

## IMPORTANT NOTICE - DISCLAIMER AND EXCLUSION - PLEASE CAREFULLY READ

- *The information in this guide is not a product of warranty. To the maximum extent allowed by law, none of Omni-tuff Group Pty Ltd, all companies related to it, and the officers, employees and agents of any of them (“Omni-tuff Parties or Engistics Parties”) will be liable for any act or omission that is said to give rise to any form of damages or loss of profit or interest or cost claims for any form of personal injury, property damage or consequential loss or claims arising from a death made by any person or entity arising from use of this Guide or any product displayed in it.*
- *All readers and users of this Guide are responsible for the correct use of the products displayed in it according to the individual conditions and requirements of any piece of equipment or other thing placed on them.*
- *No Omni-tuff Parties will be liable for any loss or damage of any form arising from use of the products displayed in this Guide which use does not comply with/or falls outside the scope of this Guide.*
- *This Guide is certified to comply with the requirements stipulated in the Performance Standards specified in Schedule 7 of the Heavy Vehicle (Mass, Dimension and Loading) National Regulation 2018. Certification provided by RPEQ 21522, for Omni-tuff Group Pty Ltd. Compliance can only be achieved when all aspects of this Guide are adhered to in full by a user. Additional requirements may be necessary under some conditions that are outside the scope of this certification. In those circumstances you must contact Omni-tuff Group Pty Ltd before using any product displayed in this Guide.*
- *No changes to that certification are permitted unless first approved in writing by both Omni-tuff Group Pty Ltd and Engistics Pty Ltd.*
- *Any deviation from this Guide must first be approved in writing by Omni-tuff Group Pty Ltd and Engistics Pty Ltd.*
- *Copyright in the entirety of this document and any modifications or adaptations or variations to it at any time in the future remains the sole property of Omni-tuff Group Pty Ltd. It must not be reproduced in any material form and whether in hard copy or electronically except as permitted in writing by Omni-tuff Group Pty Ltd.*

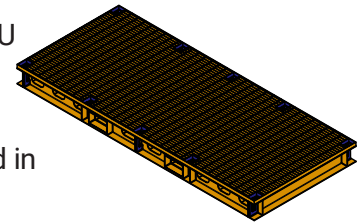
*Assess the condition of each Daywalk bolt before use. Discard bolts with visible signs of damage, including (but not limited to):*

- *Bending, damage or deformation of the threaded rod, washer plate or base plate*
- *Missing or damaged roll pins or spring washer*
- *Cracked or damaged welds, base plate or thread body*
- *Damaged or stripped threads on the bolt or nut*
- *Galvanisation or coating peeling off or exposed base metal*
- *Variation in the thread pitch in diameter or width for the nut or thread body*
- *Sharp or flaky threads on the nut or thread body*

*Bolts are recommended by the manufacturer to be single use only.*

## This Guide

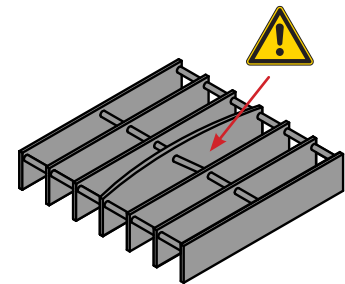
- Covers singular items secured to a Daywalk 10T rated steel pallet (SKU 13-PSGG3500/1500/10T) by Daywalk securing bolts, transported by road in Australia
- Meets the requirements of the Performance Standard forces specified in Schedule 7 of the Heavy Vehicle (Mass, Dimension and Loading) National Regulation 2018
- Does not cover restraint of the combined pallet and item on the truck



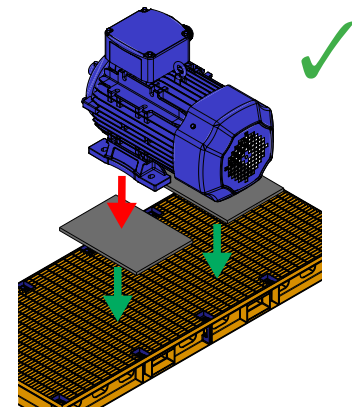
Daywalk 10T Rated Pallet

## Key Elements

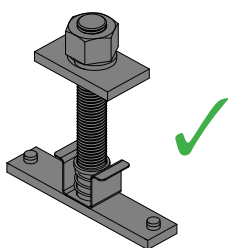
- ✓ Equipment must be in good working order
- ⚠ Damaged pallets should be inspected by a competent person to confirm their structural capacity before use
- ✓ Ensure all pallet bearers are in contact with the deck of the truck
- ✓ Place rubber with minimum coefficient of friction of 0.6 and minimum load capacity of 6.0 N/mm<sup>2</sup> between the item and pallet
- ✓ Rubber must have capacity to withstand load without failing (i.e. crushing, tearing or disintegrating etc.)
- ✗ No low friction surfaces (i.e. steel on steel)
- ⚠ Rubber may be required between the pallet and the deck of the truck to permit application of adequate restraint
- ✓ Use Daywalk securing bolts to attach the item to the pallet
- ✓ Bolts must be tightened to the required torque specified in Table 4
- ✓ Mounting points on the item must be strong enough to withstand the applied forces (Performance Standard + bolt torque)
- ✗ Do not apply lashings over the item - this will apply additional load to the pallet and may overload it
- ✓ Use spreader plates where required to increase the load capacity of the pallet



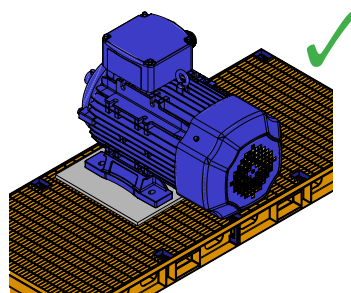
Damaged load bars



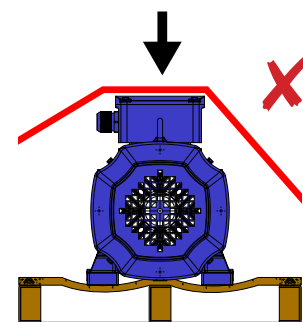
Rubber between pallet and item



Daywalk securing bolt



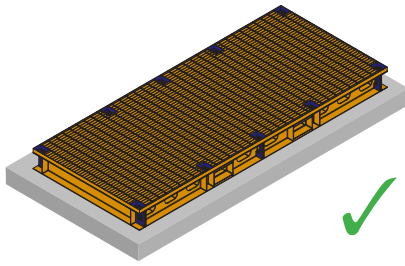
Spreader plate



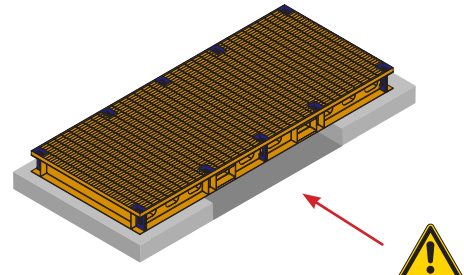
Do not lash over item

## How to Use



- ✓ Place the pallet on a rigid surface and ensure all bearers of the pallet are supported

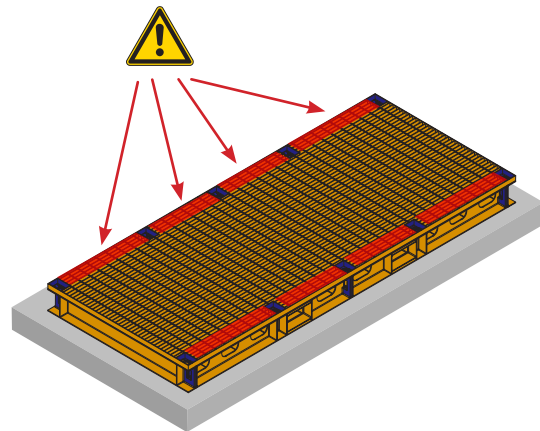
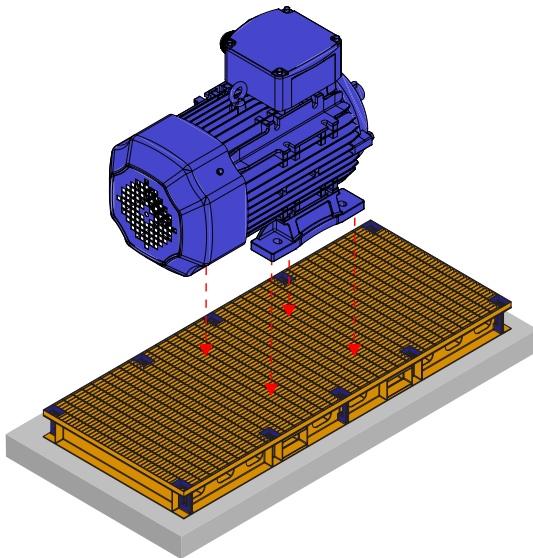


All bearers supported

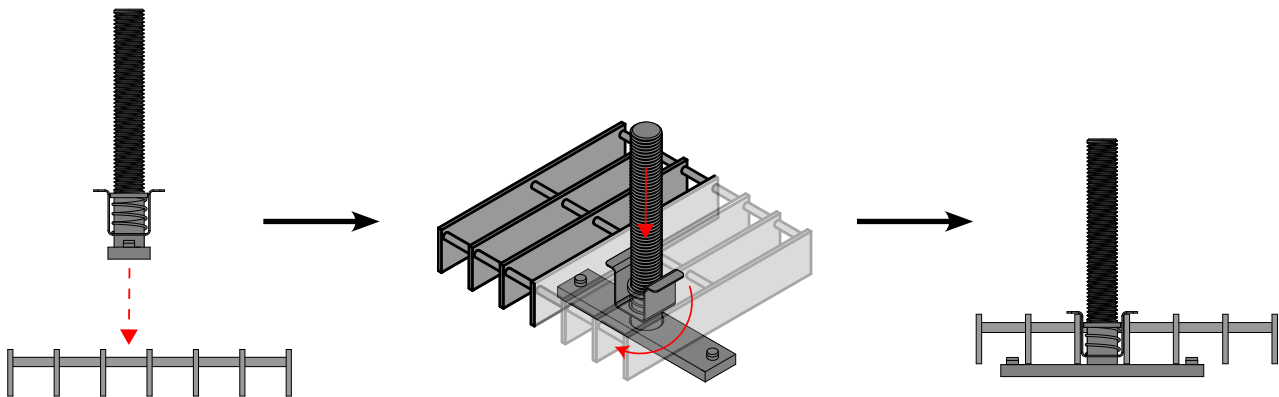


Middle bearers unsupported 

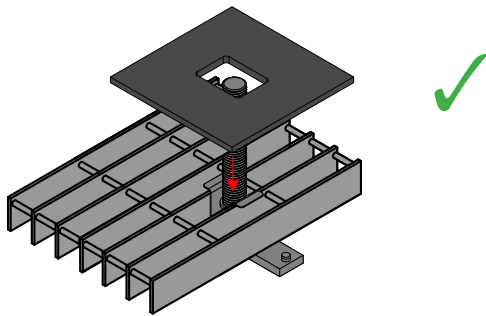
- ✓ Identify locations where securing bolts can be placed to secure the item to the pallet. The item should be placed such that the centre of gravity is centred on the pallet.
- ✓ A minimum of four bolts should be used at all times
-  If the bolt hole on the item exceeds  $\varnothing$  40mm, contact Daywalk for a larger washer
-  The load capacities identified in this document do not apply to the load bars adjacent to the lashing points - contact Daywalk for more information



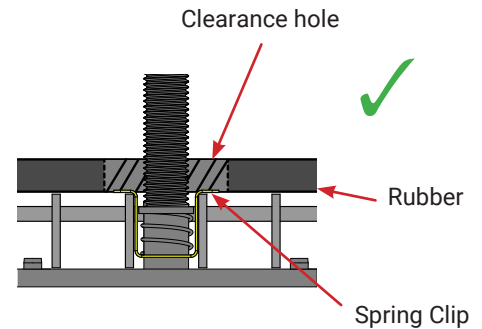
- ✓ Insert bolt between mesh, rotate and hold in place with the spring clip at each location



- ✓ Place rubber over bolt at each location
- ✓ Rubber must have a hole cut in it to clear the spring clip

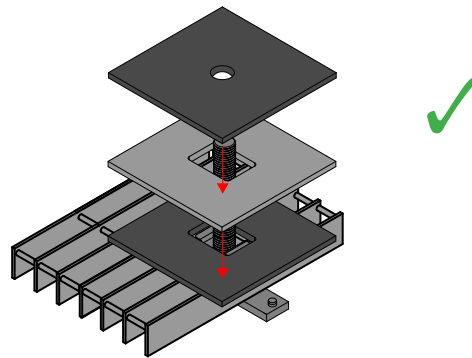


Rubber strip over bolt



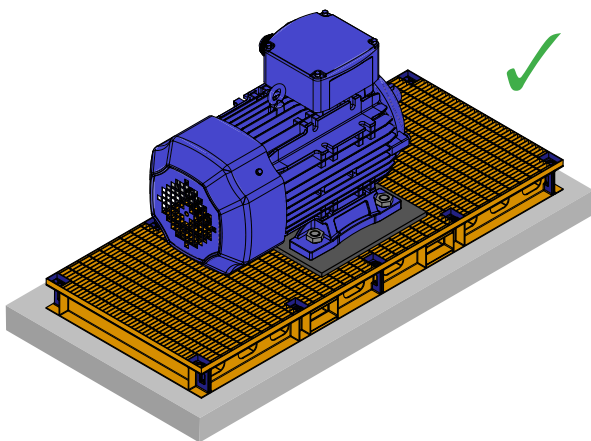
Rubber clearance

- ✓ If spreader plates are required, place spreader plate followed by another piece of rubber over bolt at each location

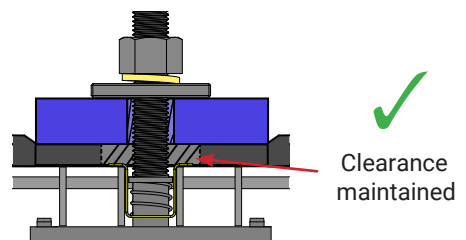


Spreader plate

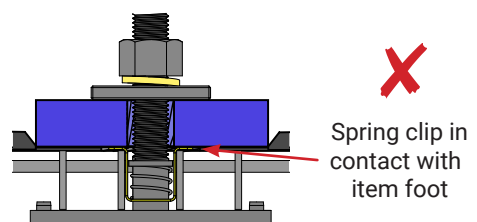
- ✓ Load item onto pallet and secure by tightening bolts to the required torque
- ✓ Rubber must have capacity to prevent contact between the item (or spreader plate) and the spring clip under the applied load



Item secured to pallet



Clearance maintained



Spring clip in contact with item foot

## Load Capacity

- ✓ The load capacity of the pallet depends on the total number of contact points and the area of each
- ⚠ Load capacity is also affected by the stability of the item - Table 1 must be read in combination with Tables 2 and 3
- ✓ The capacity of the pallet is determined by identifying the relevant value from each Table (1, 2 and 3) and taking the lesser of the three
- ✓ Refer to Table 4 for the required bolt torques
- ✓ Forklift tynes must extend the full width of the pallet

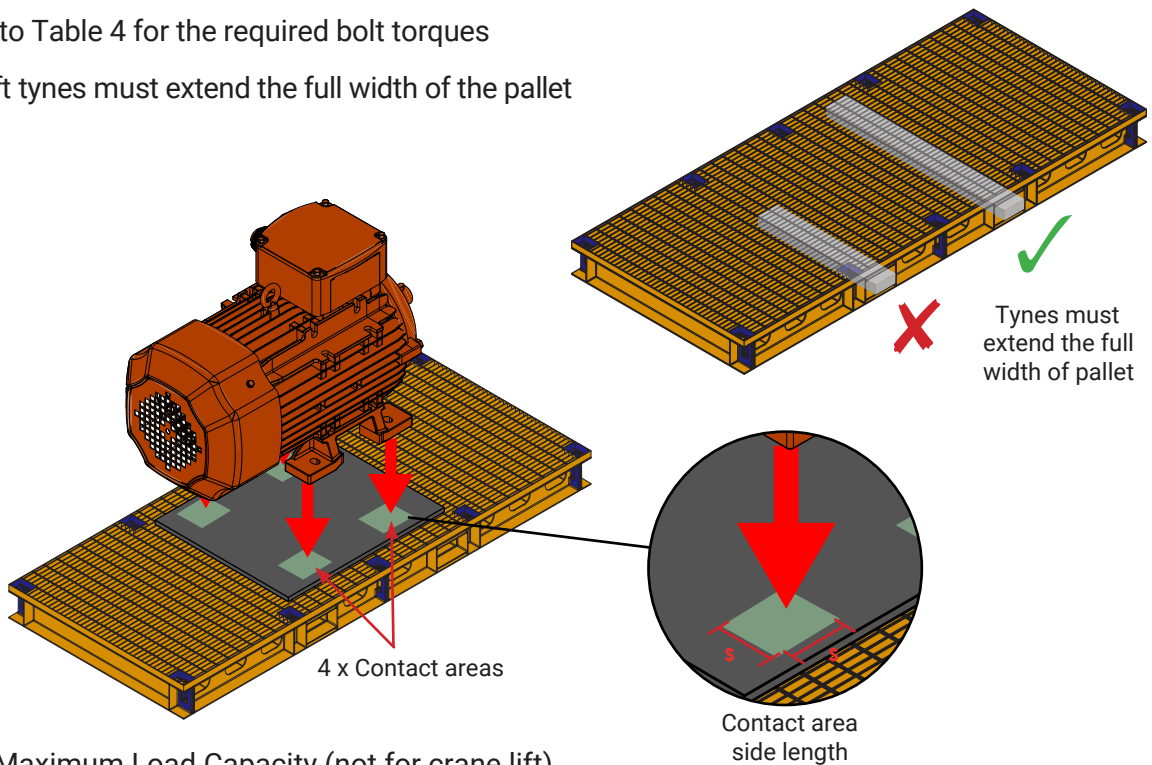
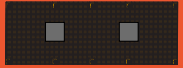
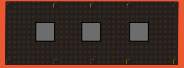
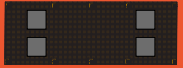
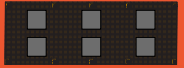


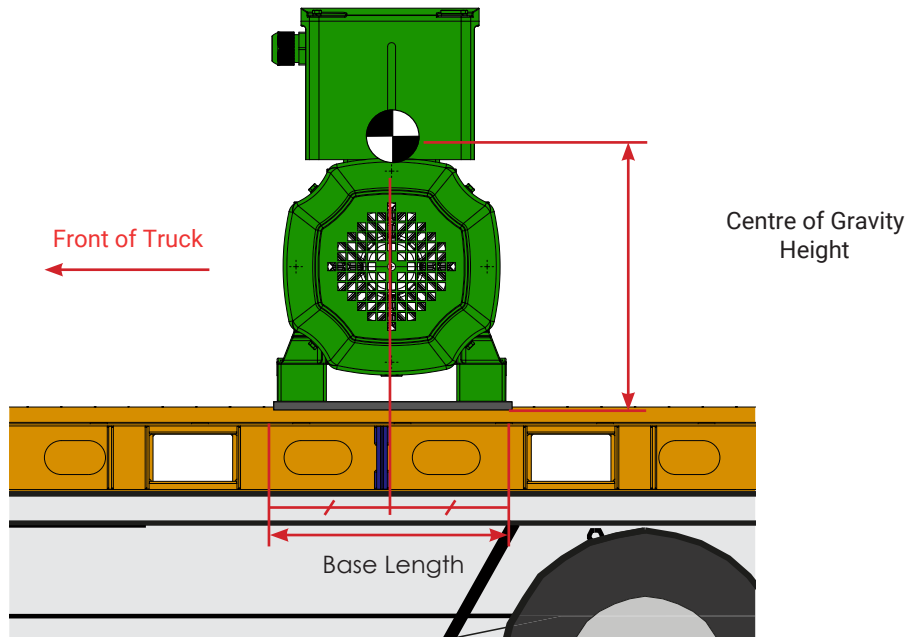
Table 1: Maximum Load Capacity (not for crane lift)

Contact Area Side Length (S)	Number of Contact Areas			
	2	3	4	6
Assumed Arrangement:				
125 - 150mm	910kg	1365kg	1820kg	2730kg
151 - 175mm	1310kg	1965kg	2620kg	3930kg
176 - 200mm	1780kg	2675kg	3565kg	5350kg
201 - 225mm	2330kg	3495kg	4660kg	6990kg
250 x 250mm spreader plate <sup>^</sup>	3625kg	5440kg	7260kg	10000kg
400 x 150mm spreader plate <sup>^</sup>	3485kg	5230kg	6970kg	10000kg
400 x 400mm spreader plate <sup>^</sup>	9310kg	10000kg	10000kg	10000kg
500 x 350mm spreader plate <sup>^</sup>	6200kg	9300kg	10000kg	10000kg

<sup>^</sup> Minimum contact area of item on each spreader plate =150 x 150mm

## Load Capacity - Load Stability

- ✓ The maximum load capacity of the pallet is also dependent on the stability of the item in the forwards and sideways directions (i.e. the base width, base length and centre of gravity height)
- ✓ Tables 2 and 3 specify the maximum pallet capacity based on load stability in the forwards and sideways directions respectively
- ⚠ Items may topple **forwards** if they have a narrow **base length**

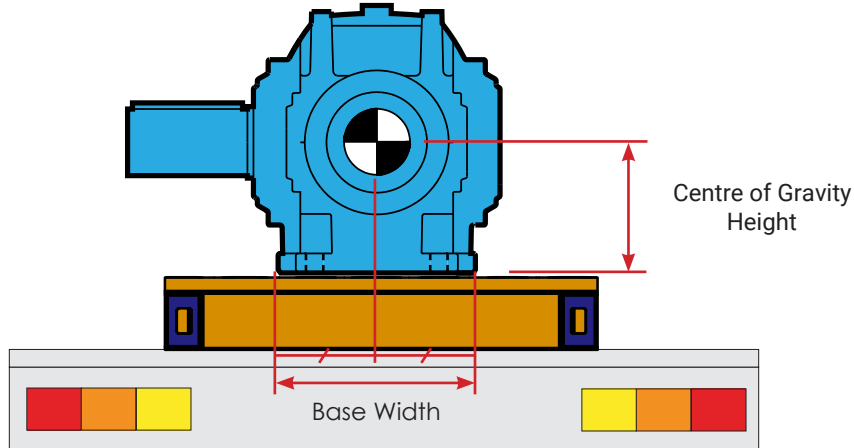


- ✓ The maximum **forwards** toppling load capacity for items with a centre of gravity at the mid point of the base length is shown in Table 2

Table 2: CoG Limitations - Forwards Toppling

Base Length	Centre of Gravity Height (mm)				
	200 - 400	401 - 600	601 - 800	801 - 1000	1001 - 1200
1001 - 1100mm	10000kg	10000kg	1175kg	550kg	355kg
1101 - 1200mm	10000kg	10000kg	2015kg	725kg	440kg
1201 - 1300mm	10000kg	10000kg	4945kg	990kg	550kg
1301 - 1400mm	10000kg	10000kg	10000kg	1430kg	690kg
1401 - 1500mm	10000kg	10000kg	10000kg	2310kg	885kg
1501 - 1600mm	10000kg	10000kg	10000kg	4945kg	1175kg
1601 - 1700mm	10000kg	10000kg	10000kg	10000kg	1650kg
1701 - 1800mm	10000kg	10000kg	10000kg	10000kg	2550kg

 Items may topple **sideways** if they have a narrow **base width**




 The maximum **sideways** toppling load capacity for items with a centre of gravity at the mid point of the base width is shown in Table 3

Table 3: CoG Limitations - Sideways Toppling

Base Width	Centre of Gravity Height (mm)				
	200 - 400	401 - 600	601 - 800	801 - 1000	1001 - 1200
400 - 500mm	10000kg	660kg	330kg	220kg	165kg
501 - 600mm	10000kg	1650kg	550kg	330kg	235kg
601 - 700mm	10000kg	10000kg	990kg	495kg	330kg
701 - 800mm	10000kg	10000kg	2310kg	770kg	460kg
801 - 900mm	10000kg	10000kg	10000kg	1320kg	660kg
901 - 1000mm	10000kg	10000kg	10000kg	2970kg	990kg
1001 - 1100mm	10000kg	10000kg	10000kg	10000kg	1650kg
1101 - 1200mm	10000kg	10000kg	10000kg	10000kg	3630kg

**Key Assumptions:**

- Contact points remain in contact with the pallet at all times
- Static coefficient of friction between rubber and item and rubber and pallet is min. 0.6
- Performance standard forces: 0.8g forwards, 0.5g rearwards and sideways and 0.2g vertical.
- Restraint is applied to the pallet only, no additional load is placed on the item (i.e. lashings do not pass over item)
- Accelerations from mobile plant do not exceed the performance standard forces
- Item weight is evenly distributed between contact areas
- Bolt torque calculated based on nut factor of 0.28

## Required Bolt Torque

- ✓ The required bolt torque for Daywalk bolts is shown in Table 4
- ⚠ Exceeding the bolt torques specified below may damage the rubber between the item and the pallet
- ✓ A spring washer must always be placed between the nut and washer plate to prevent loosening during transport

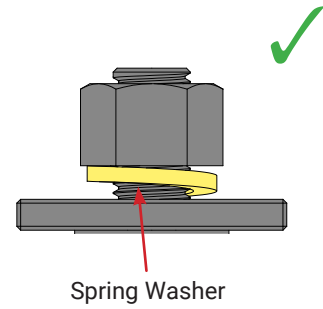
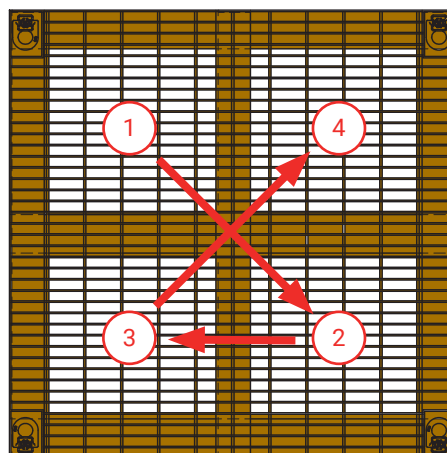


Table 4: Required Bolt Torque

Item Weight	Number of Bolts			
	2	3	4	6
0 - 2000kg	55 Nm	40 Nm	30 Nm	30 Nm
2001 - 4000kg	110 Nm	75 Nm	55 Nm	40 Nm
4001 - 6000kg	min. 3 bolts	110 Nm	85 Nm	55 Nm
6001 - 8000kg	min. 4 bolts required		110 Nm	75 Nm
8001 - 10000kg	min. 4 bolts required		140 Nm	95 Nm

## Bolt Torque Sequence

- ✓ Bolts should be torqued in a 'criss-cross' sequence over multiple passes to ensure all bolts achieve the required torque
- ✓ Incrementally increase the applied torque with each pass until the required torque is achieved



(A) Bolt Location

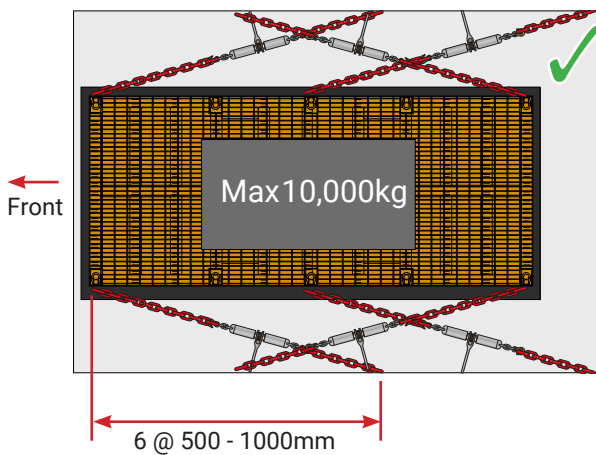
Example Bolt Torque 'Criss-Cross' Sequence



## Restraint of Pallet on Vehicle

- ✓ Restraint of the pallet to the vehicle should be per the options below
- ✓ Place anti-slip load matting (with min. coefficient of friction of 0.6 and min. load capacity of 6.0 N/mm<sup>2</sup>) or rough sawn timber (with min. coefficient of friction of 0.4) between the pallet and the deck
- ✓ Ensure the pallet is centred across the width of the truck
- ✓ Lashings must be prevented from wear
- ⚠ All items on the pallet must be adequately secured to the pallet to meet the Performance Standard forces
- ✓ Lashings must be min. 8mm transport chain with a minimum lashing capacity of 3600kg.f, conforming to AS/NZ 4344 and tensioned to a minimum pre-tension of 1000kg.f

Anti-Slip Load Matting ( $\mu=0.6$ )



Timber ( $\mu = 0.4$ )

