

Load Restraint Guideline

Slit Coil

SC

1. This Guideline applies for:

- Restraint of bore vertical, sheet metal coils, known as Slit Coils.

THIN SLIT COILS are LESS THAN or EQUAL to 180mm wide

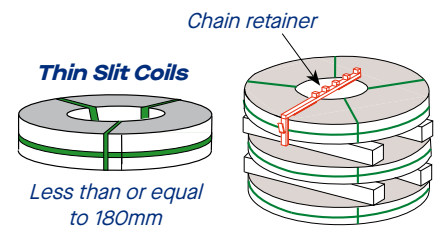


Fig 1.1: Thin Slit Coil example configurations & chain retainer.

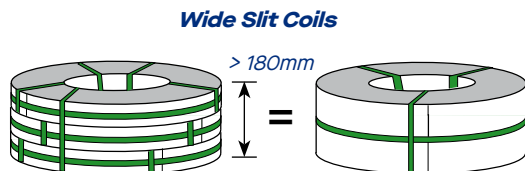


Fig 1.2: Wide Slit Coil example configurations.

WIDE SLIT COILS are GREATER THAN 180mm wide

2. Essential Requirements:

- ✓ Base Dunnage **MUST** be rough sawn hardwood **100 x 100mm nominal size**. Base dunnage may be half tray width, but full width is preferred. It must support the full length of the slit coil. Chamfered dunnage is acceptable **ONLY** if the chamfer faces to the front to avoid roll over.
- ✓ Intermediate dunnage, between slits, may be plastic “cling” wrapped or faced with plastic damp course material. The recommended size is 65 x 65mm hardwood.
- ✓ **Galas Corners with a horizontal anti-rotation chain MUST be used on all Slit Coil**. The chain must be connected to “Galas” corners around the front of the stack of slit coils.
- ✓ **2nd off 1st chaining method MUST be used**, if two chains are needed. Refer to the BlueScope Steel Load Restraint Guideline “Chaining - 2nd off 1st Method”. (Fig. 2.3)
- ✓ **A Chain Retainer MUST be used on ALL stacks where the top coil is a Thin Slit Coil** to stop the anti-rotation chain from falling between the thin slit coils. Figures 1.1, 3.2, 3.14 & 3.18 show thin slit coils with Chain Retainers. Figure 2.4 shows the chain retainer.
- ✓ **All restraints MUST be 8mm transport chain with a minimum Lashing Capacity of 3.0 tonnes and comply with AS/NZS4344.** (See LRG17-EQ for further details).
- ✗ Do **NOT** use ordinary polyurethane corner protectors. They do not allow for the front horizontal chain.
- ✗ Do **NOT** use webbing lashings. Their stretch and the curved top of the coils make them unsuitable.

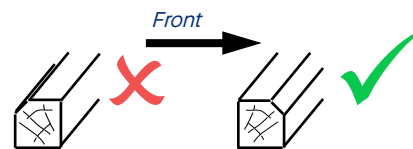


Fig 2.1: If chamfered dunnage is used, chamfer **MUST** face forward.

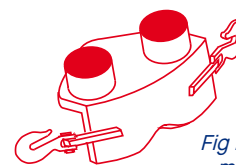


Fig 2.2: “Galas” corners must be used with a horizontal chain to stop rotation.

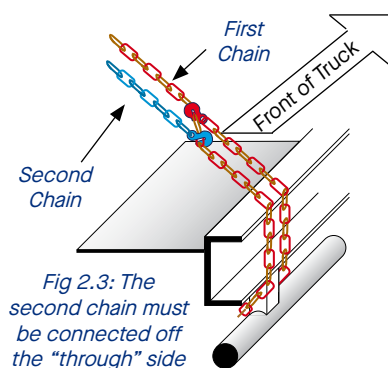


Fig 2.3: The second chain must be connected off the “through” side of the first chain.

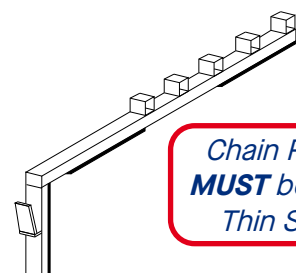


Fig 2.4: Chain Retainer for restraining Thin Slit Coils.

3. Coil & Stack Configurations

3.1 All Arrangements

- ✓ Slit Coils strapped together, without intermediate dunnage are considered as one slit of equal width and weight. These consolidated slit coils can be referred to as a 'mult' of slit coils.
- ✓ Without intermediate dunnage, the maximum number of slit coils strapped together to make a 'mult' is 6. (Fig. 3.1)
- ✓ Slit Coils strapped together with intermediate dunnage are considered as individual slit coils, regardless of the size of the dunnage used. These consolidated slit coils can be referred to as a 'pack of slit coils'. (Eg. A pack of 3 slit coils has a stack height of 3, not 1). (Fig. 3.2)
- ✓ The approximate maximum pack height to outside diameter ratio of a 'pack of slit coils' is **1 to 1**. (Eg. Coils with an OD of 900mm can have a pack height of 900mm +10% max.).
- ✓ The minimum thickness of each individual slit when separated by intermediate dunnage is 32mm. This is to prevent bending of the unsupported edges.
- ✗ Do **NOT** strap more than 5 slit coils together when using intermediate dunnage. (Fig. 3.3)

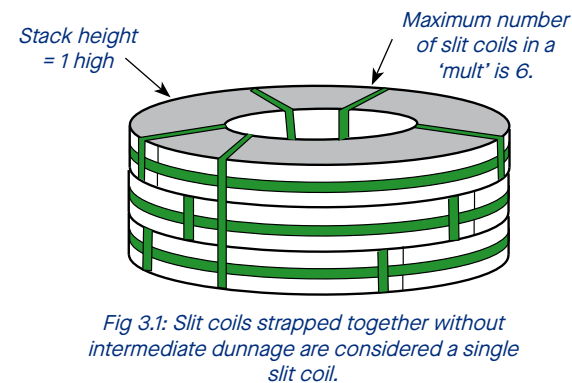


Fig 3.1: Slit coils strapped together without intermediate dunnage are considered a single slit coil.

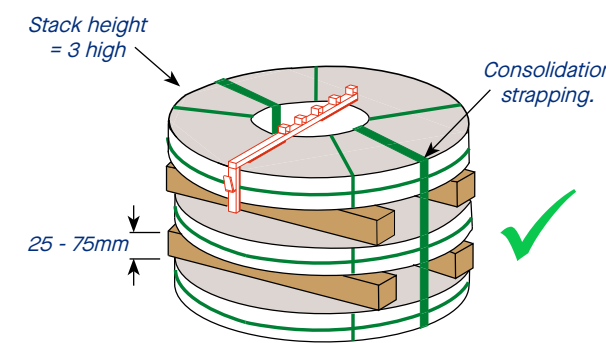


Fig 3.2: Slit coils strapped together with intermediate dunnage are considered as a pack of individual slit coils.

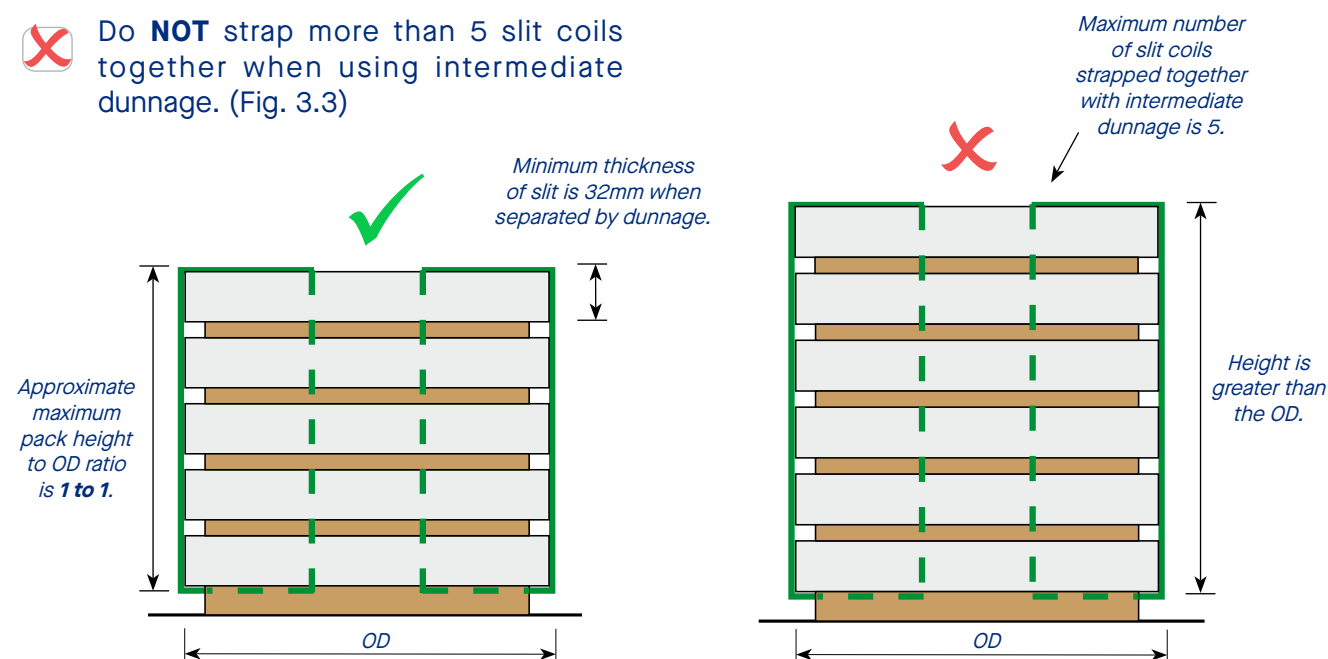


Fig 3.3: Maximum of 5 slit coils with a maximum pack height to outside diameter ratio of 1 to 1 can be strapped together with intermediate dunnage.

3.1 All Arrangements

- ✓ The maximum number of unconsolidated coils in a stack is 3. (Eg. A stack of 5 slit coils must have at least 2 of the coils strapped together using steel strapping). (Fig. 3.4)
- ✓ The dunnage width to height ratio of the total stack must not exceed **1 to 1.5** to reduce the risk of toppling. (Eg. If the dunnage width is 800mm then the maximum stack height is 1200mm). (Fig. 3.5)
- ✓ Slit Coils **MUST** be stacked with the weight and outside diameter of each coil smaller than, or equal to, the coil below it. (Fig. 3.6)
- ✓ Slit Coils **MUST** be stacked centrally above each other. (Maximum offset allowed is 25mm from the centreline of the base coil). (Fig. 3.7)
- ✗ Do **NOT** stack slit coils higher than **1400mm** from the trailer deck. (Fig. 3.5)
- ✗ Do **NOT** load stacks or coils that exceed the maximum weight shown in **Table 1** for single file on page 5 or **Table 2** for two abreast on page 6.

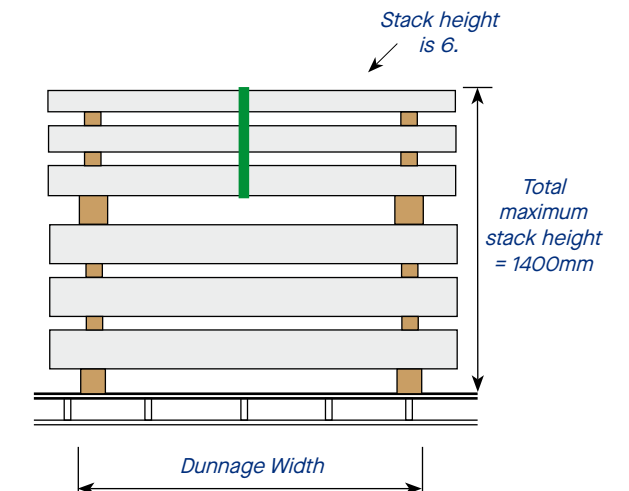


Fig 3.5: Dunnage width to total stack height ratio must not exceed 1 to 1.5.

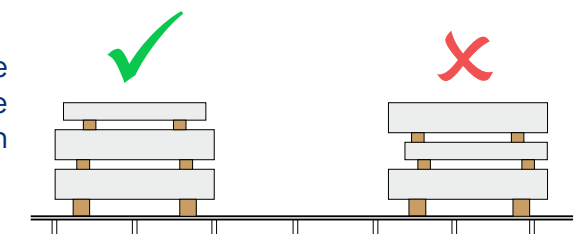
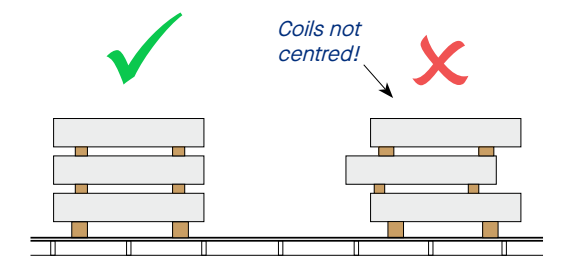


Fig 3.6: Smallest slit coil on top



Maximum offset of 25mm

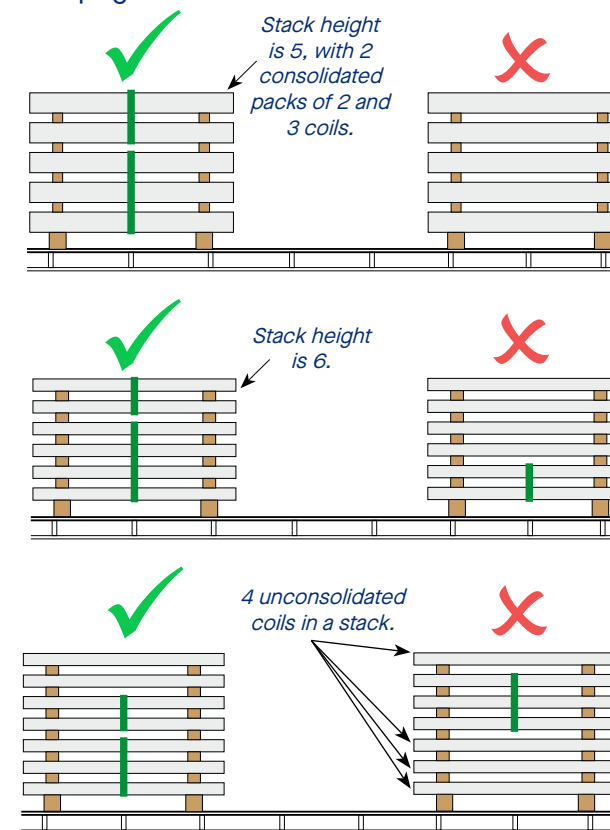


Fig 3.4: Maximum number of unconsolidated coils in a stack is 3.

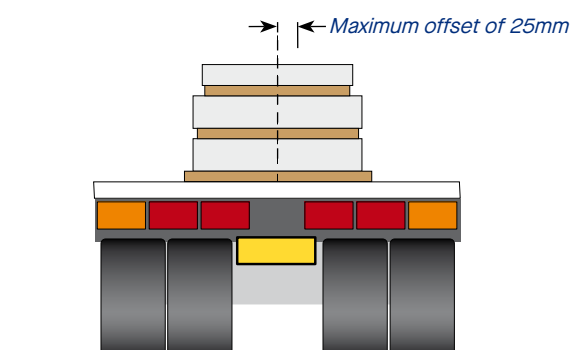


Fig 3.7: Slit coils to be stacked centrally on truck and to one another.

3.2 Dunnage

- ✓ Dunnage shall:
 - **Extend to the width of the coil** (+/- 100mm);
 - **Be placed** centrally across the side of the coil;
 - **Be placed** parallel to each other and not offset or angled;
 - If chamfered, chamfer **MUST** face forward.
 - If rectangular dunnage is used, it **MUST** be placed flat on its long edge.

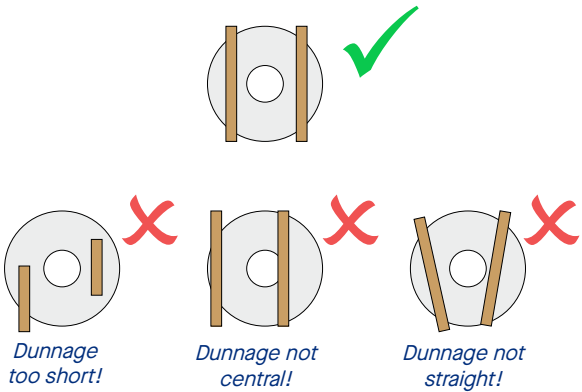


Fig 3.8: Dunnage Placement.

3.3 Single File

- ✓ Position single stacks or coils in the **centre of the trailer**. (Some sites allow a 300mm offset. See site manager for details).
- ✗ Do **NOT** stack coils more than **8 high**, single file.

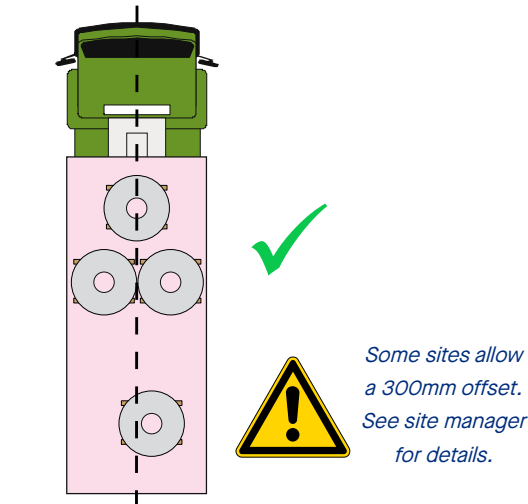


Fig 3.9: Coils to be stacked in the centre of the trailer.

3.4 Two Abreast (including Pyramid)

- ✓ Position stacks side by side over the **centre of the trailer**, with stacks **butted against each other**. Top slits **MUST** also butt or be a single slit centred over the two stacks.
- ✗ Do **NOT** exceed a stack height difference of 100mm. Both stacks should be similar in diameter and weight.
- ✗ Do **NOT** stack coils more than **5 high**, two abreast.

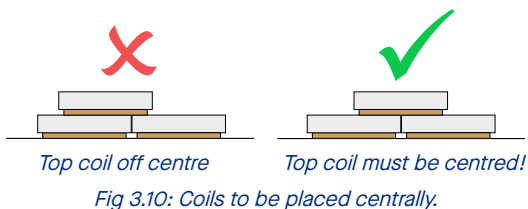


Fig 3.10: Coils to be placed centrally.

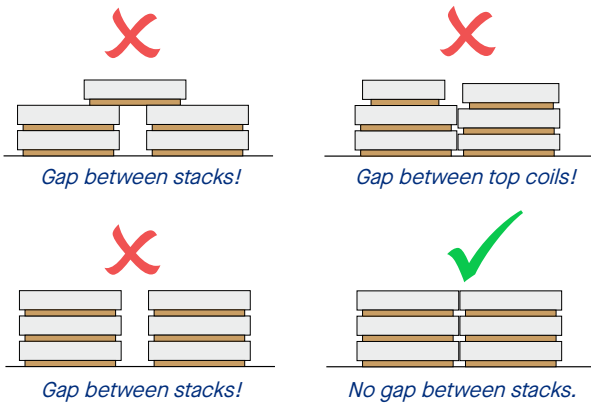


Fig 3.11: Examples of Stack Gaps.

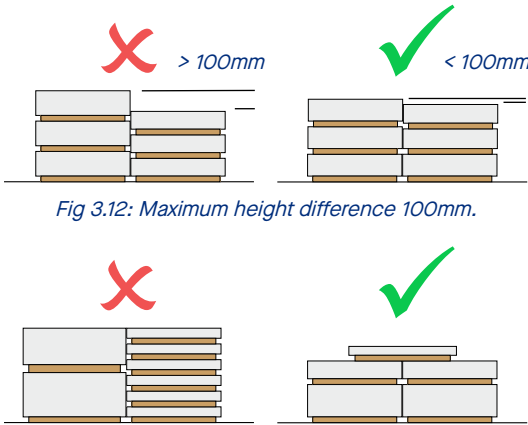


Fig 3.12: Maximum height difference 100mm.

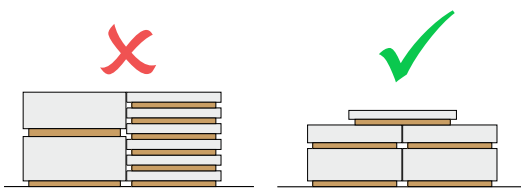


Fig 3.13: Stack weights to be about equal, maximum 5 high two abreast.

Single File Slit Coils – Preferred Method

Table 1. Maximum Weight per Stack

	Lashing Angle (Degrees)							
	Less than 30°		30° - 45°		45° - 60°		Greater than 60°	
Stack Height	1 Chain	2 Chains	1 Chain	2 Chains	1 Chain	2 Chains	1 Chain	2 Chains
1	Not Recommended (Lashing angle too low to provide sufficient clamping force)	Not Recommended (Lashing angle too low to provide sufficient clamping force)	3.0	6.0	4.2	8.4	5.2	10.4
2			2.6	5.3	3.7	7.5	4.6	9.2
3			2.0	4.0	2.8	5.6	3.4	6.9
4			1.7	3.5	2.5	5.0	3.0	6.1
5			1.6	3.3	2.3	4.7	2.8	5.7
6			1.6	3.2	2.2	4.5	2.7	5.5
7			1.5	3.1	2.1	4.3	2.6	5.3
8			1.5	3.0	2.1	4.3	2.6	5.2

Note: Coil stacks greater than 3 high need to have part of the stack consolidated by steel strapping.

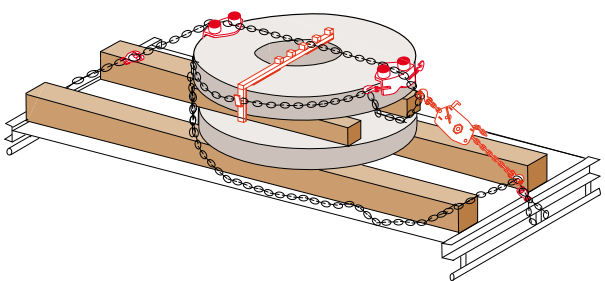


Fig 3.14: Thin Slit Coil Two High Stack. Stack Mass 2.0t with 1 Chain and 1 retainer. Chain Angle 30-45°.

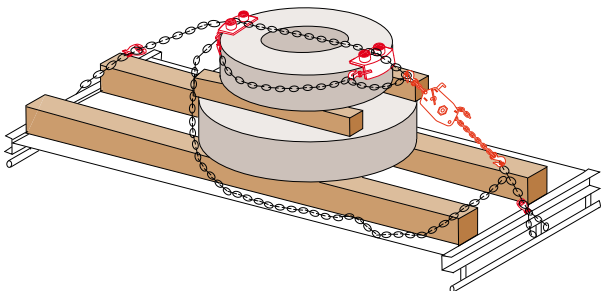


Fig 3.15: Wide Slit Coil Two High Stack. Stack Mass of 2.0t with 1 Chain. Chain angle 30-45°.

NOTE: All diagrams show the correct Single File arrangement using "Galas" corners and anti-rotation chain.

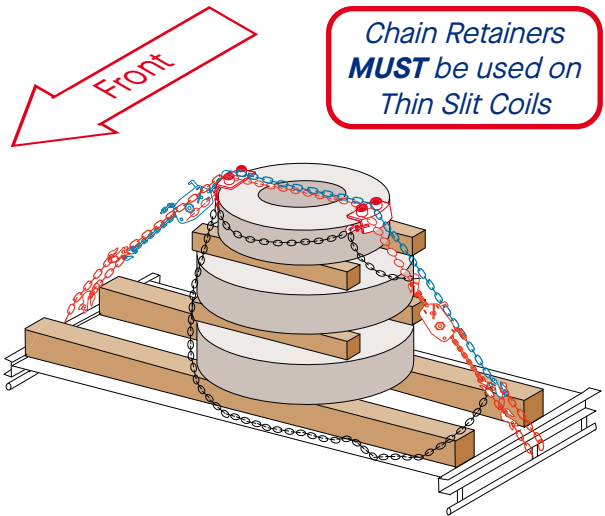
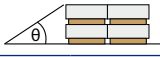
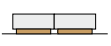
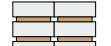
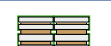


Fig 3.16: Wide Slit Coil Three High Stack. Stack Mass of 5.0t with 2 Chains (2nd off 1st Chaining Method). Chain angle greater than 45°.

Two Abreast or Pyramid Slit Coils

– Acceptable but Non-preferred

Table 2. Maximum Weight per Row (Sum of Both Stacks)

	 Lashing Angle (Degrees)					
	Less than 30°		30° - 60°		Greater than 60°	
Stack Height	1 Chain	2 Chains	1 Chain	2 Chains	1 Chain	2 Chains
1 	Not Recommended (Lashing angle too low to provide sufficient clamping force)	Not Recommended (Lashing angle too low to provide sufficient clamping force)	3.0	6.0	5.2	10.4
2 			2.6	5.3	4.6	9.2
3 			2.0	4.0	3.4	6.9
4 			1.7	3.5	3.0	6.1
5 			1.6	3.3	2.8	5.7

Note: Coil stacks greater than 3 high need to have part of the stack consolidated by steel strapping.

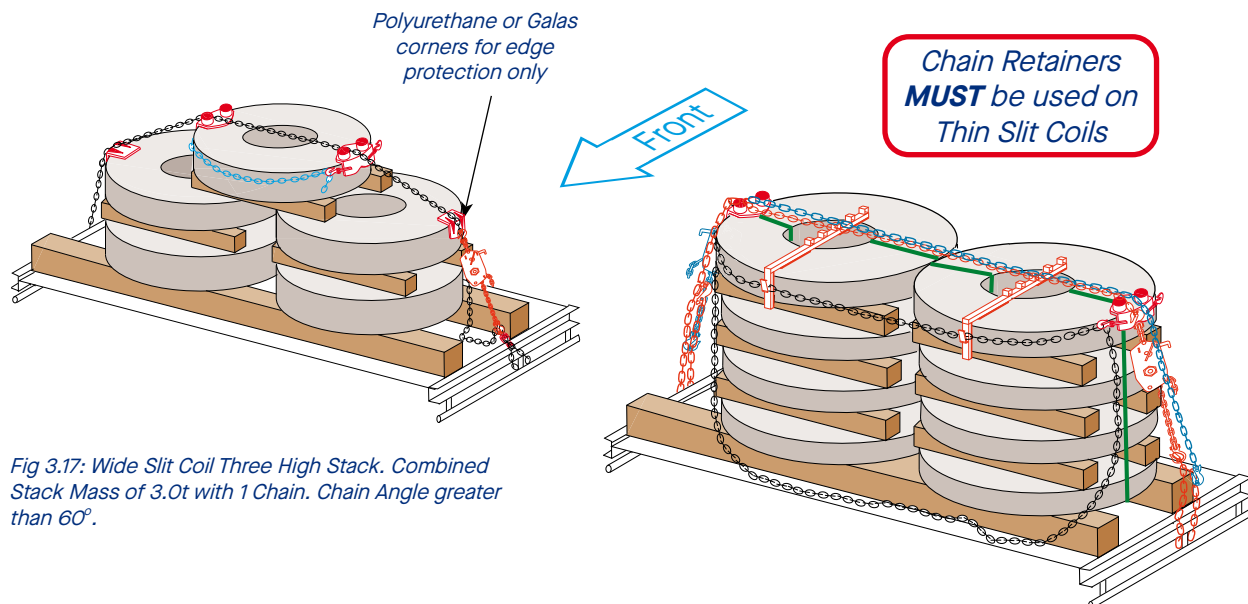


Fig 3.17: Wide Slit Coil Three High Stack. Combined Stack Mass of 3.0t with 1 Chain. Chain Angle greater than 60°.

Fig 3.18: Thin Slit Coil Four High Stack with consolidation strapping. Combined Stack Mass 6.0t with 2 Chains (2nd off 1st Chaining Method) and 2 chain retainers. Chain angle greater than 60°.

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