

This Guideline:

- Covers the transportation of sheet product, palletised cornice product and palletised compounds (bags and buckets) packed to the standards applied by CSR, via Roads in Australia.
- Is the loader and driver guide to the certification E00691-LRC1 to meet the loading performance standards listed in Schedule 7 of the Heavy Vehicle (Mass, Dimension and Loading) National Regulation (22 February 2021).

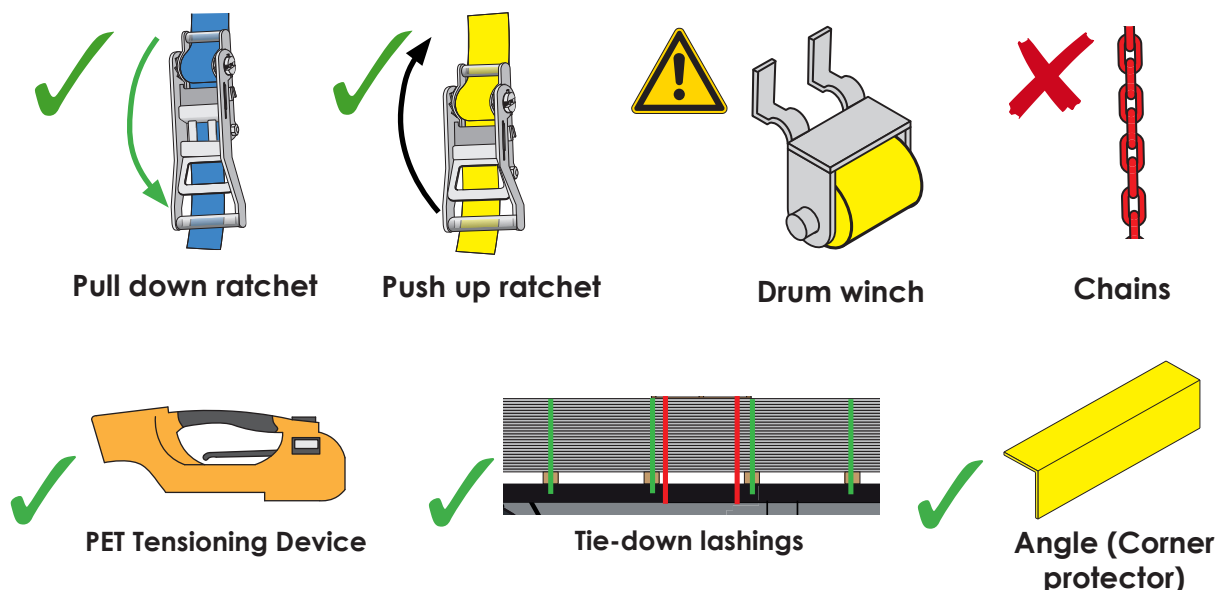
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Key Requirements

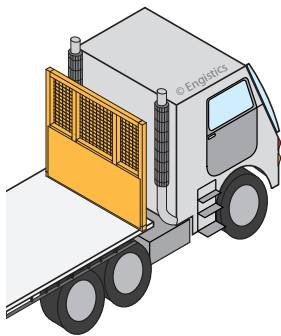
- ✓ For tie-down lashings use a minimum of 50 mm webbing straps fully tensioned using push up ratchet.
- ✓ For **cross over** lashings use a minimum of 50 mm webbing straps anchored behind the load post, fully tensioned using a pull down ratchet.
- ⚠ A lashing is a standard lashing with 300 kg pretension, unless specified otherwise.
- ⚠ Stability of vehicles and product stacks can be impacted by high load heights: check stability requirements.
- ⚠ Drum winches are not suitable for tensioning of Cross over straps
- ⚠ The minimum height of freight restrained to be 360 mm.
- ✗ Do not leave items loose on the vehicle. Always secure within a box or crate.
- ✗ Do not use chains.
- ⚠ Steel pallets must have Industrial rubber or rough sawn timber material placed under them to remove the steel on steel low friction surface contact
- ⚠ Dunnage must meet the CSR standard and should be aligned vertically when placed on multiple layers
- ⚠ Throwing webbing is a manual handling risk. Use caution when applying lashings and check the other side of the trailer is clear when throwing lashings.
- ✓ Best practice for loads is to be blocked against a suitably engineered headboard/ surface or use cross over lashings.
- ✓ Refer to the packaging guideline for advice on packaging.

Load Restraint Equipment

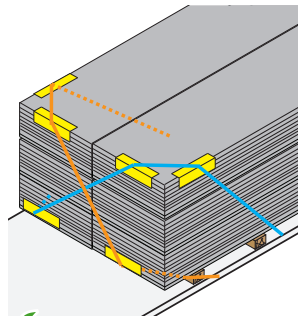


Blocking

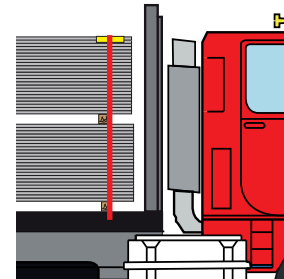
- ✓ Refer to Load restraint principles document E00691-LRG2.



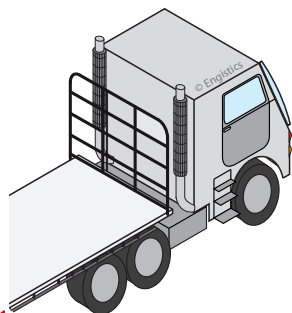
✓ Engineered Headboard



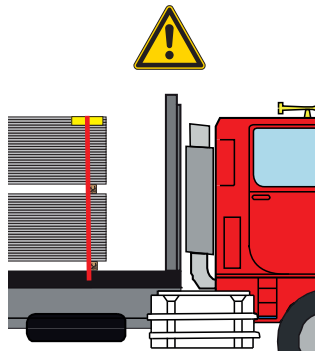
✓ Cross over straps



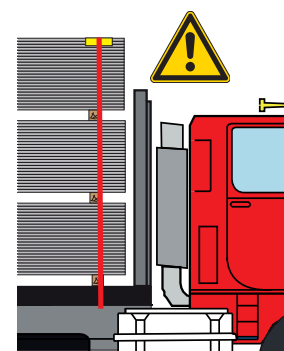
✓ Blocked load



✗ Pipe-gate Headboard



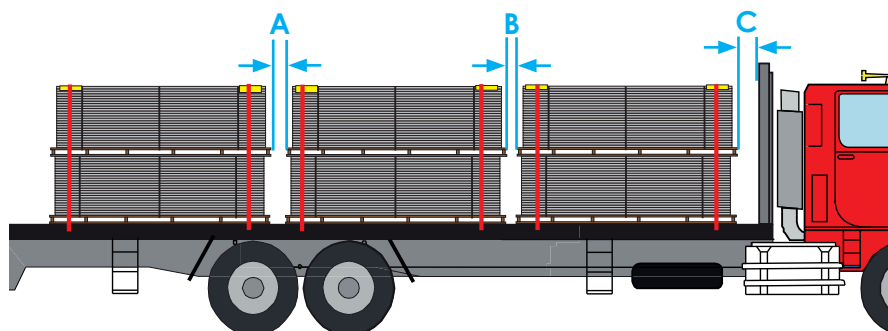
Unblocked



Top pack is Unblocked

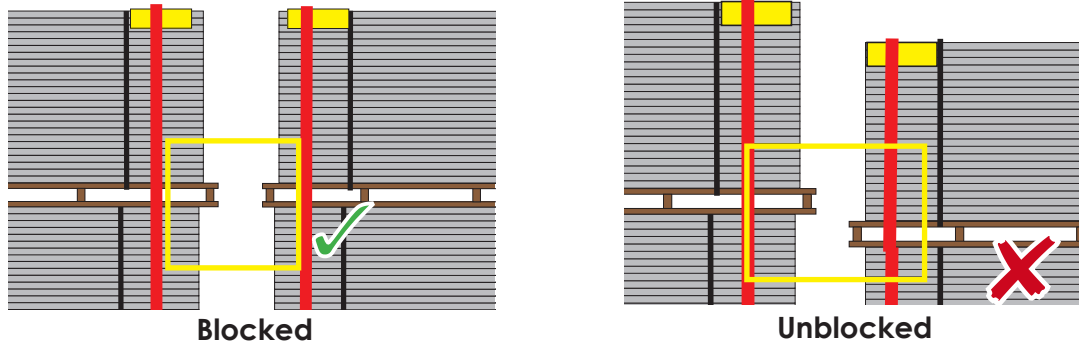
Palletised sheet product

- ✓ When the sheets are unitised to the pallet using PET straps, then the gap between the pallet and blocking surface must be measured as shown below.



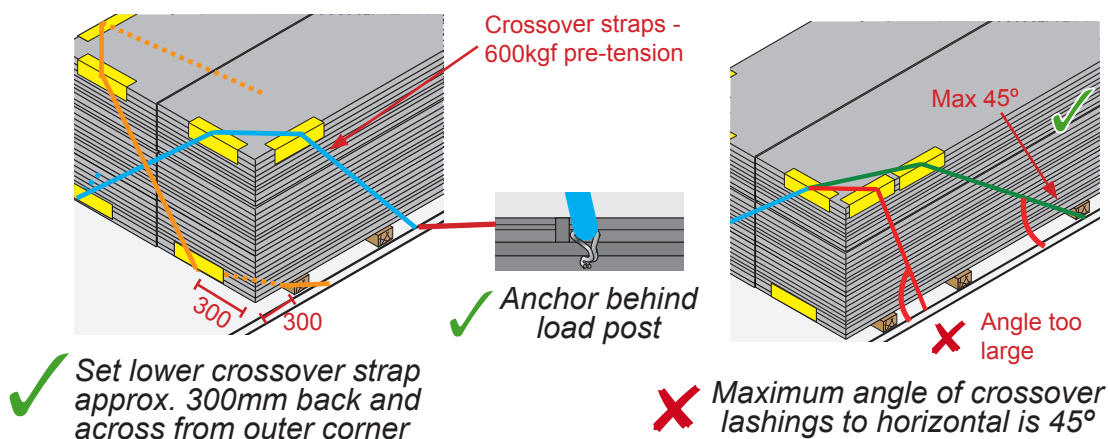
- ✓ Maximum cumulative gap along the load must be less than 200mm.
i.e. $A+B+C = 200\text{mm}$ or less

- ✓ When a palletised stack is blocked against another palletised stack, then the pallets must be aligned to be considered as blocked.

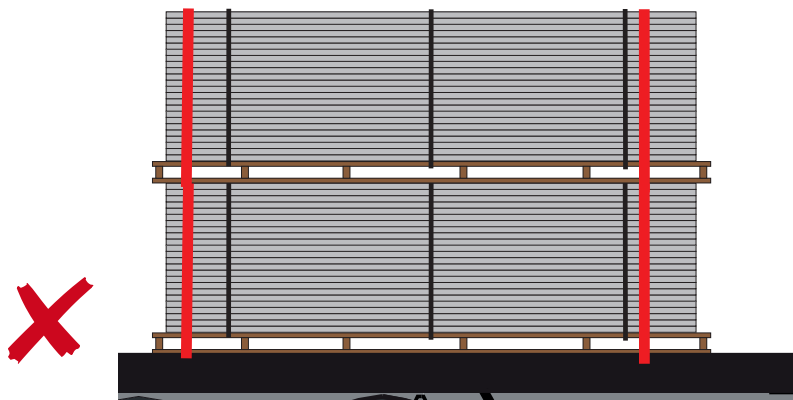


Blocking With Crossover Straps - Bulk sheet products

- ✓ When a load cannot be blocked to headboard, cross-over lashings may be used to reduce the total number of tie-down lashings.
- ✓ Refer to the cross over lashings table for number of tie-down lashings required when using cross-over lashings for blocking.
- ✓ Tie-down lashings must be applied first and then the cross over lashings must be applied.
- ⚠ Cross-over lashings must be anchored behind the load-post.
- ✓ Refer to the general principles guideline for more information on cross-over straps.

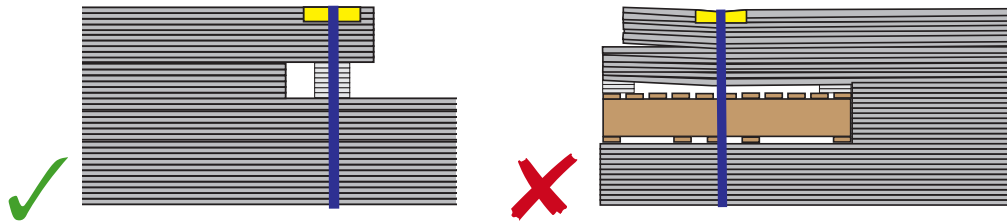
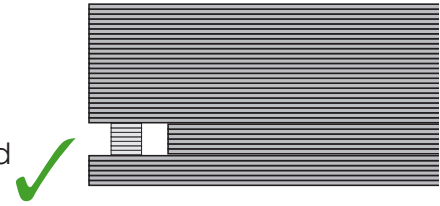


- ✗ Do not use cross-over straps for palletised sheet product.



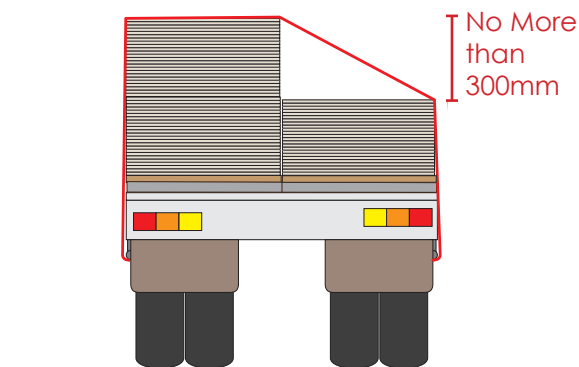
Packaging strips

- ✓ Packaging strips may be used to fill small voids.
- ✓ Make sure not to use more than 8 strips in any stack.
- ⚠ Make sure the packs are stable
- ⚠ A lashing must be applied over the strips and supported properly.

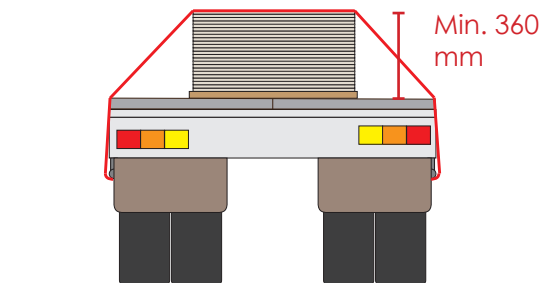


Make sure the top pack is supported where a lashing is applied

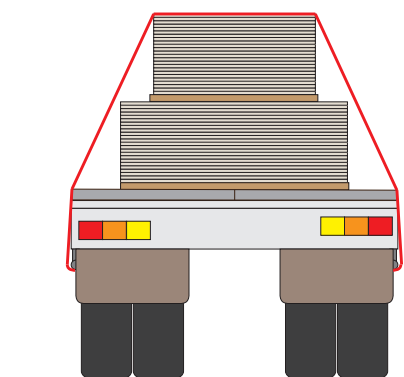
Load Configurations - Sheet Product



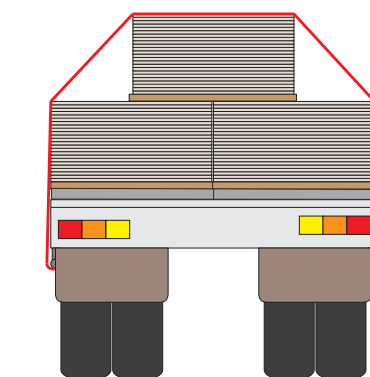
✓ Two Abreast packs maximum height difference is 300mm



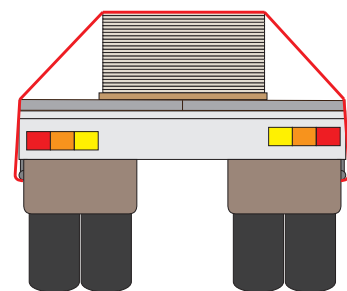
✓ Minimum height of the load to be 360 mm.



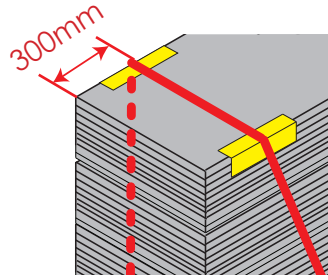
✓ Stack narrow packs on top of wide packs



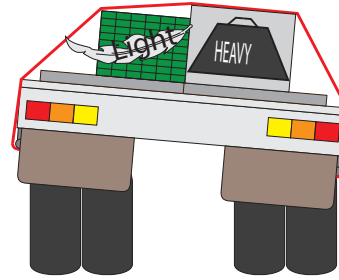
✓ Pyramid stack loads of 3 bundles



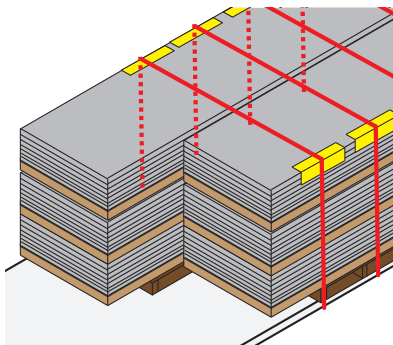
✓ Load single packs centrally on the deck



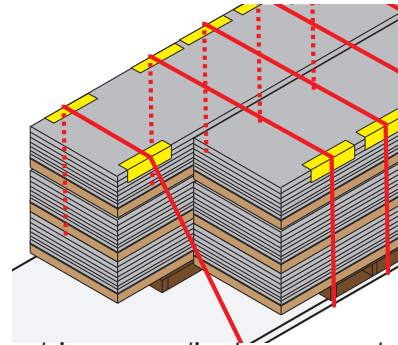
To protect the boards from flapping, the straps must be applied no more than 300 mm off the end of product



Avoid Imbalanced Loads



Lashings must be applied to all stacks across the deck



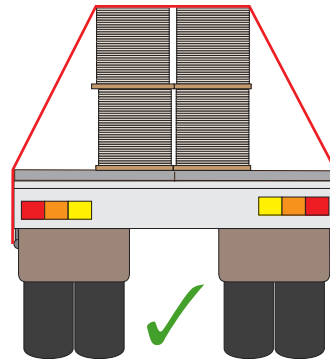
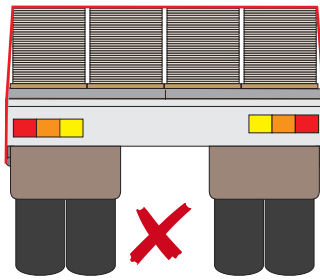
Lashings applied over part of the load are not counted in total lashing requirements in the tables



A lashing is a standard lashing with 300 kg pretension, unless specified otherwise.

Load Configurations - Sheet Product 600 mm wide : 3 or more across deck

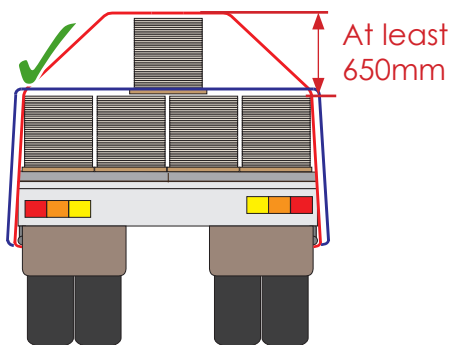
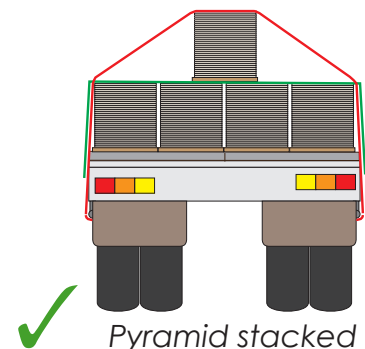
- ✓ All stacks more than 2 Abreast must be blocked to an Engineered Headboard
- ✓ All stacks more than 2 Abreast must be blocked rearward by a Rear wall of a Tautliner.
- ⚠ Maximum height limits apply to multi abreast product stacks.
- ⚠ A lashing is a standard lashing with 300 kg pretension, unless specified otherwise.
- ✓ Max. height per pack - 650 mm
- ✓ Min width per pack - 600 mm
- ✓ Max mass per pack - 2000 kg.
- ✓ Maximum 2 high.



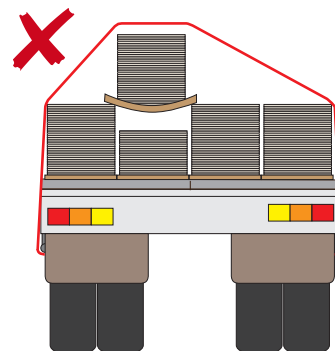
Single layer of 4 abreast must be loaded as 2 abreast 2 high.

Pyramid stacks - Blocked to Headboard

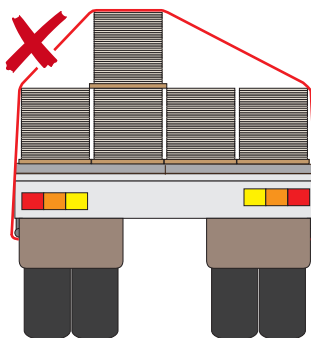
- ✓ Pyramid stacks must be the preferred way of loading 3 or more abreast loads.
- ✓ Pyramid stacks will require belly lashings and additional lashings over the top pack per table 1.
- ⚠ Each pack of a pyramid stack must be be at least 650 mm high inclusive of pallet or dunnage.



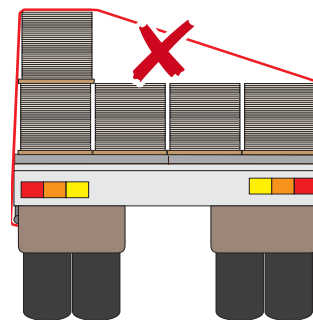
Pack height - 650 mm

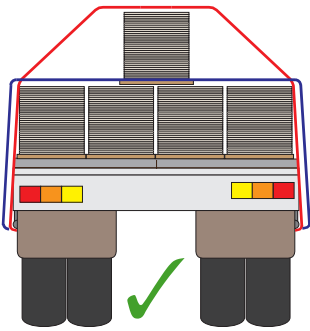


Do not bridge dunnage or pallets

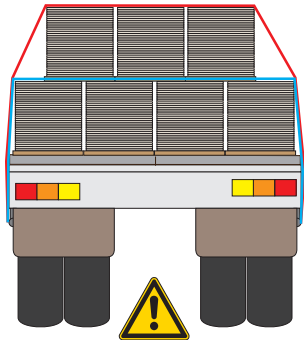
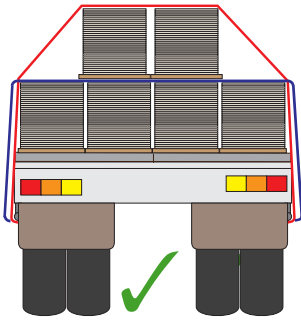


Center loads for pyramid stacks





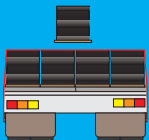
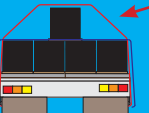
Pyramid stacked

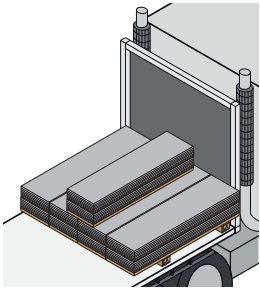


Flat top stack - refer to flat top table

Table 1 Blocked (Headboard): Pyramid stack

Refer to the following table for number of tie-down lashings required when the load is pyramid stacked and blocked to headboard.

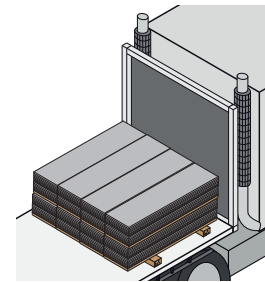
 Max mass restrained Base layer per stack	Required No. of Belly lashings		
	Push up ratchet / Drum winch	Pull Down Ratchet	Max layer height
8,000 kg	2	2	0.65 m
 Max mass restrained Top layer per stack	Required No. of Pyramid Lashings		
	Push up ratchet / Drum winch	Pull Down Ratchet	Max layer height
	2,000 kg	5	3
4,000 kg	6	3	0.65 m



✓ Pyramid stack

Flat top Stacks - Blocked forwards and Rearwards

- ✓ Loads may be loaded as flat top when pyramid stack cannot be achieved.
- ✓ All stacks more than 2 Abreast must be blocked forwards and rearwards by headboard/tailboard.
- ✓ Restrain the stacks as per table 2 on each layer.



Flat top stack - max 2 high

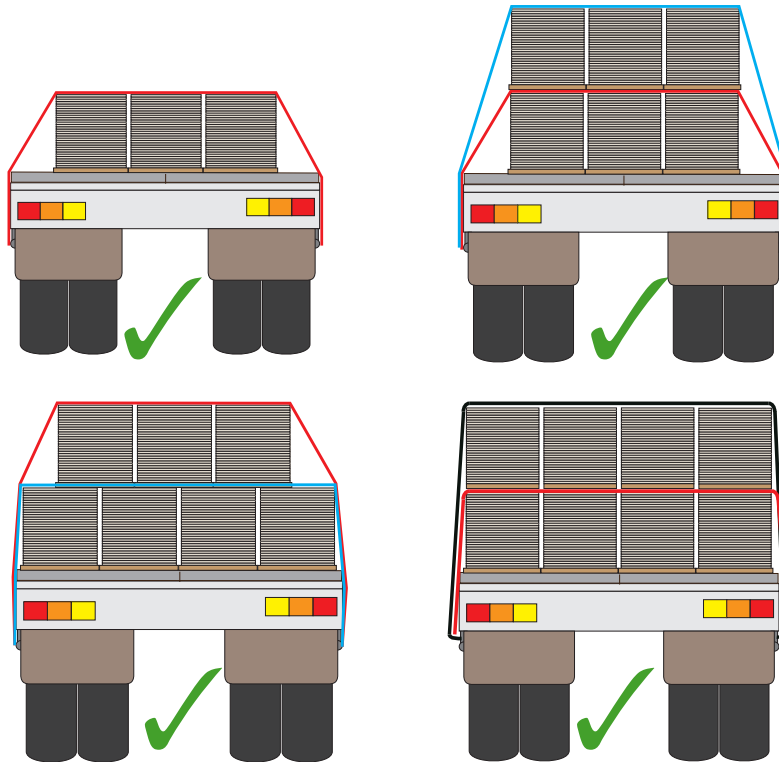
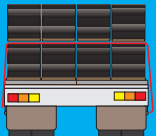
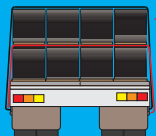
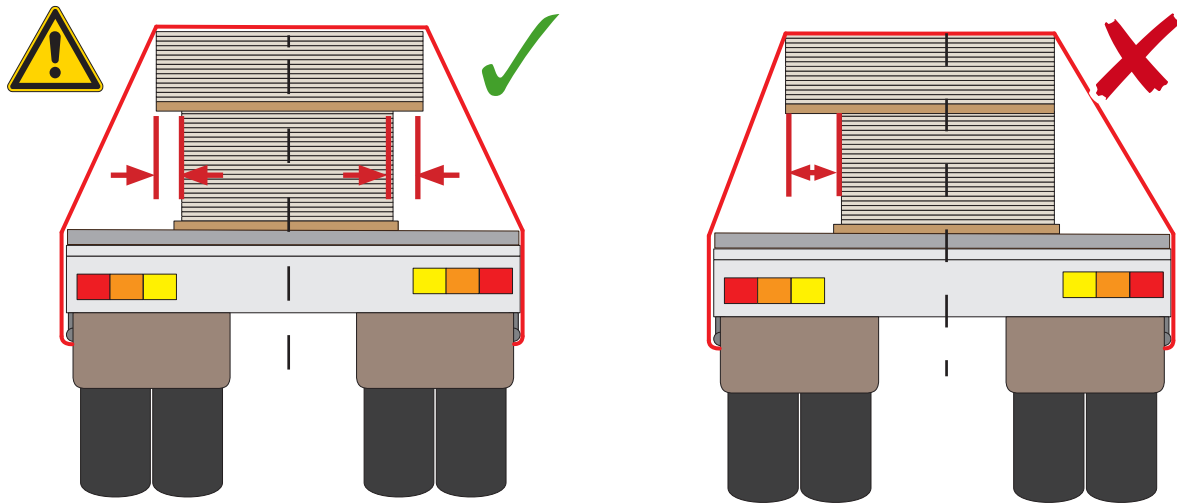


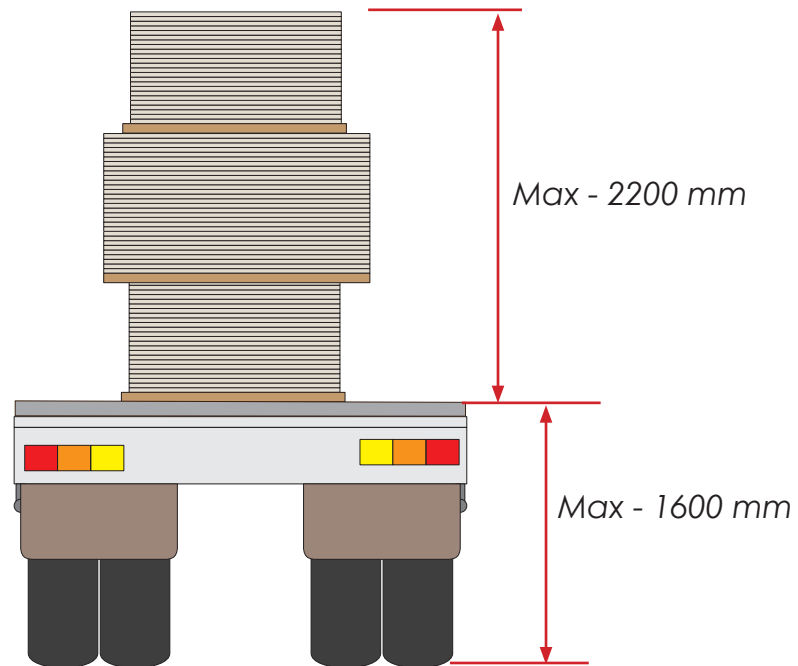
Table 2 Blocked (Headboard and Tailboard): Flat top stack

 Max mass restrained Base layer	Required No. of Belly lashings		
	Push up ratchet / Drum winch	Pull Down Ratchet	Max layer height
Up to 8,000 kg	6	3	0.65 m
 Max mass restrained Top layer	Required No. of Over the top lashings		
	Push up ratchet / Drum winch	Pull Down Ratchet	Max layer height
Up to 8,000 kg	6	3	0.65 m

Load Configurations - Sheet Product: 1350mm sheets on 1200mm sheets



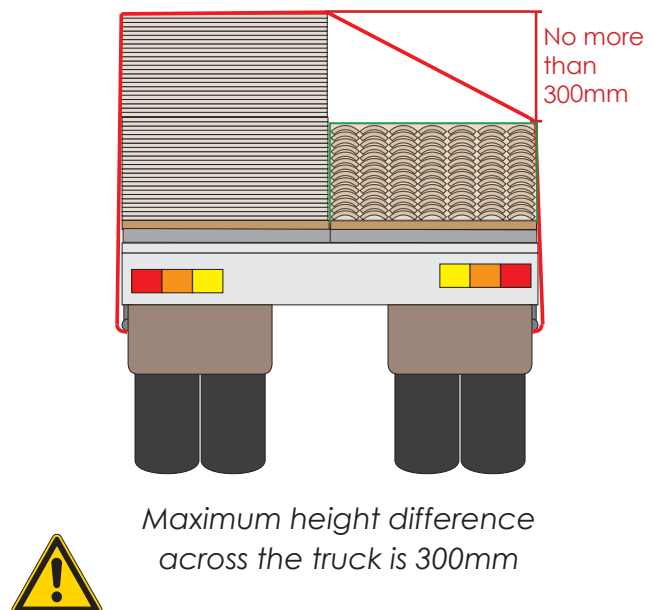
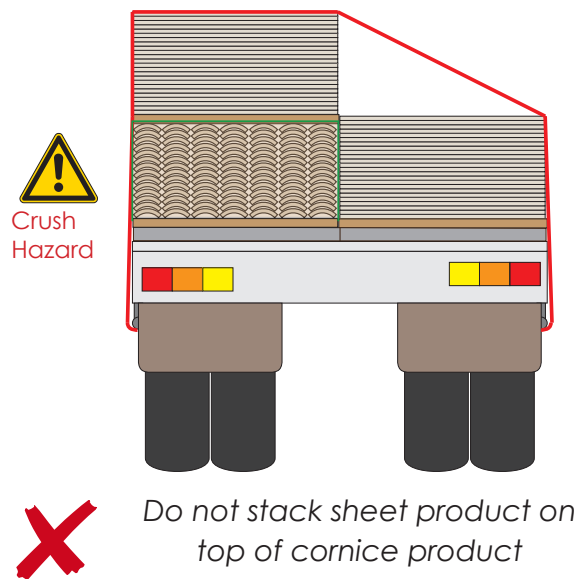
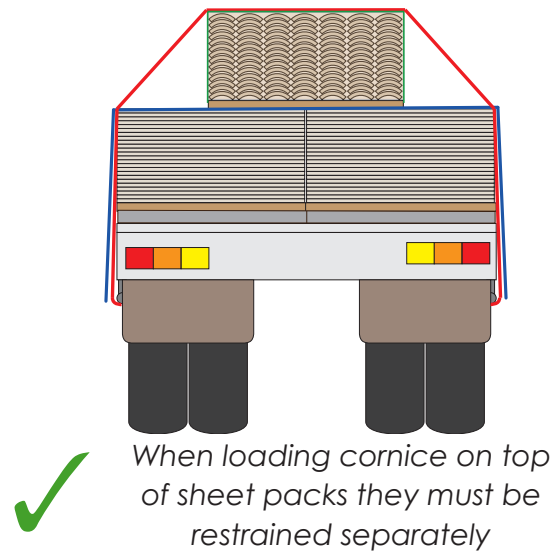
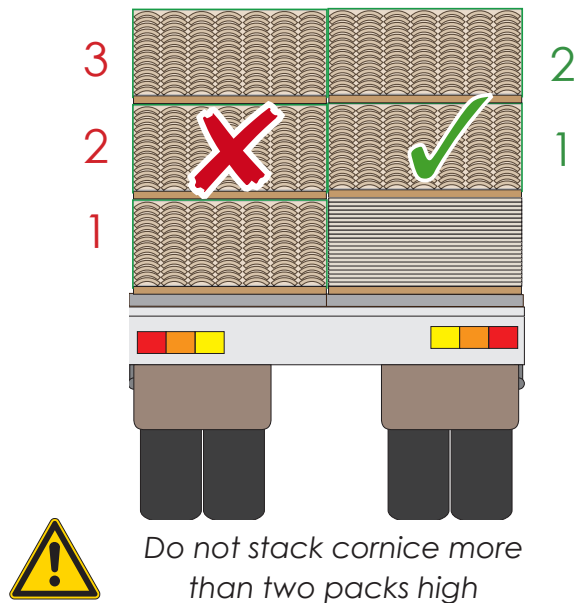
Ensure top load is centred.



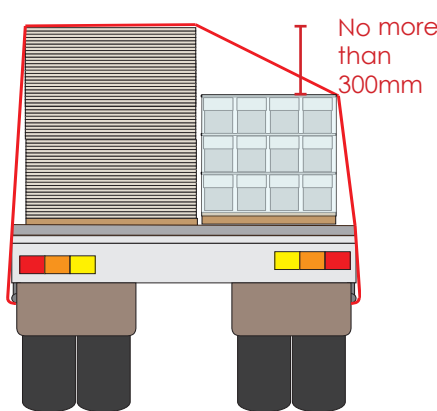
To ensure the stability of the vehicle consider the following;

- ✓ Maximum deck height 1600 mm from ground.
- ✓ Maximum height of product from deck - 2200mm.
- ✓ Maximum total height of product from ground - 3600 mm.
- ✓ Maximum payload of 10,000 kg.
- ✓ Minimum tare weight of semi trailer 4,000 kg.
- ✓ Individual vehicle stability requirements must be met to prevent roll-over risk.
- ✓ Maximum height for house lots is no more than 2200 mm from the deck of the truck.

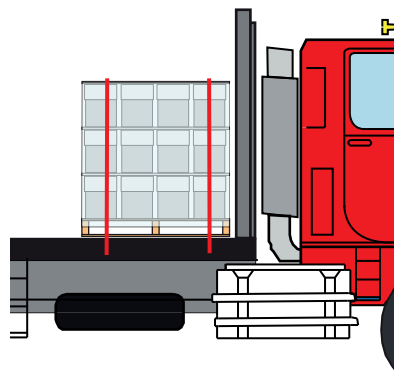
Load Configurations - Palletised Cornice Product



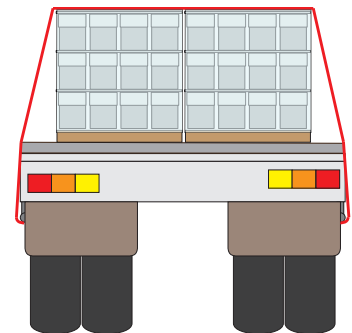
Load Configurations - Palletised Compound Product



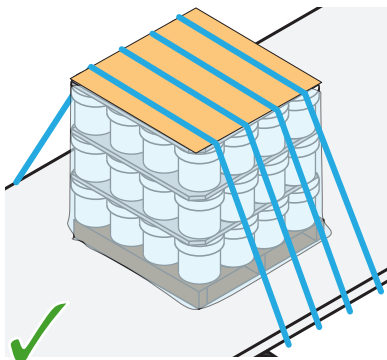
⚠️ Maximum height difference across the truck is 300mm



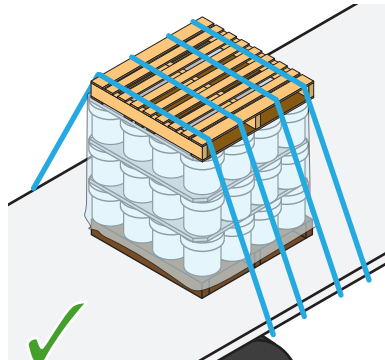
✓ Block compound product wherever possible



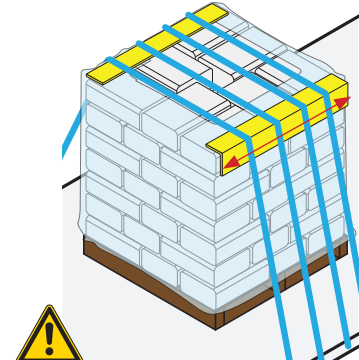
✓ Load pallets maximum two abreast



✓ Place pallets / plywood on top of buckets when tying down to prevent damage to product

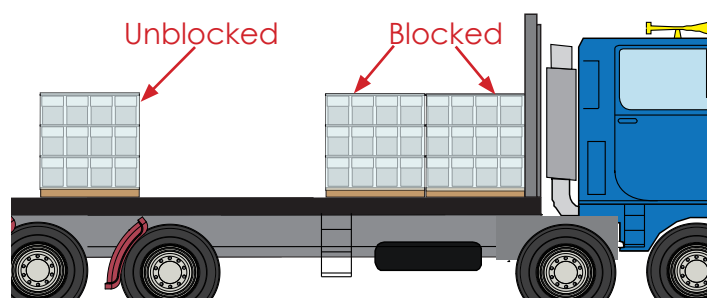


✓

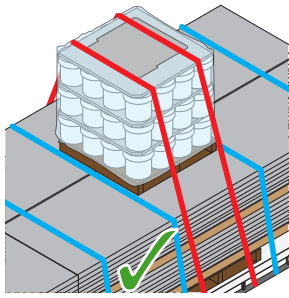


⚠️ Corner protectors must be full width of the pallet

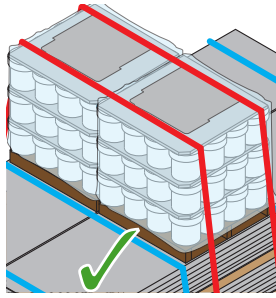
- ✓ Refer to the packaging document for advice on packaging.
- ✓ Minimum height of the load to be 360 mm.
- ✓ Maximum weight of 1200 kg per pallet.
- ✓ Minimum of 2 lashings for blocked pallet row.
- ✓ Minimum of 4 lashings for unblocked pallet row.
- ⚠️ Pallets on other product must be loaded as two abreast.



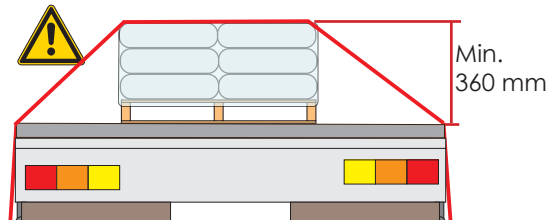
⚠️ A lashing is a standard lashing with 300 kg pretension, unless specified otherwise.



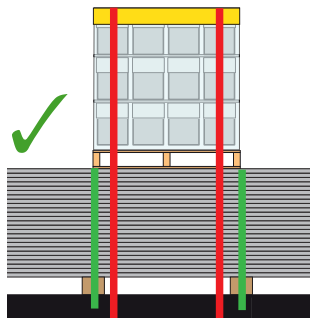
Single abreast



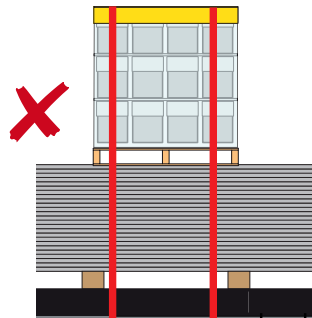
Two abreast



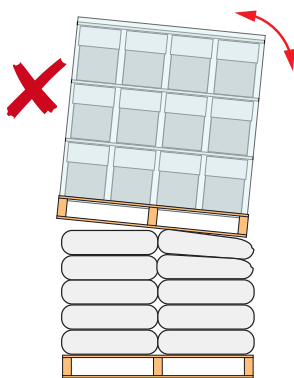
Min. height of the load to be 360 mm in order achieve an angle of 30 degrees



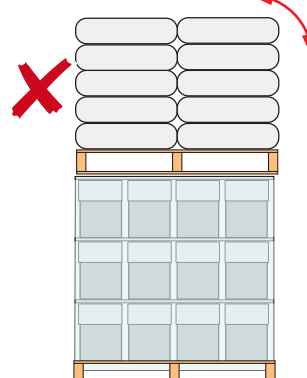
✓ Compound products loaded on top layer must be restrained separately



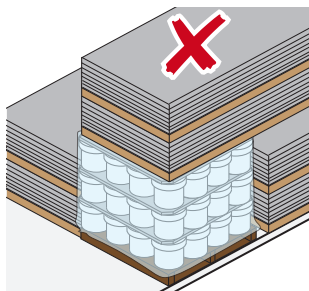
⚠ Do not stack on top of bagged / bucketed compound products.



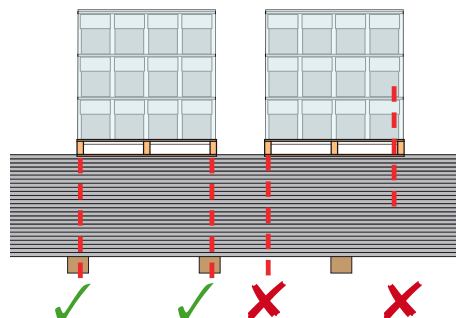
✗ Bucketed product stacked on top of bagged product



✗ Bagged product stacked on top of bucketed product



✗ Do not stack any pallets on top of buckets



⚠ Pallets stacked on loose sheet product - bearers must align with the supporting dunnage

Load Configurations - Rondo

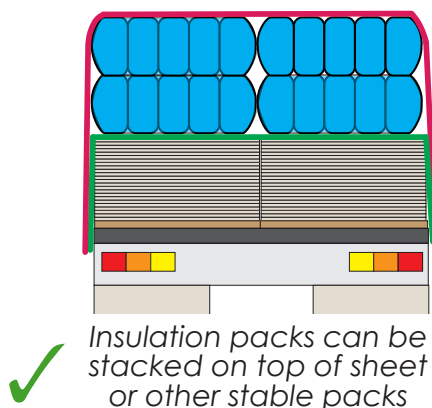
- ✓ Rondo packs must be unitised and restrained adequately.
- ✓ Make sure each pack has clamping.
- ✓ Rondo products may have to be load choked to avoid spearing.
- ✓ It must be restrained independently of other items.
- ✗ Do not load any other item on top of Rondo.

Load Configurations - Insulation

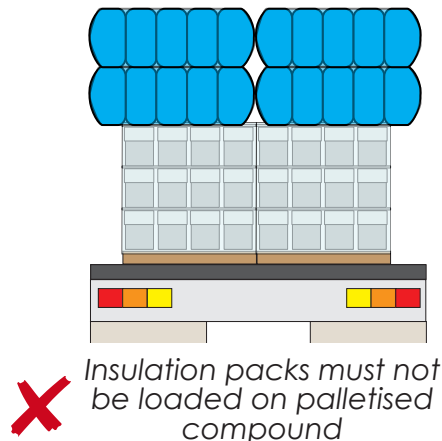
- ✓ Insulation packs be loaded on top of stable pack of sheet or bricks.
- ✓ Insulation must be unitised into a pack.
- ✓ It can be loaded as a maximum of 2 abreast and 2 high.
- ✓ It must be restrained independently.
- ✗ Do not load any other item on top of insulation.
- ✗ Do not load insulation on top of palletised products.
- ✓ Refer to Bradford guideline for more information.



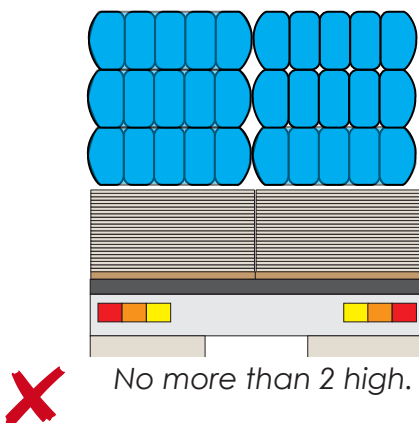
✓ Unitised pack



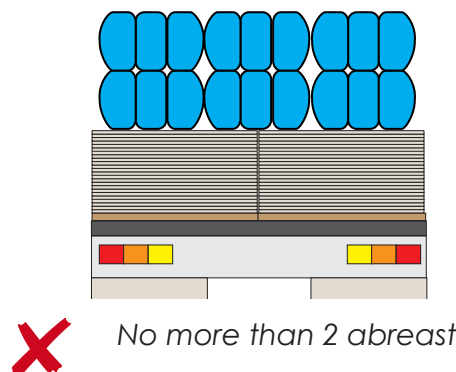
✓ Insulation packs can be stacked on top of sheet or other stable packs



✗ Insulation packs must not be loaded on palletised compound



✗ No more than 2 high.



✗ No more than 2 abreast

⚠ A lashing is a standard lashing with 300 kg pretension, unless specified otherwise.

Table 3 : Unblocked Configuration

Refer to the following table for number of lashings required when the load cannot be blocked using headboard or cross-over lashings.

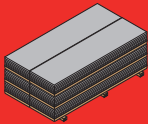
Stack Mass restrained 	Lashings per stack two Abreast loads 		Lashings per stack single file loads 					
	 (81 - 90°)		 (61-80°)		 (46-60°)		 (30-45°)	
	Push up ratchet / Drum winch	Pull Down Ratchet	Push up ratchet / Drum winch	Pull Down Ratchet	Push up ratchet / Drum winch	Pull Down Ratchet	Push up ratchet / Drum winch	Pull Down Ratchet
0 - 2,000 kg	4	2	4	3	5	3	7	4
2,001 - 4,000 kg	8	4	8	5	10	6	14	8
4,001 - 6,000 kg	11	6	12	7	15	8	Impractical	11
6001 - 8000 kg	15	8	16	9	19	11		Impractical
8,001 - 10,000 kg	18	10	20	11	Impractical	13		
10,000 - 12,000 kg	22	12	24	13	Impractical			
Over 12,000 Kg	Impractical							

Table 4: Blocked Configuration (2 Crossover Straps)

Refer to the following table for number of tie-down lashings required when using cross over straps, 2 cross over lashings are also required which is not included in the table.

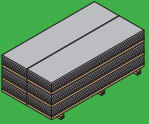
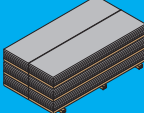
Stack Mass restrained 	Lashings per stack two Abreast loads 		Lashings per stack single file loads 					
	(81 - 90°)		(61-80°)		(46-60°)		(30-45°)	
	Push up ratchet / Drum winch	Pull Down Ratchet	Push up ratchet / Drum winch	Pull Down Ratchet	Push up ratchet / Drum winch	Pull Down Ratchet	Push up ratchet / Drum winch	Pull Down Ratchet
0 - 2,000 kg	2	2	2	2	2	2	2	2
2,001 - 4,000 kg	3	2	3	2	4	2	2	2
4,001 - 6,000 kg	4	3	5	3	6	4	7	4
6001 - 8000 kg	6	4	7	4	9	5	Impractical	8
8,001 - 10,000 kg	9	5	11	6	Impractical	7		11
10,001 - 12,000 kg	Impractical	7	Impractical	8	Impractical		Impractical	
12,001 - 14,000 kg		9		10				
14,001-15,000kg		10		11				

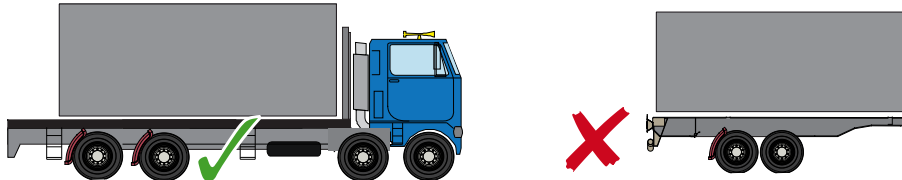
Table 5: Blocked Configuration (Headboard)

Refer to the following table for number of lashings required when the load is blocked to headboard.

Stack Mass restrained 	Lashings per stack two Abreast loads 		Lashings per stack single file loads 					
	(81 - 90°)		(61-80°)		(46-60°)		(30-45°)	
	Push up ratchet / Drum winch	Pull Down Ratchet	Push up ratchet / Drum winch	Pull Down Ratchet	Push up ratchet / Drum winch	Pull Down Ratchet	Push up ratchet / Drum winch	Pull Down Ratchet
0 - 2,000 kg	2	2	2	2	2	2	2	2
2,001 - 4,000 kg	2	2	2	2	3	2	4	2
4,001 - 6,000 kg	3	2	3	2	4	2	5	3
6001 - 8000 kg	4	3	4	2	5	3	7	4
8,001 - 10,000 kg	5	3	5	3	6	3	9	5
10,001 - 12,000 kg	6	3	6	3	Impractical			
12,001 - 14,000 kg	7	4	7	4				
14,001-15,000kg	7	4	8	4				

Tie Down Lashing Requirements : Stacks greater than 15t mass

Blocked only (Headboard)



Unblocked loads over 12 tonnes is not practical as the number of lashings required would be high.

Table 6: Blocked Configuration (Crossover Straps)

Refer to the following table for required number of lashings when using cross over straps, 2 cross over lashings are also required which is not included in the table.

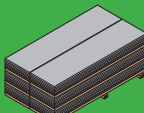
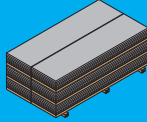
Stack Mass restrained 	Lashings per stack two Abreast loads 		Lashings per stack single file loads 					
	(81 - 90°)		(61-80°)		(46-60°)		(30-45°)	
	Push up ratchet / Drum winch	Pull Down Ratchet	Push up ratchet / Drum winch	Pull Down Ratchet	Push up ratchet / Drum winch	Pull Down Ratchet	Push up ratchet / Drum winch	Pull Down Ratchet
15001 - 16,000 kg	Impractical	11	Impractical	12	Impractical			
16,001 - 17,000 kg		12		13				
17,001 - 18,000 kg		13		14				
18001 - 19000 kg		14		NA				
19001 - 20000 kg		15		NA				

Table 7: Blocked Configuration (Headboard): Single file and two abreast

Refer to the following table for number of lashings required when the load is blocked to headboard.

Stack Mass restrained 	Lashings per stack two Abreast loads		Lashings per stack single file loads								
											
	(80 - 90°)		(60-80°)		(45-60°)		(30-45°)		Impractical		
	Push up ratchet / Drum winch	Pull Down Ratchet	Push up ratchet / Drum winch	Pull Down Ratchet	Push up ratchet / Drum winch	Pull Down Ratchet	Push up ratchet / Drum winch	Pull Down Ratchet			
15001 - 16,000 kg	8	4	8	5							
16,001 - 17,000 kg	8	5	9	5							
17,001 - 18,000 kg	8	5	9	5							
18001 - 19000 kg	9	5	10	6							
19001 - 20000 kg	9	5	10	6							

This document provides the practical information and key methods for securing the nominated freight type(s) to the relevant certification. Engistics has developed this guideline to comply with the relevant standards and legislation. Additional requirements may be necessary under some conditions outside the nominated application of this guideline and Engistics and provides no warranty for circumstances outside the nominated application. The information contained in this guideline is confidential to and remains the property of Engistics Pty Ltd for use by CSR Ltd. Any changes to this guideline must be approved by Engistics. Further details are available on the accompanying Certification to this Guideline.