load split evenly between the top and bottom layers. Maximum difference in width between top layer and edge of the false headboard 200 mm on each side.
- ✓ Horizontal packing timbers should be applied at approximately 45° to fill the gaps created by the different bundle heights.
- ✓ Vertical packing timbers applied to fill any gaps between bundles.
- ✓ To match width of the load half headboards can be used (see Section 6).

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4.2 Strap positioning

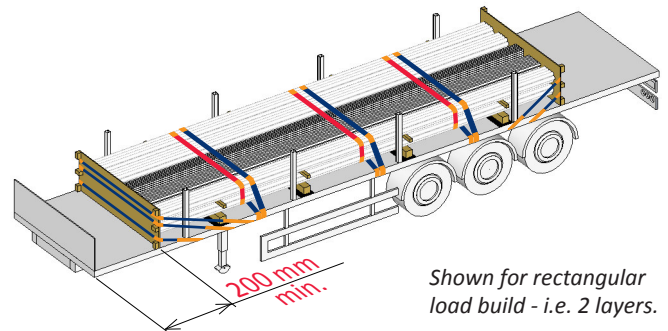
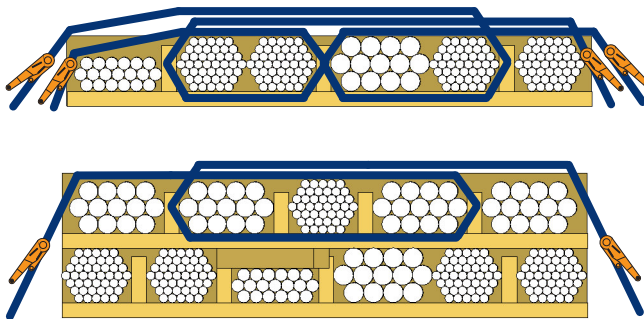


Shown for rectangular load build - i.e. 2 layers.

- ✓ On 2 layer rectangular loads bottom strap must be placed in line with the centre of the bottom packs and remaining straps positioned in line with the top layer.
- ✓ On single layer loads and pyramid loads all straps must be placed in line with the bottom layer of the product.
- ✓ Headboard straps anchored back a minimum of 500 mm.
- ✓ If using trailer chassis as lashing point always attach hook to the cross member.
- ✓ Belly-wrapped strap or opposing loop strap may be applied to the same lashing point as the false headboard strap.

✗ Do not attach more than one headboard strap to the same lashing point or cross member.

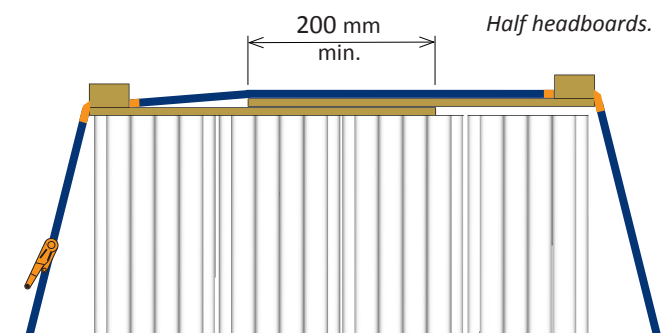
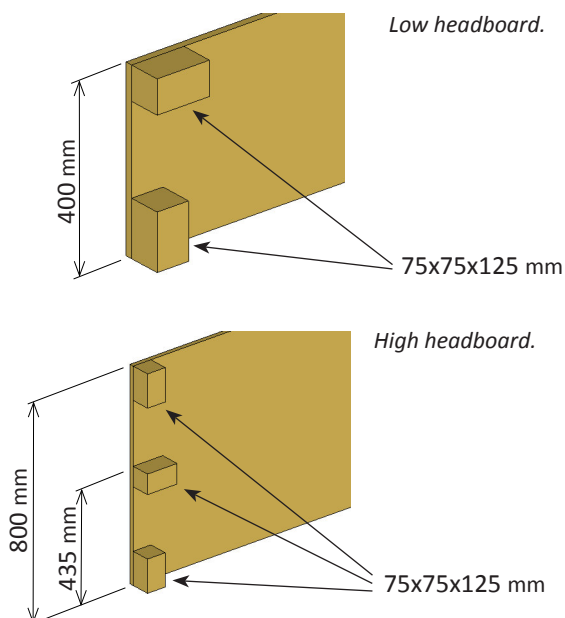
5. Rearward restraint options



Shown for rectangular load build - i.e. 2 layers.

Note: If belly wraps cannot be applied false tailboard must be used to prevent rearward movement.

6. False headboard/tailboard requirements



- ✓ To match width of the load half headboards can be used with minimum overlap of 200 mm.
- ✓ Minimum one sheet of 24 mm plywood board.
- ✓ Timber blocks to be nailed to the plywood for added stability and to help with strap positioning.

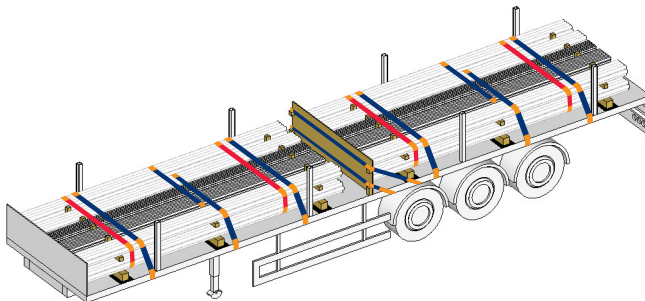
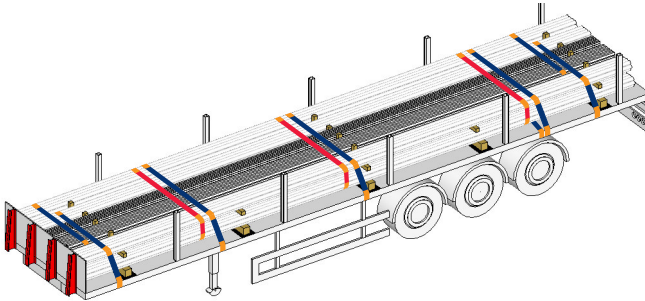
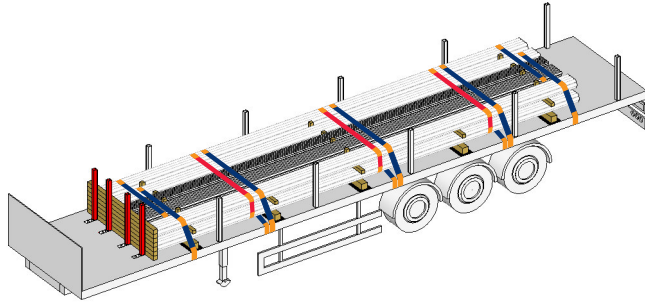
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7. Forward blocking options

Instead of using false headboards, the following options can be used to block the load in the forward direction. ***

*** Subject to axle weights.



Note: If belly wraps cannot be applied false tailboard must be used to prevent rearward movement.

- ✓ Minimum of 4 stanchions required.
 - Minimum cross-section of 80 x 80 x 4 mm.
 - If cross-section is less, a greater number of stanchions is required.
 - Timbers between stanchions and material must be adequately secured.
- ✓ Trailers manufactured to EN 12642 Code XL, or approved by Liberty Speciality Steels Load Restraint Engineers, can be loaded with full load against the trailer headboard to provide forward restraint.

Fahrzeugaufbau entspricht	EN 12642-XL
Voertuigopbouw voldoet aan norm	
Vehicle body in compliance with	
LAG TRAILERS N.V.	2008

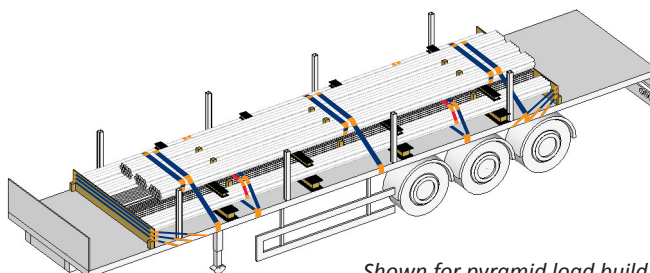
Typical plaque on a trailer with a headboard rated to EN 12642 Code XL

- ✓ Trailers manufactured to EN 12642 Code L, can be loaded with product against the trailer headboard to provide forward restraint for first row of short bars.
- ✓ Two or more stacks can be separated by a false headboard with 2 straps allowing a minimum gap of 200 mm from the stack in front. Back rows of product can be positioned to achieve correct axle weight distribution.
- ✓ Trailers manufactured to EN 12642 Code XL, can be loaded without false headboard straps provided that there are no gaps between rows of product.

8. Intermodal transport



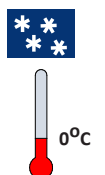
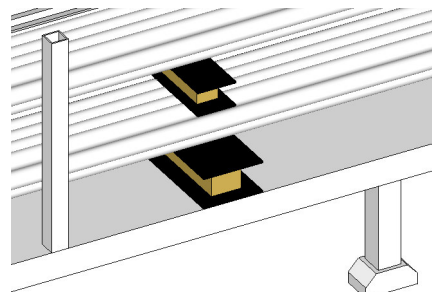
- ✓ Anti-slip matting applied to both sides of all timbers.
- ✓ Tailboard fitted and secured with 3 straps.
- ✓ Other restraint requirements remain the same.



Shown for pyramid load build.

9. Winter weather restraint requirements

- ✓ Anti-slip matting applied to both sides of all timbers.
- ✓ Other restraint requirements remain the same.



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