

# MODULE HANDLING

September' 2025



# Content

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- Secondary Packaging
- Secondary loading & dispatches
- Packaging part specification, approved vendor list for packaging and Module support structure design.

# Introduction

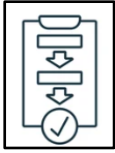
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The safe and efficient handling of solar modules is critical to maintain their performance, longevity, and warranty integrity. This document outlines the standard procedures and best practices for **inspection, unloading, handling, storage**, and **secondary transportation** of solar modules received from channel partners. Proper adherence to these guidelines ensures:

- **Minimized risk of physical damage** during transit and handling.
- **Compliance with manufacturer warranty conditions.**
- **Efficient inventory management** and traceability.
- **Safe working conditions** for personnel.

This document or presentation is applicable to all solar modules supplied by authorized channel partners and must be followed from the point of receipt to destination.

# Basic compliance - General Instructions



Follow company's unpacking procedure to unpack the PV modules.

Don't unpack or handle module on rainy, windy season or snow condition.



Wear insulating and non-slip gloves while handling the module. And do not touch any side of module with bare hand.

Do not stand, step, walk or jump on the module or packed pallet. Do not drop or place any objects on the modules (such as tools.). Also do not apply direct impact pressure to front/rear glass and back-sheet of module.



Don't move module with single person. And don't carry module on head.

To minimize the risk of electrical leakage and shock, never carry modules by grasping junction boxes or wires by hand.



Do not touch & hit the front and back of the module with any sharp objects.

# Basic compliance - General Instructions



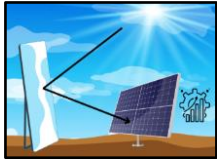
To ensure that the back-sheet does not directly contact the support structure.

Kindly keep in mind about man fatigue while unloading & transferring the modules manually.



Do not clean the glass with chemicals. Avoid exposing electrical modules and contacts to unauthorized chemicals or solvents to prevent damage, ensure long-term performance, and maintain electrical safety.

Skilled person is required in every step to avoid any damage.



Do not focus sunlight onto modules using mirrors or magnifying glasses.

If you don't remove all the modules after unpacking, place the remaining ones horizontally with proper alignment (the glass side of the lowest module facing up and the glass side of the rest of the modules facing down). The maximum piling number of modules per pallet is 15. Don't place the module directly on top of each other without paper corner.

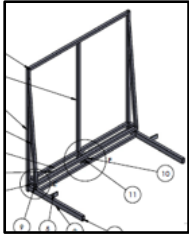


# Basic compliance - General Instructions



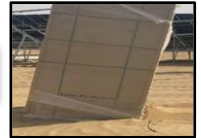
It is recommended to use art knife to remove the PET strap and wrapping film. Violent removal is prohibited to avoid scratching the module in the box.

Do not leave the module un-supported and unsecured.



Before removing the internal strapping, Pallet must be supported by supporting structure like fixed wall, other packed pallet or specially design structure.

Don't stack pallet on desert land.



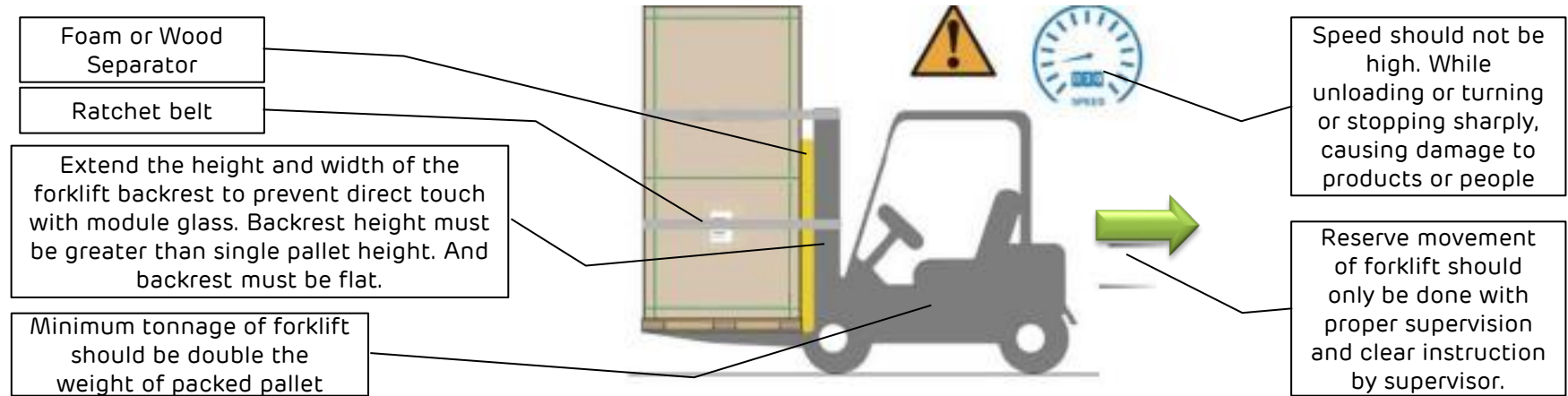
As sparks may be generated, avoid installing the module in areas where flammable gases, materials, or vapors are present.

Avoid applying paint or adhesives to both the back sheet and the front surface of the module.



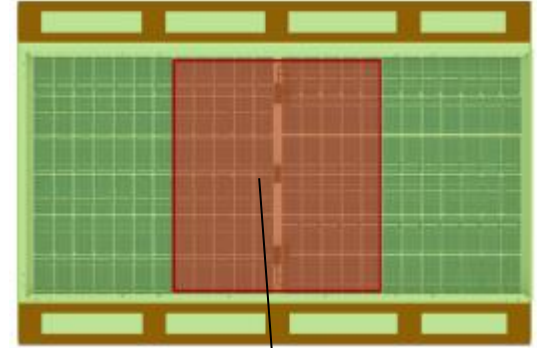
# Unloading, Handling, Movement & Storage

- To avoid forklift components from damaging the module package, it is recommended to have a foam/wood separator between the forklift components and the modules pallets. Make sure the wood separator and foam is wider than the module package.
- Ensure that the forklift's traveling and unloading process is controlled to prevent modules from falling over when turning or stopping sharply, causing damage to products or people.
- The length of the fork of forklift must be greater than 80% that of pallet length/width to avoid toppling. If it is less then extensive sleeve should be fitted over the fork of forklift before performing the activity.
- Hitting the packed pallet & module with forklift fork corner should be avoided while loading and unloading.
- Operating the forklift from the pallet's shorter side is recommended and to avoid contact with the glass side. If it is necessary to work on the glass side, ensure buffer protection material is placed beforehand to prevent damage to the internal modules caused by external forces.
- When transporting modules with a forklift, adjust the spacing between the forks as needed to ensure balanced support and prevent deflection.
- It is recommended to not lift more than 2 pallets a time by forklift.

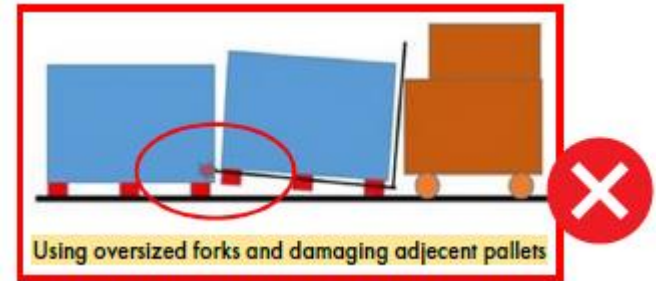
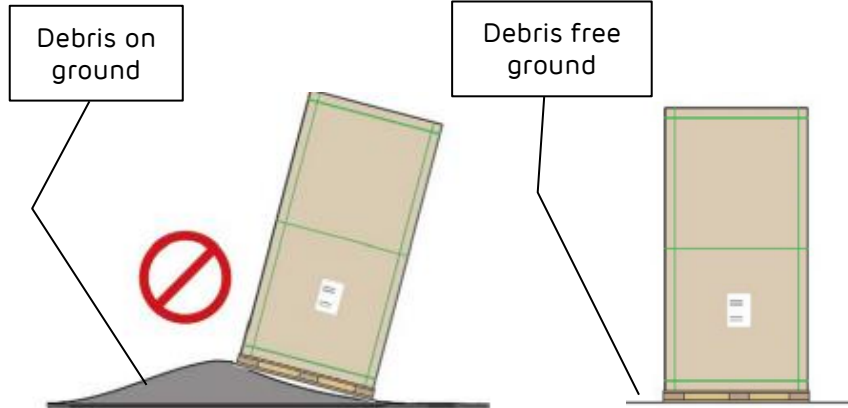


# Unloading, Handling, Movement & Storage

- The height of the container at the door is little less as compared to inside height. So, it is recommended prevent the collision of pallet at the door of container while unloading from container.
- Make sure to place the modules and packaging on a flat surface without any sharp or protruding debris to avoid tipping.
- In any case, it is not recommended to pile more than two layers of long-side horizontal packaging and short-side vertical packaging, and the piling pattern must be followed.
- Don't place the module or module pallet on soft ground that is easy to collapse. It is recommended to choose hard ground.
- Do not extend the forklift forks beyond the pallet, as this may cause damage to nearby pallets. Always inspect the surrounding area before loading or unloading.



Most sensitive part



# Unloading, Handling, Movement & Storage



Fragile, handle with care. Don't place module on their corner.



This side up.



Do not step on or sit on pallets or modules.



E - Waste Recycling. Packaging materials are re-cyclable.



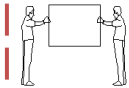
Keep the pallet or module dry.



Wheelie Bin.



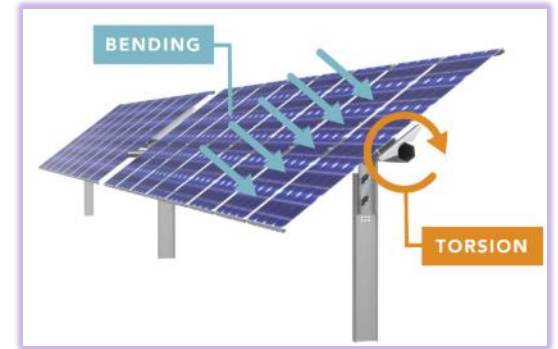
Do not stack more than 2 pallets.



Module should be handled by 2 person.

# Unloading, Handling, Movement & Storage

- Ensure that the surface of the PV module is not partially shaded. Uneven shading can cause certain cells to overheat (a phenomenon known as hot spots), potentially leading to permanent damage to the module.
- Be careful not to scratch the anodized frame coating or drill the frame.
- Don't drag the modules while unstacking.
- To prevent damage, do not apply excessive bending or twisting forces to the module.
- For long term storage, It is recommended to store the packed pallet in standard storage location or warehouse with regular inspection. If the package and modules can't be stored in warehouse or sheds, then pallets must be carefully covered with tarpaulins.
- In rainy season, ground is easily become soft, So, it is recommended to not place the module or module pallet on soft ground that is easy to collapse. It is recommended to choose hard ground. And it is recommended to cover all packed pallet with water-proof tarpaulin to prevent from moisture and water.
- There should be proper drainage system in the storage location to soaking of rainwater by packaging materials.
- In storage location, All packed pallet should be properly placed with proper alignment and proper gap between each and every pallets to prevent scratching of Sleeve box.
- During handling, completely cover the front surface of the PV modules with a dense, opaque material—such as a cardboard box—to ensure full protection.
- When moving goods out of the container port, lower the forklift height and proceed slowly. Ensure there is sufficient clearance at both the bottom and top of the container to prevent collisions. The entire pallet should be carefully and gradually removed from the container.



# Unloading SOP \_ GEN-1/GEN-2

## 1. Purpose

To define the process for unloading of packed pallets M10 144 HC Bifacial / Mono-facial modules loaded in 40'HC container.

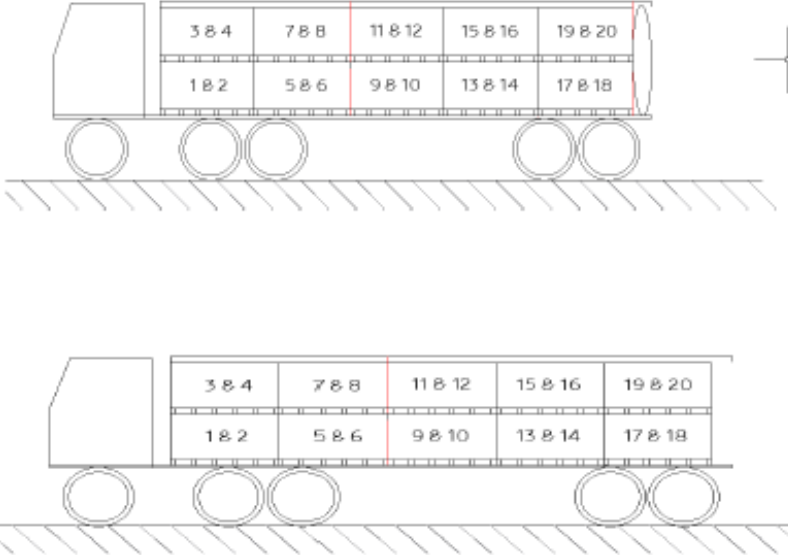
S

## 2. Scope loaded

Applicable to unload M10 144 HC Bifacial / Mono-facial modules.

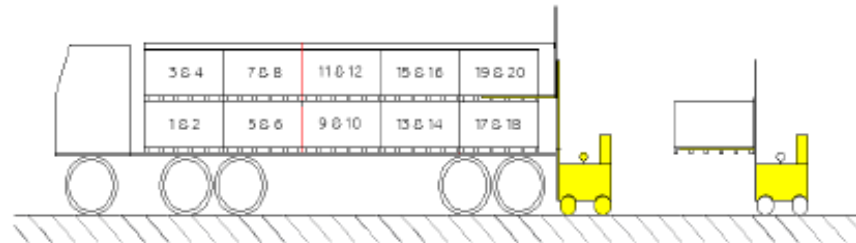
S.No.	Module Size (mm)	Packed Pallet Size (mm)	No. of Modules/Pallet	No. of Pallets /40'HC container	No. of Modules /40'HC container
1.	2266 x 1133 x 35	2293x1150x1270	31	20	620
2.	2278 x 1133 x 35	2305x1150x1270	31	20	620
3.	2266 x 1133 x 30	2293x1150x1270	36	20	720
4.	2278 x 1133 x 30	2305x1150x1270	36	20	720

# Unloading SOP \_ GEN-1/GEN-2

Equipment/ Material	Work Instructions (Steps)	Pictures	Check Points										
<ul style="list-style-type: none"><li>• Loaded Container</li><li>• Stacker/ Forklift</li><li>• Cutter</li><li>• Hand gloves</li><li>• Belt / Rope</li></ul>	<ol style="list-style-type: none"><li>1. Unseal and open the door of the container.</li>          <li>2. Cut Cord lashing with cutter &amp; remove airbag (if any)</li></ol>	 <p>The diagrams show a side view of a container on a trailer. The container has a table of numbers on its side:</p> <table border="1"><tr><td>3 8 4</td><td>7 8 8</td><td>11 8 12</td><td>15 8 16</td><td>19 8 20</td></tr><tr><td>1 8 2</td><td>5 8 6</td><td>9 8 10</td><td>13 8 14</td><td>17 8 18</td></tr></table> <p>The top diagram shows a red vertical line between the second and third columns of numbers, representing the door seal. The bottom diagram shows a red vertical line between the second and third columns of numbers, representing the cord lashing location. A crosshair symbol is located to the right of the top diagram.</p>	3 8 4	7 8 8	11 8 12	15 8 16	19 8 20	1 8 2	5 8 6	9 8 10	13 8 14	17 8 18	<p>Ensure the seal on the door is intact and proper before breaking it.</p>          <p>Ensure that the packaging box is not damaged while cutting the lashing.</p>
3 8 4	7 8 8	11 8 12	15 8 16	19 8 20									
1 8 2	5 8 6	9 8 10	13 8 14	17 8 18									

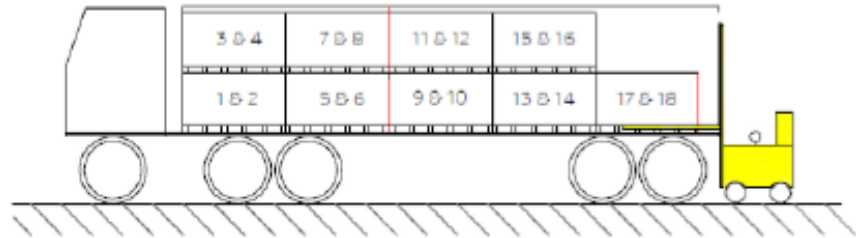
# Unloading SOP \_ GEN-1/GEN-2

3. Lift, pull-out and unload the top pallet using the forklift.



Ensure that fork should not hit or damage the pallet / box.

4. Lift pulls out and unload the bottom pallet using the forklift.



Ensure that the packaging box is not damaged while cutting the lashing.

# Unloading SOP \_ GEN-1/GEN-2

5. Pull out double stacked pallet slowly with help of rope / ratchet belt using forklift till the pallets are 1200 mm away from container door.

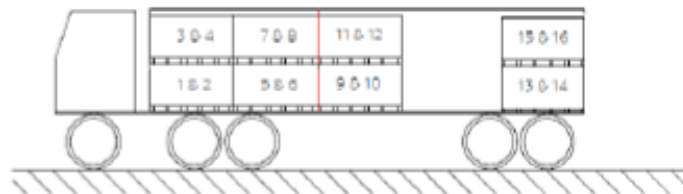
Unloading on dock rope/ ratchet belt is not required.

**Don't lift double pallets from container**

6. Repeat the activity no.3 to 4 to unload the full container



Ensure rope/ ratchet belt to be properly nodded with lower wooden pallet blocks & forklift



**Don't lift double pallets from container**

Ensure Pallet outside edge should not come out from Container floor outer edge

Ensure to pull out pallet carefully without any damage

# Unloading SOP \_ GEN-3

## 1. Purpose

To define the process for unloading of packed pallets G12R 132 HC Bifacial / Mono-facial modules loaded in 40'HC container.

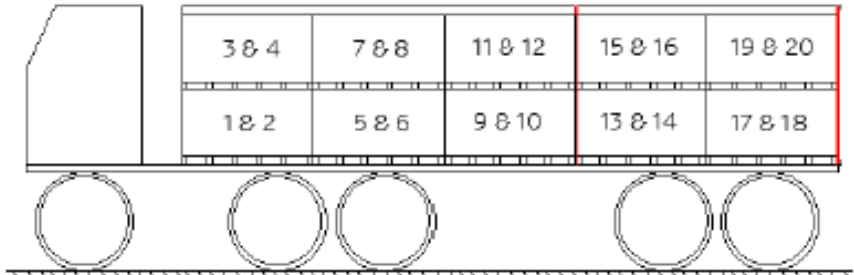
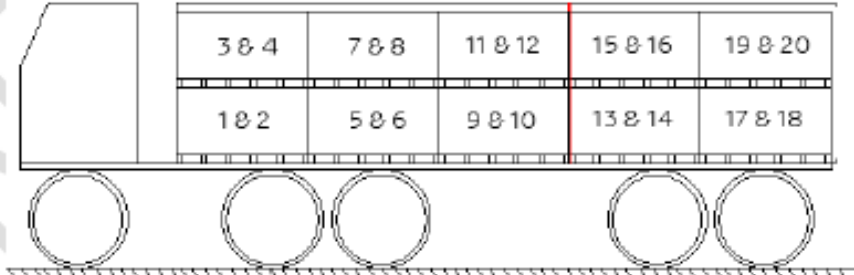
## 2. Scope loaded

Applicable to unload G12R 132 HC Bifacial / Mono-facial modules.

S.No.	Module Size (mm)	Packed Pallet Size (mm)	No. of Modules/Pallet	No. of Pallets /40'HC container	No. of Modules /40'HC container
01	2382 x 1133 x 30	2392x1150x1270	36	20	720

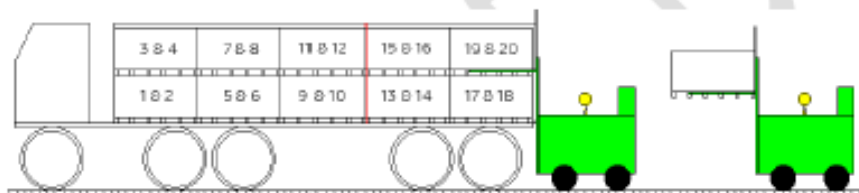
# Unloading SOP \_ GEN-3

## 3. Procedure:

Equipment/ Material	Work Instructions (Steps)	Pictures	Check Points
<ul style="list-style-type: none"> <li>• Loaded Container</li> <li>• Stacker/ Forklift</li> <li>• Cutter</li> <li>• Hand gloves</li> <li>• Belt / Rope</li> </ul>	<ol style="list-style-type: none"> <li>1. Unseal and open the door of the container.</li> </ol>		<p>Ensure the seal on the door is intact and proper before breaking it.</p>
	<ol style="list-style-type: none"> <li>2. Cut Cord lashing with cutter &amp; remove airbag (if any)</li> </ol>		<p>Ensure that the packaging box is not damaged while cutting the lashing.</p>

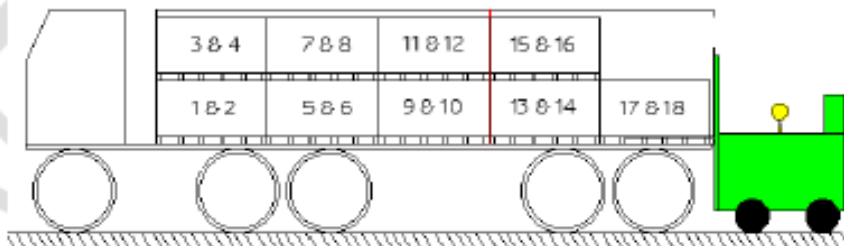
# Unloading SOP \_ GEN-3

3. Lift, pull-out and unload the top pallet using the forklift.



Ensure that fork should not hit or damage the pallet / box.

4. Lift, pull out and unload the bottom pallet using the forklift.



Ensure that the packaging box is not damaged while cutting the lashing.

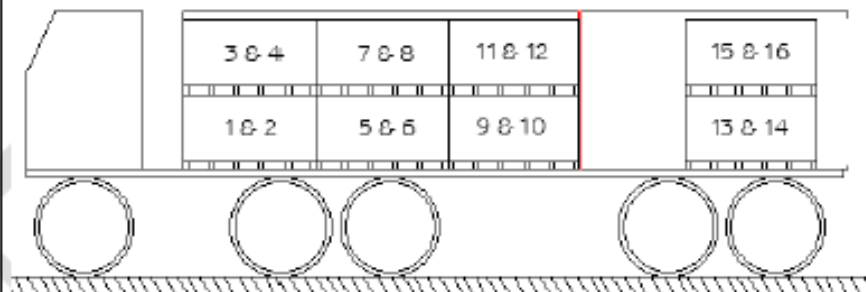
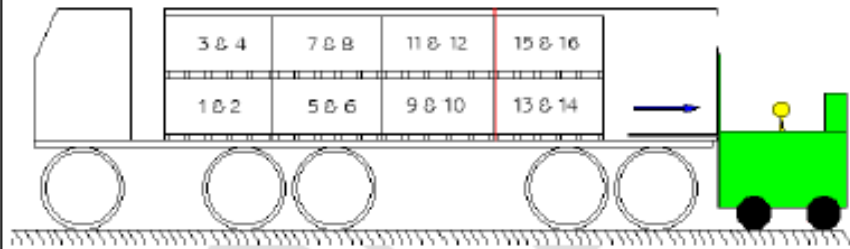
# Unloading SOP \_ GEN-3

5. Pull out double stacked pallet slowly with help of rope / ratchet belt using forklift till the pallets are 1200 mm away from container door.

Unloading on dock rope/ ratchet belt is not required.

Don't lift double pallets from container

6. Repeat the activity no.3 to 4 to unload the full container



Don't lift double pallets from container


Ensure rope/ ratchet belt to be properly nodded with lower wooden pallet blocks & forklift

Ensure Pallet outside edge should not come out from container floor outer edge

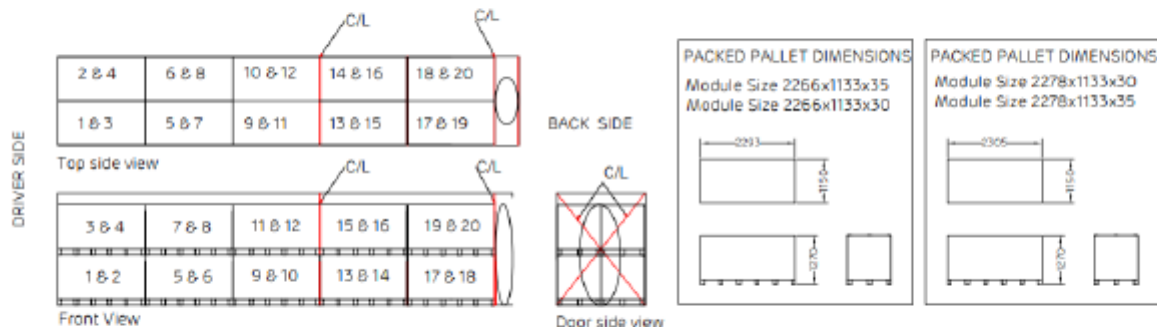
Ensure to pull out pallet carefully without any damage

NOTE: - The length of forks of the forklift or stacker (used for unloading) should be equal or greater than 80% of the length of Pallet.

# Container Stuffing Plan \_ 40' HC CONTAINER

	<b>MUNDRA SOLAR ENERGY LIMITED &amp; MUNDRA SOLAR PV LIMITED</b>	DOC NO: ANI1MRDA3093
	<b>Container stuffing Plan for 20 pallets 144 HC Bi facial / Mono facial module in 40' Container (Gen-1 &amp; Gen-2)</b>	ISSUE NO / DATE: 01/01-07-2023
		REVISION NO./ DATE:00/01-07-2023

## CSP FOR -144 CELL MODULE(Gen-1 & Gen-2), 20 PALLETS IN 40 ' H C CONTAINER



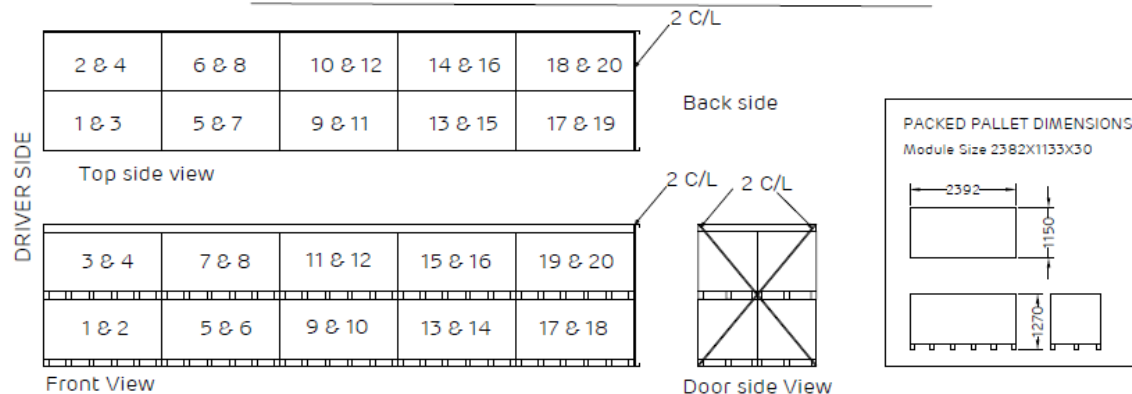
### Note:-

1. Angle board to be place under cross lashing on every corner of packed pallet.
2. Lashing to be tightened on a medium pressure, not so tight and not so loose.
3. There should be no gap in placing of pallet to pallet in container length side.
4. In case of Mix quantity of 31 Qty. & 36 Qty. pallets:-
  - A. 31 Qty. Pallet (Top) should to be place on 31 Qty. Pallet(Bottom)
  - B. 36 Qty. Pallet (Top) should to be place on 36 Qty. Pallet (Bottom).
  - C. 31 Qty. Pallet (Top) should to be place on 36 Qty. Pallet (Bottom).
  - D. 36 Qty. Pallet (Top) should not to be place on 31 Qty. Pallet (Bottom).
5. All dimensions are in mm.

Stuffing Details			
S.No	Description	(35mm)	(30mm)
1.	40' HC CONTAINER (No.)	1	1
2.	MODULE PER PALLET-(Nos)	31	36
3.	PACKED PALLET PER 40' HC CONTAINER-(Nos.)	20	20
4.	MODULE PER 40' HC CONTAINER -(Nos.)	620	720

# Container Stuffing Plan \_ 40' HC CONTAINER

## CSP FOR 20 PALLETS OF (GEN-3) MODULE IN 40' HC CONTAINER



Note:-

1. Angle board to be placed under cross lashing on every corner of packed pallet.
2. Lashing to be tightened with medium pressure, not so tight and not so loose.
3. There should be no gap between pallet while placing in length & width side.
4. There should be double cross lashing at the end.
5. All buckles of cross lashing should come above the gap between pallets.
6. All dimensions are in mm.
7. In case of Mix quantity of GEN-3 & GEN-2 pallets: -
  - A. GEN-2 Pallet (Top) should be placed on GEN-2 Pallet (Bottom).
  - B. GEN-3 Pallet (Top) should be placed on GEN-3 Pallet (Bottom).
  - C. GEN-2 Pallet (Top) should not be placed on GEN-3 Pallet (Bottom).
  - D. GEN-3 Pallet (Top) should not be placed on GEN-2 Pallet (Bottom).
8. Only below mentioned pallets combinations are allowed for stuffing: -

Sl. no.	Combinations	
1	GEN-3	GEN-3
2	GEN-2	GEN-2

9. In case of GEN-2 & GEN-3 pallet combinations and single point unloading, there should be one cross lashing after 12th pallet and one at the end. And also use air bag if there is sufficient gap between door and the end pallets.
10. In case of two point unloading, Put cross lashing and loop lashing accordingly.
11. \* For two point delivery, 40' HC Container should be used only.

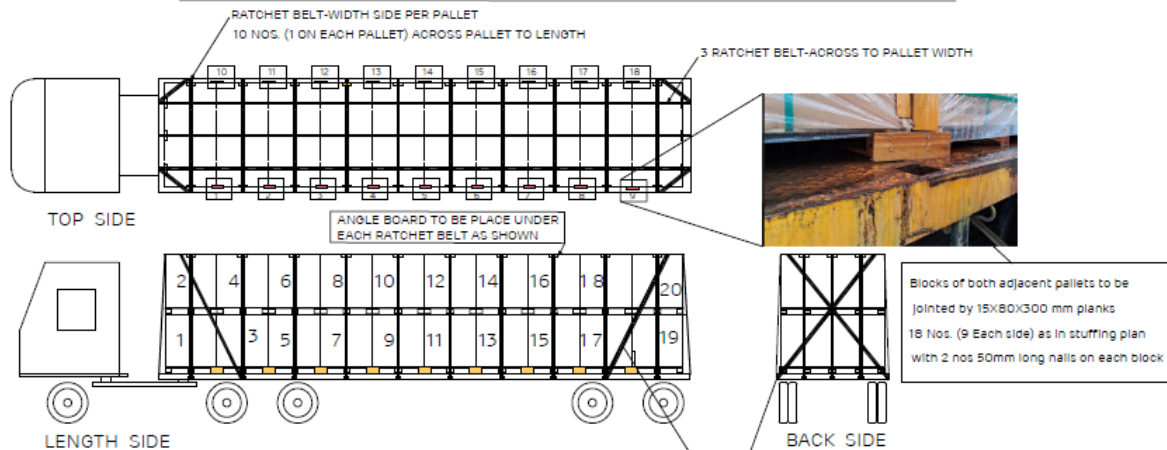
### Stuffing Details

S.No.	Description	Quantity
1.	40' HC CONTAINER (No.)	1
2.	MODULE PER PALLET (No.)	36
3.	PACKED PALLET PER 40' HC CONTAINER (No.)	20
4.	MODULE PER 40' HC CONTAINER (No.)	720

adani Solar		REV	DATE	DESCRIPTION	APPROVED BY	DATE	REVISION
ADANI SOLAR							
40' HC CONTAINER, 20*36*36 GEN-3 PALLETS PER CONTAINER							
PROJECT NO: AN17MRD03105							
PREPARED BY:	SECTION HEAD-LOGISTICS (IND)						
CHECKED BY:	SECTION HEAD-LOGISTICS (IND)						
APPROVED BY:	HOD-LOGISTICS (IND)						

# Stuffing Plan \_ OPEN TRAILER

## CSP FOR -144/132 CELL MODULE, 20 PALLETS ON 40' OPEN TRAILER



Note:-

1. Angle board to be place under ratchet belt on every corner of packed pallet.
2. Lashing to be tightened with medium pressure, not so tight and not so loose.
3. There should be no gap between pallets while placing on open trailer.
4. All pallets should be properly aligned with each other while placing on open trailer.
5. 50mm wide ratchet belt is required for lashing with open trailer in length & width side.
6. All dimensions are in mm.
7. Both end pallets (1, 2 & 19, 20) to be double strapped vertically and supported with angle boards.
8. In case of Mix quantity of GEN-3 & GEN-2 pallets: -
  - A. GEN-2 Pallet (Top) should be place on GEN-2 Pallet (Bottom).
  - B. GEN-3 Pallet (Top) should be place on GEN-3 Pallet (Bottom).
  - C. GEN-2 Pallet (Top) should not be place on GEN-3 Pallet (Bottom).
  - D. GEN-3 Pallet (Top) should not be place on GEN-2 Pallet (Bottom).
9. Only below mentioned pallets combinations are allowed for stuffing:-

Sl. no.	Combinations
1	GEN-3 (Top) / GEN-3 (Bottom)
2	GEN-2 (Top) / GEN-2 (Bottom)
3	GEN-3 (Top) / GEN-2 (Bottom)
4	GEN-2 (Top) / GEN-3 (Bottom)

\* Total number of pallets should be 20 for delivery on 40' open trailer.

10. In all above mentioned combination, All GEN-3 pallets should placed first (Driver Side).
11. \* 40' Open trailer is only valid for single point delivery.

CROSS LASHING WITH RATCHET BELT-FRONT & BACK SIDE OF PALLET  
4 NOS. (2 EACH ON FRONT & BACK PALLET) ACROSS PALLET

Important Dimensions		
S.No.	Description	Quantity
1.	40' OPEN TRAILER 12300(L)x2500(W)mm	1
2.	144/132 CELL MODULE PER PALLET (GEN-2/GEN-3)	36
3.	144/132 CELL MODULE PACKED PALLET PER 40' OPEN TRAILER (GEN-2/GEN-3)	20
4.	144/132 CELL MODULE PER 40' OPEN TRAILER (GEN-2/GEN-3)	720

adani Solar		Project Name		Project Location		Project No.		Project Date		Project Status	
adani Solar		40' OPEN TRAILER 12300(L)x2500(W)mm		GEN-2/GEN-3		AN11WDCAS188					
Prepared By:		Checked By:		Reviewed By:		Approved By:		Date:		Version:	
SECTION HEAD/SALES/REG		SECTION HEAD/SALES/REG		SECTION HEAD/SALES/REG		SECTION HEAD/SALES/REG					
APPROVED BY:		APPROVED BY:		APPROVED BY:		APPROVED BY:					

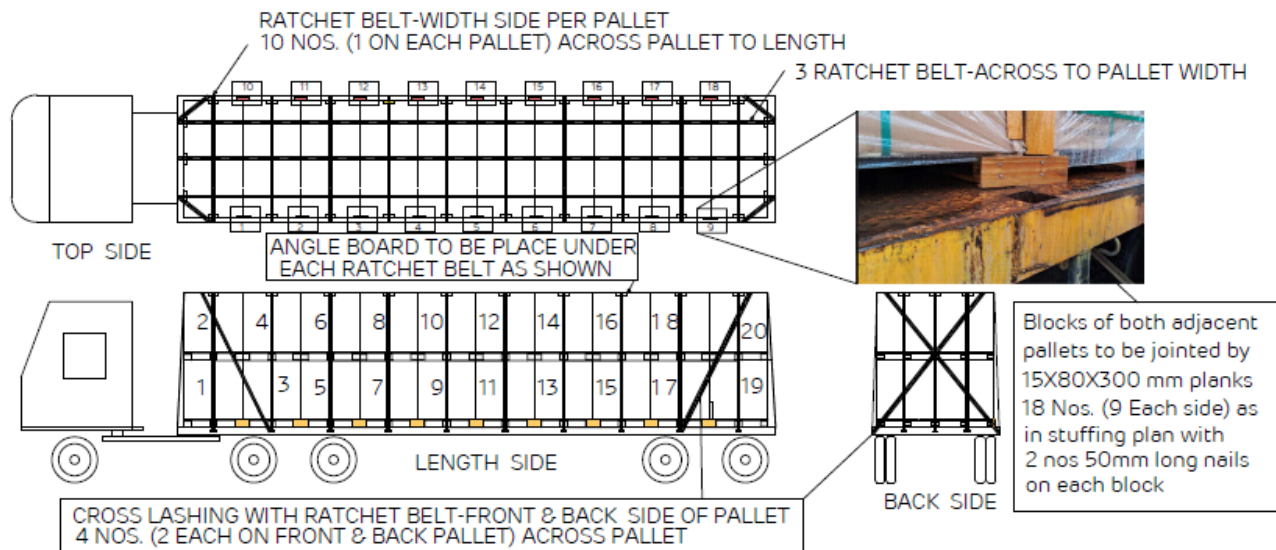
# Stuffing Plan \_ OPEN TRAILER



MUNDRA SOLAR PV LIMITED & MUNDRA SOLAR ENERGY LIMITED

Document No. / Date	ANI1MRDA3141
Issue No. / Date	01 / 03-07-2024
Rev. No. / Date	01 / 23-08-2024

CSP FOR -144 CELL MODULE, 20 PALLETS ON 40 ' OPEN TRAILER



Important Dimensions		
S.No.	Description	Quantity
1.	40' OPEN TRAILER-12300(L)x2500(W)mm	1
2.	144 CELL MODULE PER PALLET (GEN-1/GEN-2)	31/56
3.	144 CELL MODULE PACKED PALLET PER 40' OPEN TRAILER (GEN-1/GEN-2)	20
4.	144 CELL MODULE PER 40' OPEN TRAILER (GEN-1/GEN-2)	610/720

Note:-

1. Angle board to be place under ratchet belt on every corner of packed pallet.
2. Lashing to be tightened on a medium pressure, not so tight and not so loose.
3. There should be no gap in placing of pallet to pallet in length side.
4. 50mm wide ratchet belt is required for lashing with open trailer length & width side.
5. All dimensions are in mm.
6. Bottom B pallets (1,2 & 19,20) to be double strapped horizontally with angle boards on bottom side.

NOTE : THIS CSP IS FOR ONLY THIS CONSIGNMENT TO AGEL, CONTROLLED AFTER SUCCESSFUL DELIVERY

# Secondary Packaging & Dispatch & Transport from Customer End

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# Secondary Packaging methods

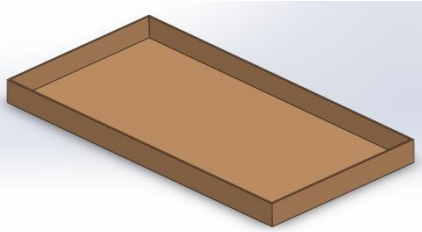
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Sl. No.	MODULE QUANTITY	PACKAGING METHOD
1.	Between 1 to 16	Tray Packaging. 2 Modules per tray (Max) 8 Trays per Pallet (Max)
2.	Between 17 to 36	Sleeve box Packaging with honeycomb sheets having size equal to module to be used as filler to fill the pallet quantity.

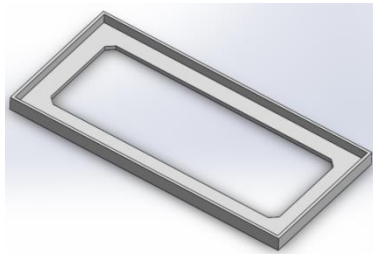
# Tray Packaging Procedure

Quantity between 1-16 MODULES

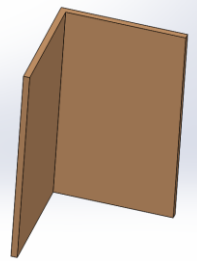
## ➤ Tray Packaging Components :-



Corrugated Tray Bottom



E. P. Foam separator bottom



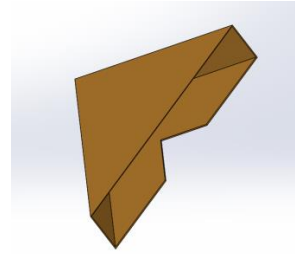
Angle board



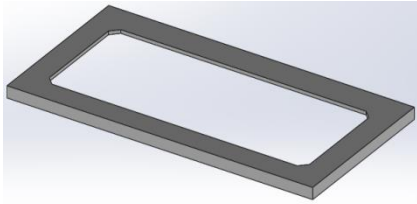
Edge Protector



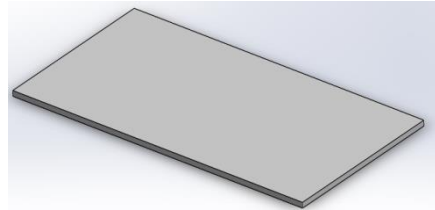
PET Strap



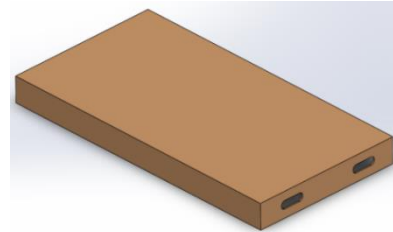
Paper corner



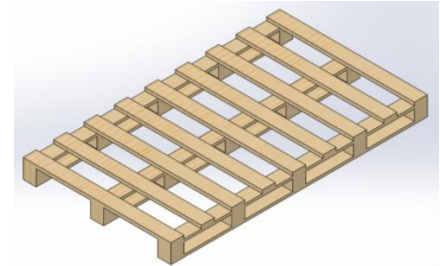
E. P. Foam separator top



E. P. Foam separator Middle

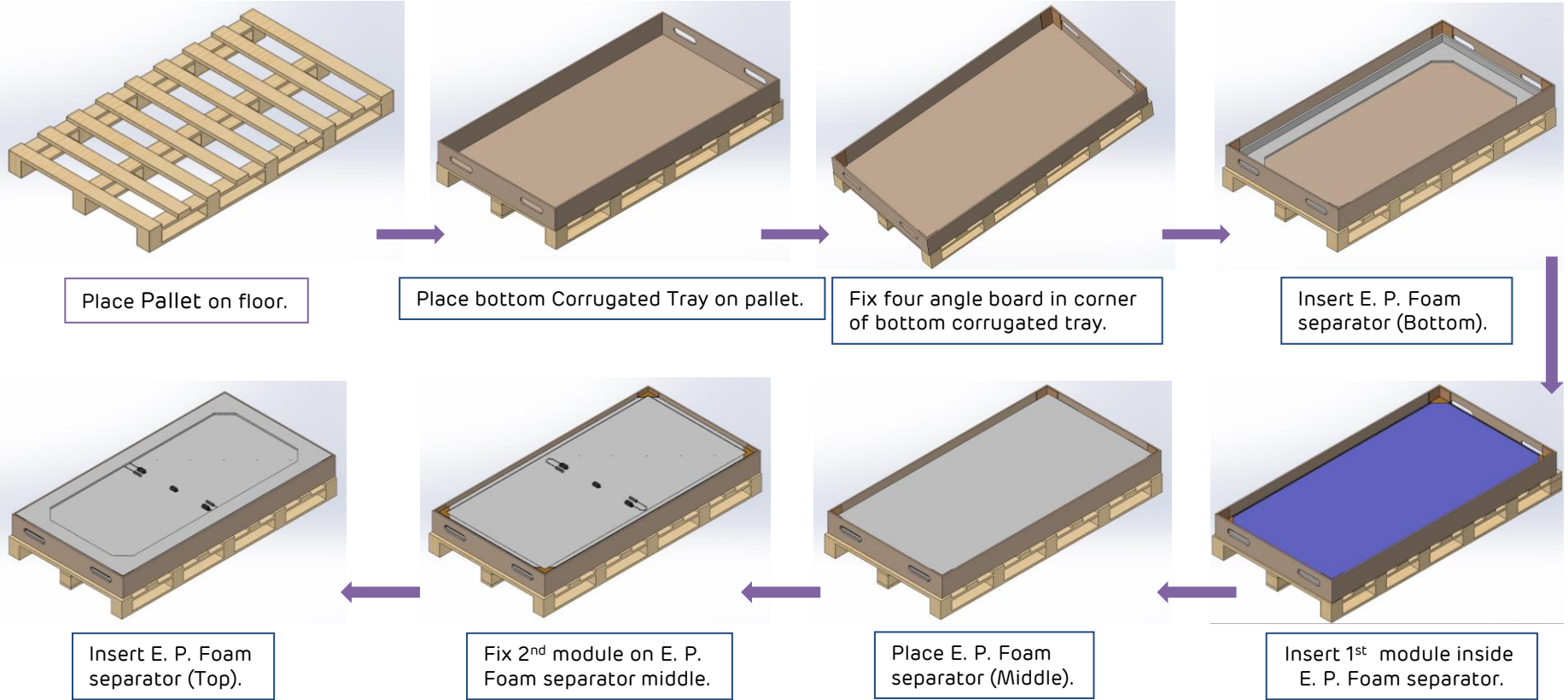


Corrugated Tray top

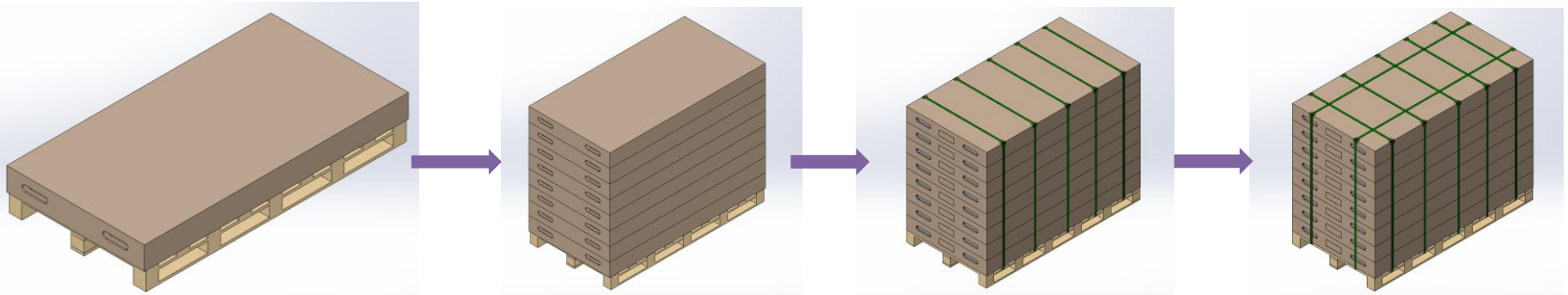


Pallet

# Tray Packaging Procedure



# Tray Packaging Procedure



Place Top Corrugated Tray on bottom Corrugated Tray.

Similarly max 16 modules can be packed in 8 tray on one pallet.

Strap all tray with pallet through plastic corners vertically 5 times at equal distance along length side.

Strap all tray with pallet through plastic corners vertically 2 times along width side.

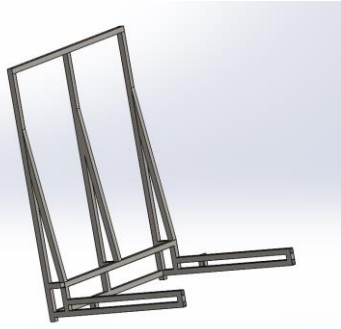
## Check Points during Tray Packaging :-

- All Trays should be aligned properly with pallet.
- Each module should have paper corner on each corner of module.
- Trays shouldn't be tilted during strapping.
- Strapping should be done straight with plastic corner, not inclined and twisted.
- Each tray should have angle board in each corner.
- Wrapping should be done according to SOP.
- Ensure that there should be no gap between layers and wrinkles while wrapping.

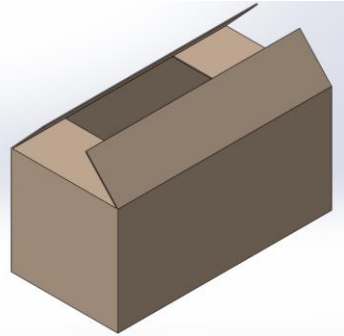
# Sleeve Box Packaging Procedure

Quantity between 17-36 MODULES

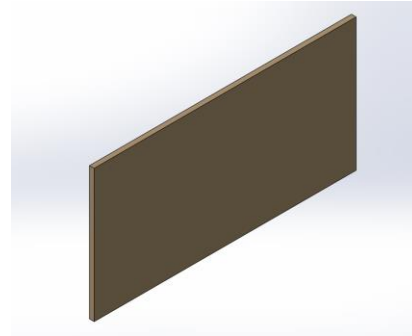
## ➤ Sleeve Box Packaging Components :-



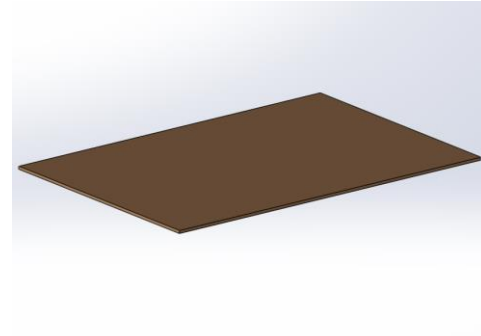
Module support structure



Sleeve Box



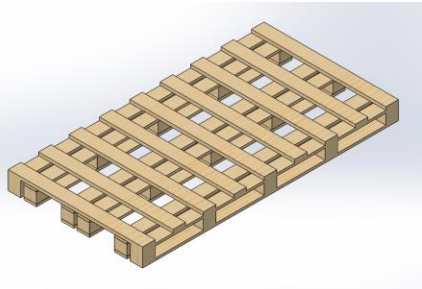
Honeycomb



Base sheet



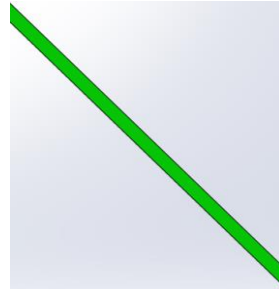
JB cover strip



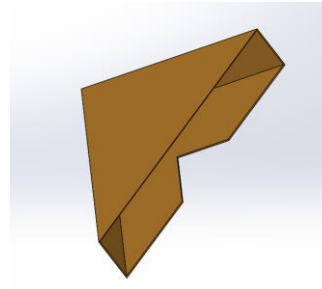
Pallet



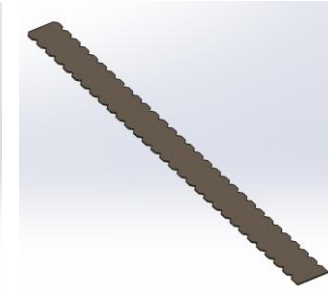
Edge Protector



PET Strap

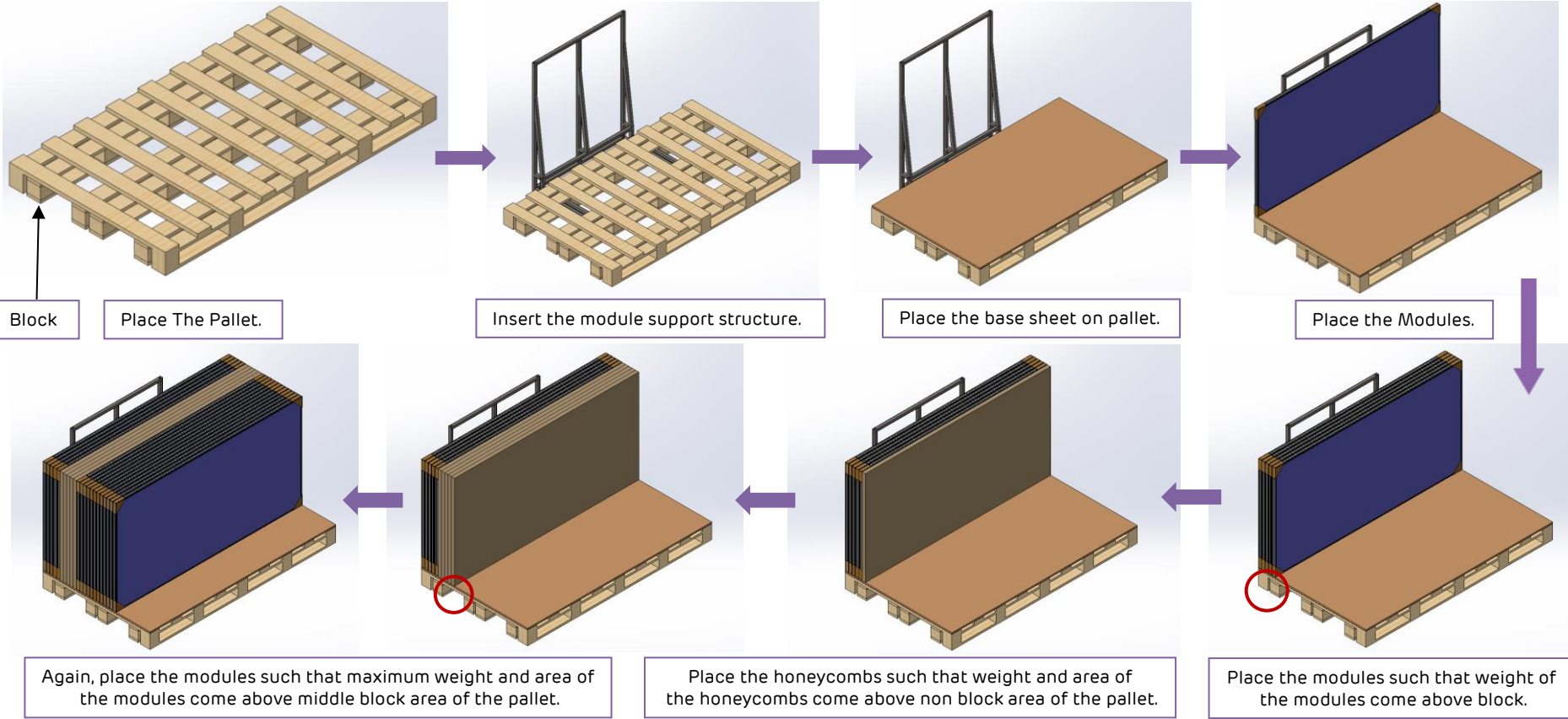


Paper corner

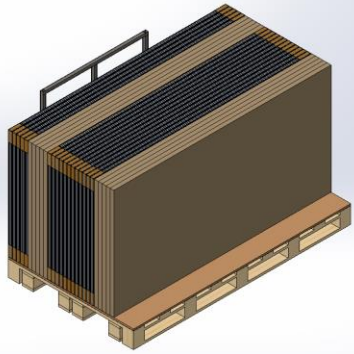


Retainer strip

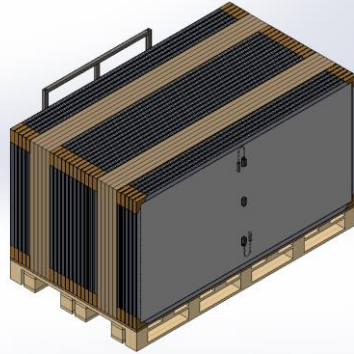
# Sleeve Box Packaging Procedure



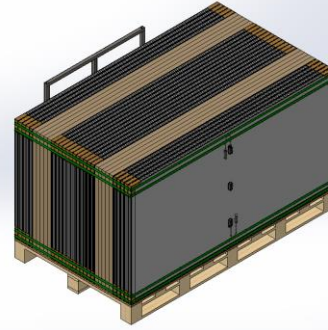
# Sleeve Box Packaging Procedure



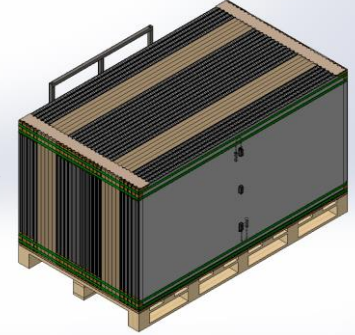
Place the honeycomb after module again.



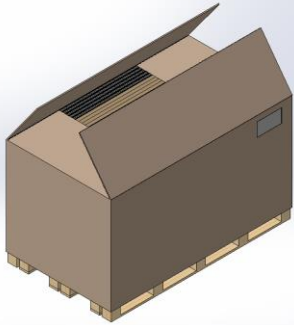
Place the module after honeycomb again.



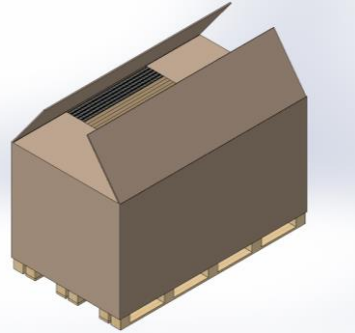
Strapping horizontally  
4 times along width side.



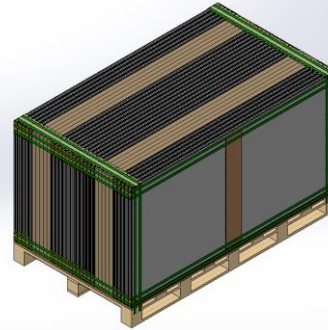
Paste 2 Retainer strips



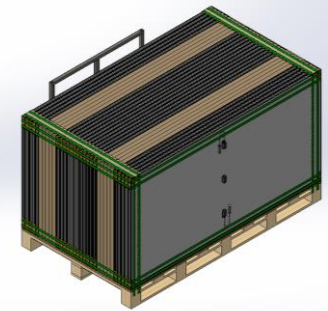
Paste HU paper on Sleeve box.



Place the Sleeve box.

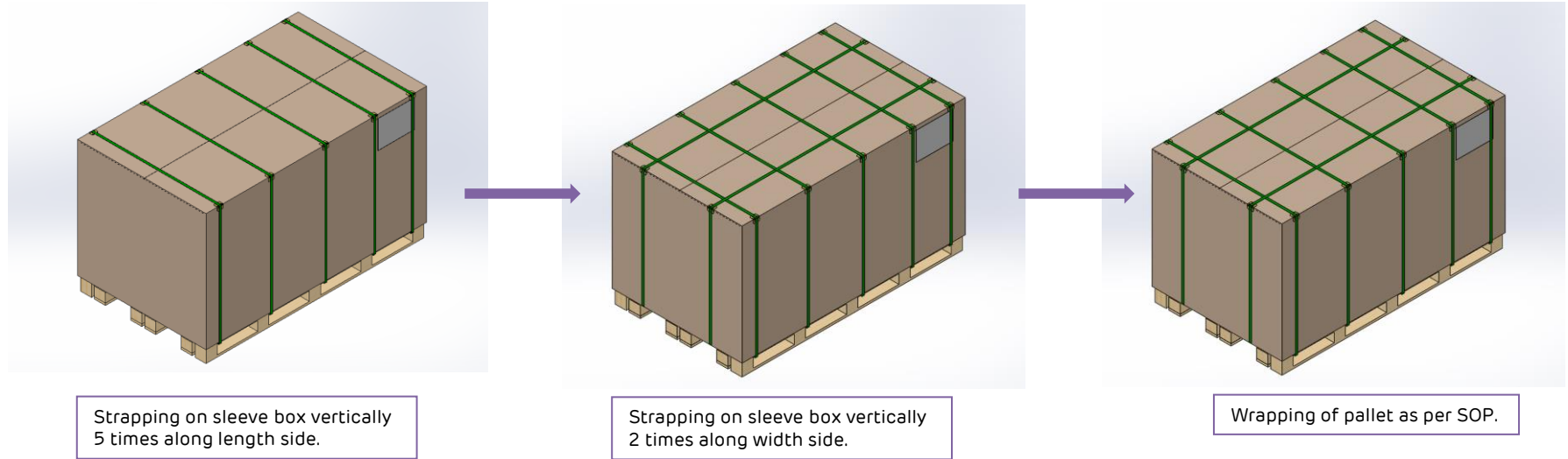


Remove the module support  
structure and place 2 JB cover strip



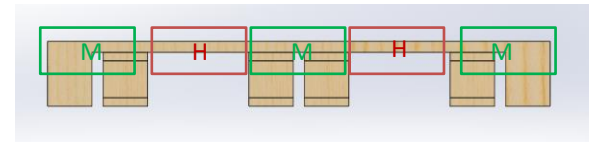
Strapping vertically 4  
times along length side.

# Sleeve Box Packaging Procedure

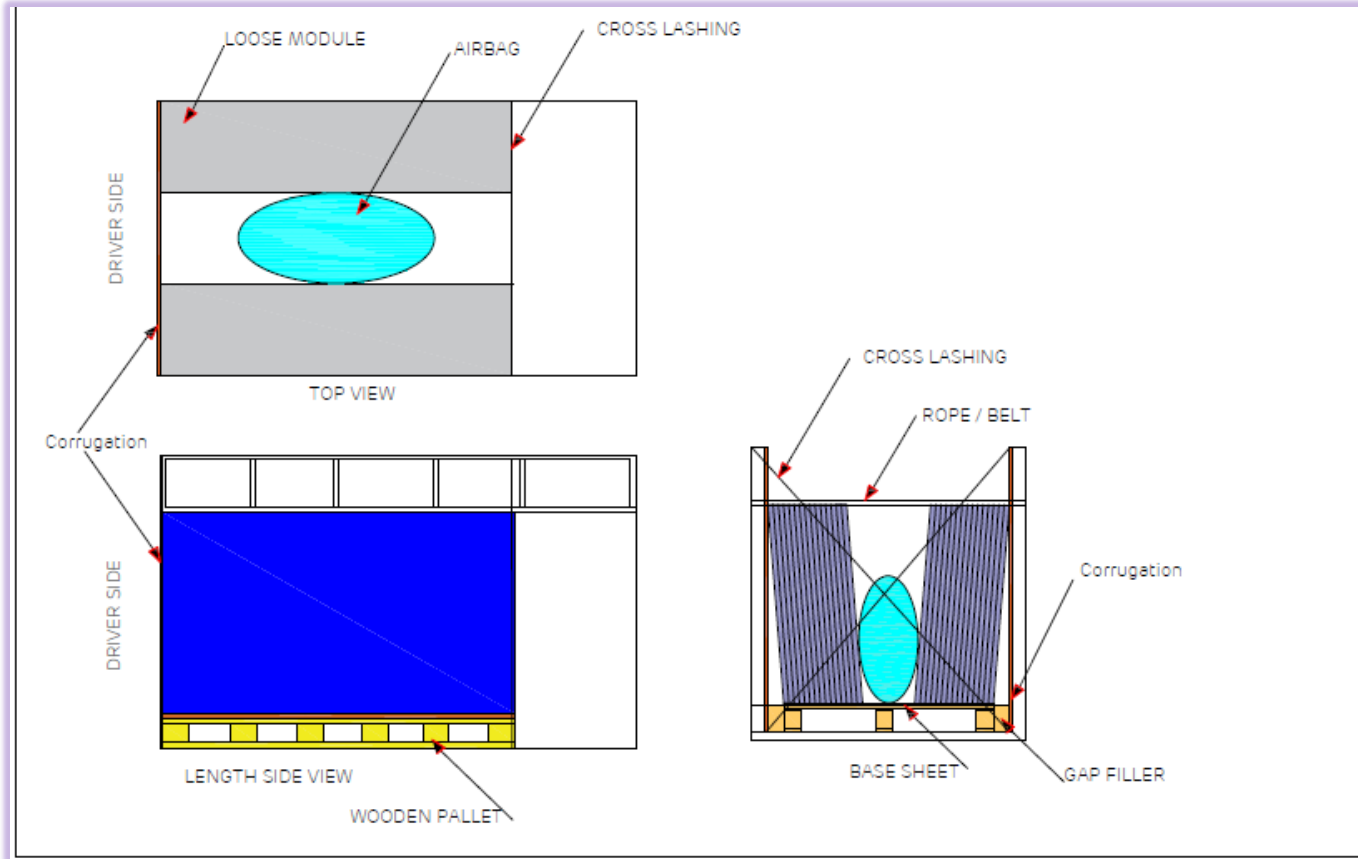


## Check Points during Sleeve Box Packaging :-

- All modules and honeycomb should be aligned properly with pallet.
- Each module should have paper corner on each corner.
- Module shouldn't be tilted during strapping.
- Strapping should be done straight with plastic corner, not inclined and twisted.
- Try to place module above [M] area and honeycomb above [H] area as shown in figure so that maximum weight of modules come above blocks and passes to floor.
- Ensure Retainer strip should be properly pasted on all paper corners of modules.



# Stuffing Plan \_ Loose Module \_ Small Vehicle



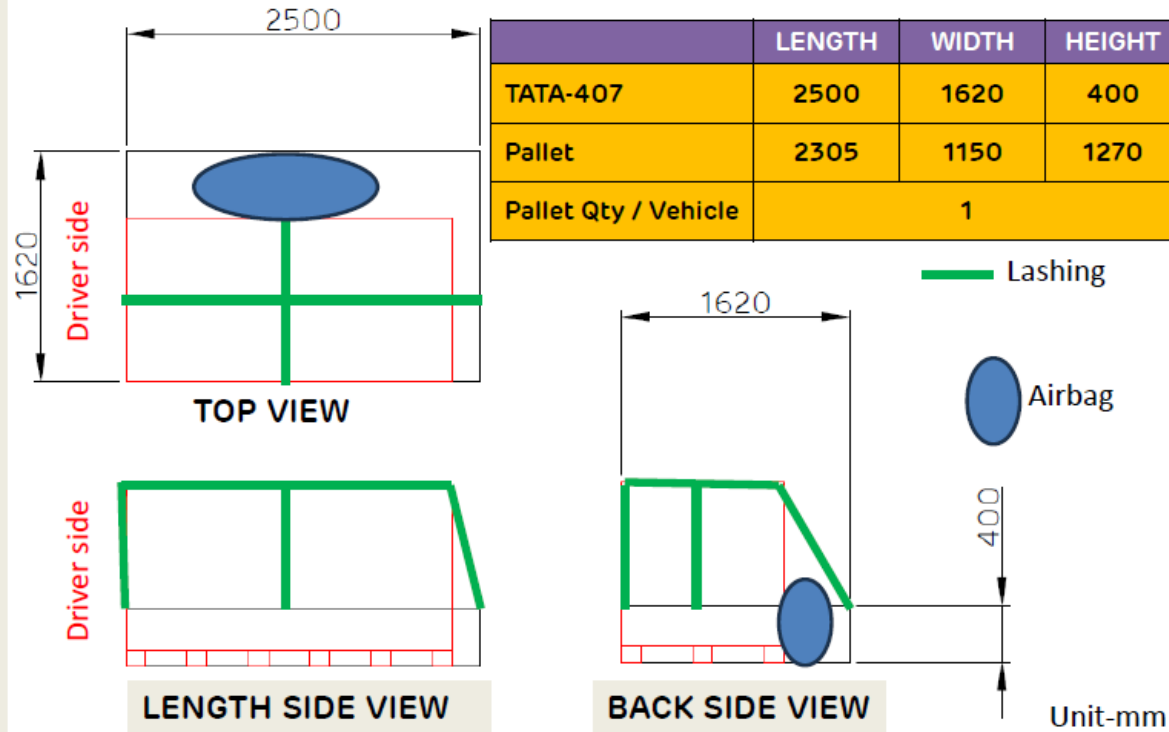
# Stuffing Plan\_ Small Vehicle

## Vehicle details & sizes

S. No.	Vehicle Type	Internal Sizes		
		Length	Width	Height
1	LEYLAND DOST	2500	1620	440
2	TATA-407	3070	1965	1835
3	TATA ACE	3800	1500	1845
4	EICHER / MAZDA 14'	6485	2255	2920
5	EICHER-17'	5185	2135	2135
6	EICHER-19'	5795	2135	2135
7	EICHER-22'	6710	2288	2135

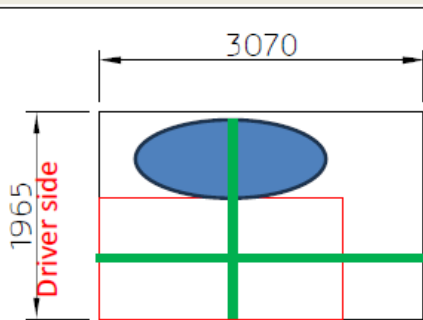
# Stuffing Plan\_ Small Vehicle

## LAYLAND DOST

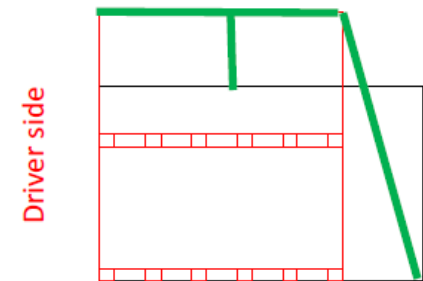


# Stuffing Plan\_ Small Vehicle

TATA-407

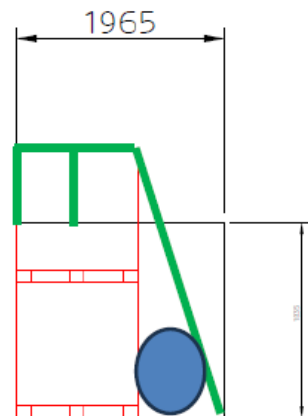


TOP VIEW




LENGTH SIDE VIEW

DESCRIPTION	LENGTH	WIDTH	HEIGHT
TATA-407	3070	1965	1835
Pallet	2305	1150	1270
Pallet Qty / Vehicle	2		



BACK SIDE VIEW

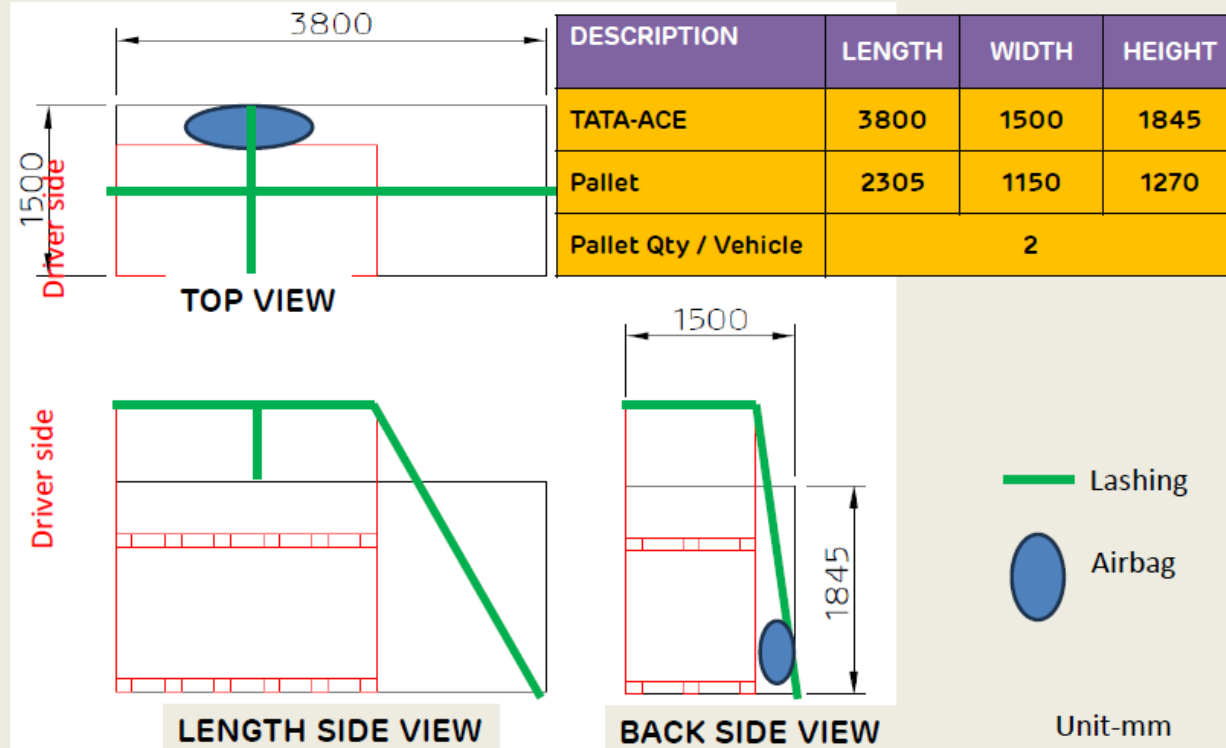
 Lashing

 Airbag

Unit-mm

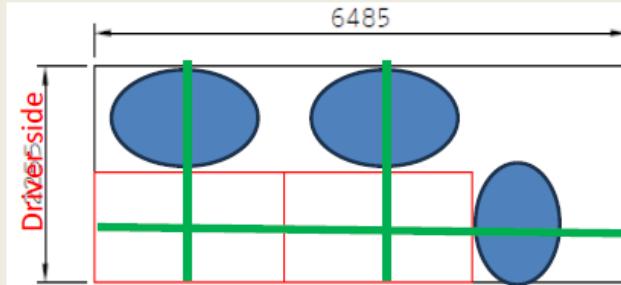
# Stuffing Plan\_ Small Vehicle

TATA ACE

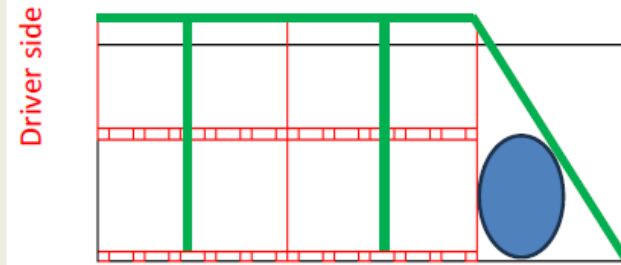


# Stuffing Plan\_ Small Vehicle

## EICHER / MAZDA 14'

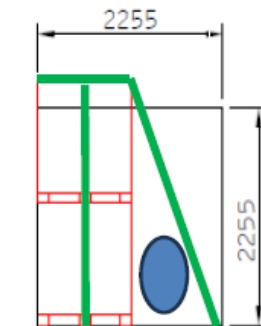


TOP VIEW

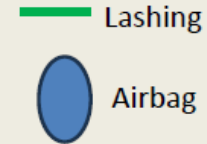


LENGTH SIDE VIEW

DESCRIPTION	LENGTH	WIDTH	HEIGHT
EICHER / MAZDA 14'	6485	2255	2920
Pallet	2305	1150	1270
Pallet Qty / Vehicle	4		



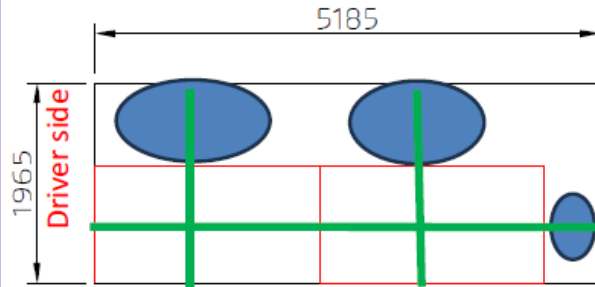
BACK SIDE VIEW



Unit-mm

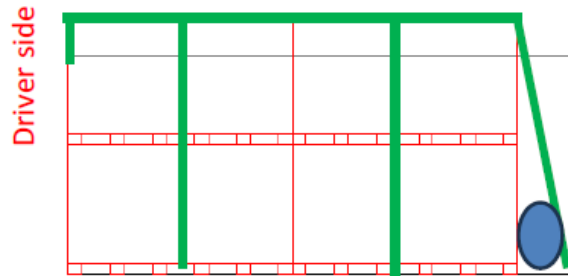
# Stuffing Plan\_ Small Vehicle

EICHER 17'

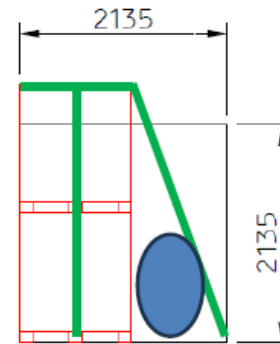


TOP VIEW

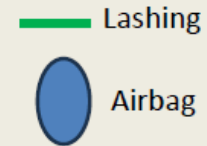
DESCRIPTION	LENGTH	WIDT H	HEIGHT
EICHER 17'	5185	2135	2135
Pallet	2305	1150	1270
Pallet Qty / Vehicle	4		



LENGTH SIDE VIEW



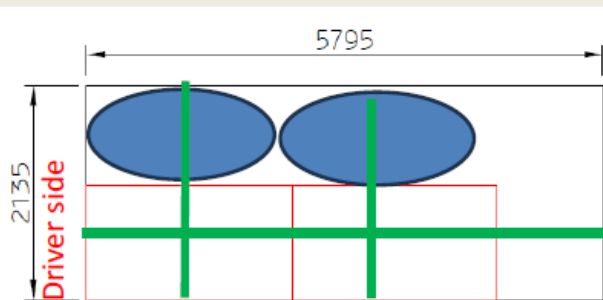
BACK SIDE VIEW



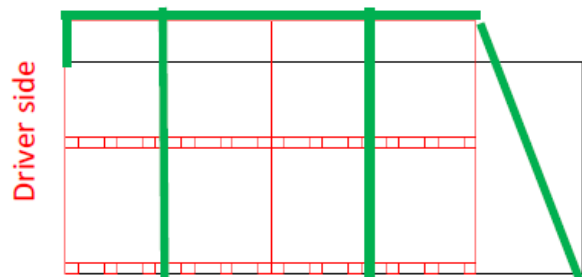
Unit-mm

# Stuffing Plan\_ Small Vehicle

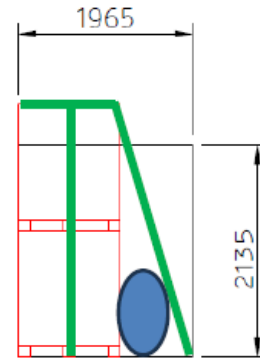
EICHER 19'



TOP VIEW

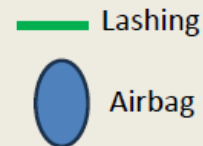


LENGTH SIDE VIEW



BACK SIDE VIEW

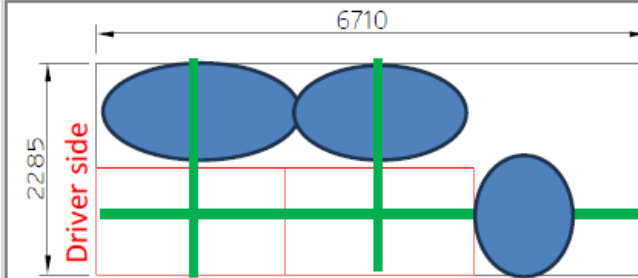
DESCRIPTION	LENGTH	WIDT H	HEIGHT
EICHER 19'	5795	2135	2135
Pallet	2305	1150	1270
Pallet Qty / Vehicle	4		



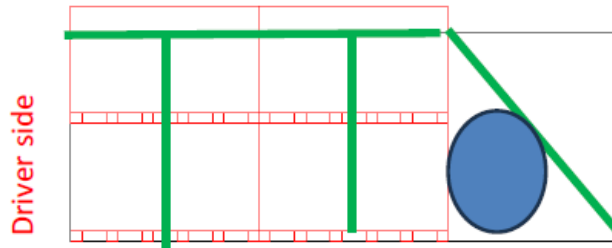
Unit-mm

# Stuffing Plan\_ Small Vehicle

## EICHER 22"

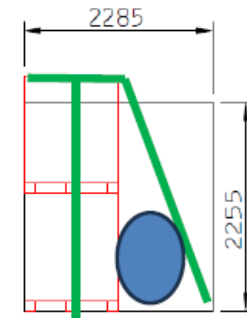


TOP VIEW



LENGTH SIDE VIEW

DESCRIPTION	LENGTH	WIDTH	HEIGHT
EICHER 22'	6710	2285	2255
Pallet	2305	1150	1270
Pallet Qty / Vehicle	4		



BACK SIDE VIEW



Unit-mm

# Secondary Loading & Dispatch Instructions

- It is recommended to use PET Strap as per Adani specification for strapping the pallet for secondary dispatch from customer end.
- It is not recommended to double stake the pallets while transporting with small trucks. Please fix the pallets to the vehicle using rope.
- Driving speed should be controlled according to road condition.
- While placing pallets on trucks, it is recommended to place the pallet in such a way that there will be no gap between the pallets. And use airbags if there is gaps.
- Don't allow the pallets to exceed the loading area of transport vehicle.
- The transshipment of the packing box must be completed before removing the outer packing case. After unpacking, the item should not be transhipped without proper protection of the packaging material. It must be repackaged before further transportation, or, if necessary, moved manually over a short distance as a single piece.
- When transporting modules, choose a smooth and even route to prevent damage or cracks caused by bumps, collisions, compression, tilting, or other factors. Modules should always be transported over flat ground.

**Not Recommended**



# Packaging Material Specifications

## Corrugated Sleeve box

Individual Paper Details		GSM	TOLERANCE	BF	PAPER TYPE
		440	(±) 5%	40	Imported KLB
		180	(±) 5%	24	Indian (HTPL)
		180	(±) 5%	24	Indian (HTPL)
		180	(±) 5%	24	Indian (HTPL)
440	(±) 5%	40	Imported KLB		
Individual Paper COBB (g/m <sup>2</sup> )	440	Front (30-60) g/m <sup>2</sup>			
	180	Front (30-40) g/m <sup>2</sup>			
Individual Paper RCT (kgf)	440	73.33 Kgf (+/- 5%)			
	180	29.30 Kgf (+/- 5%)			
Individual Paper B.S. (kg/cm <sup>2</sup> )	440	14.08 Kg/cm <sup>2</sup> (+/- 5%)			
	180	4.8 Kgf (+/- 5%)			
No. of Ply		5			
Flute Type		A-C			
Board thickness (mm)		9 mm (±0.5)			
Board Edge crush (kN/m)		>23.0 kN/m			
Board B.S. (kg/cm <sup>2</sup> )		>30 kg/cm <sup>2</sup>			
Moisture content (%)		8 ± 2			
Board COBB (g/m <sup>2</sup> )		..Front(Below 145 g/m <sup>2</sup> )	..Beck (Below 145 g/m <sup>2</sup> )		

## Paper corner

- \*Thickness - 0.36±0.02 mm
- \*Material /\* gsm/BF:- Kraft Liner (Brown) / 260±5%/40BF.

## PET Strap

### Strap Specifications

PET strap

Color-green

Width - 15.62 ±0.64mm

Thickness - 1.0±0.05mm

Break Load - 656(±5%)Kgf minimum

Elongation (%) - 10-15

## Wrapping Film

Sl.No.	Parameter	Unit	Specifications
01.	Material	-----	mm
02.	Film Width	mm	500±5
03.	Film Thickness	Micron	51±5
04.	Cling	-----	To be stick to previous layer
05.	Elongation(MD)	%	450 (min)
06.	Elongation(TD)	%	450 (min)
07.	Tensile(MD)	Mp	40 (min)
08.	Tensile(TD)	Mpa	25 (min)
11.	Core ID	mm	76
12.	Telescoping	-----	mm
13.	Stretchability	%	150
14.	Color	-----	Natural Transparent
15.	Splice	-----	Nine

# Packaging Material Specifications

## Base-Sheet

Individual Paper Details		GSM	TOLERANCE	BF	PAPER TYPE
		440	(±) 5%	40	Imported KLB
		180	(±) 5%	24	Indian (HTPL)
		180	(±) 5%	24	Indian (HTPL)
		180	(±) 5%	24	Indian (HTPL)
		180	(±) 5%	24	Indian (HTPL)
		440	(±) 5%	40	Imported KLB
Individual Paper COBB (g/m <sup>2</sup> )	440	Front (30-60) g/m <sup>2</sup>			
	180	Front (30-40) g/m <sup>2</sup>			
Individual Paper RCT (kgf)	440	73.33 Kgf (+/- 5%)			
	180	29.30 Kgf (+/- 5%)			
Individual Paper B.S. (kg/cm <sup>2</sup> )	440	14.08 Kg/cm <sup>2</sup> (+/- 5%)			
	180	4.8 Kgf (+/- 5%)			
No. of Ply		7			
Flute Type		A-A-A/A-C-A			
Board thickness (mm)		15 mm (±0.5)			
Board Edge crush (kN/m)		>28.0 kN/m			
Board B.S. (kg/cm <sup>2</sup> )		>50.5 kg/cm <sup>2</sup>			
Moisture content (%)		8 ± 2			
Board COBB (g/m <sup>2</sup> )		..Front(Below 145 g/m <sup>2</sup> )	..Back (Below 145 g/m <sup>2</sup> )		

## Wooden Pallet

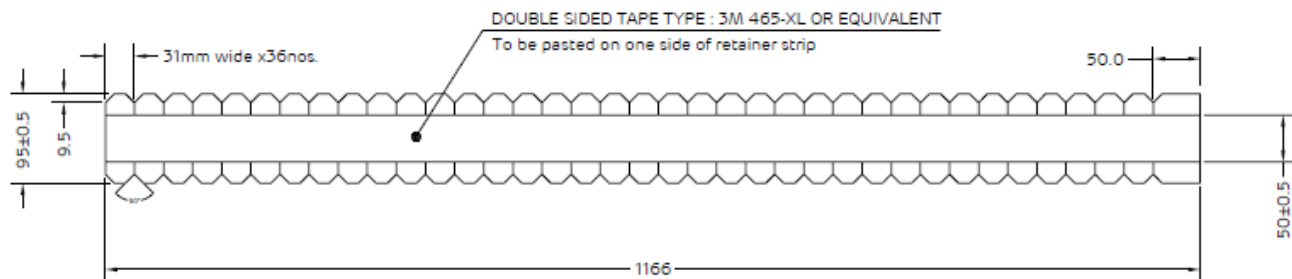
Nail (Screw Type) Specification		Nail (Generic) Specification	
Name	Screw Shank (1)	Name	Generic(2)
Wire	Drawn from HB Wire	Wire	Drawn from HB Wire
Tip	Diamond Tipped	Tip	Diamond Tipped
Head Dia.	6.5 - 5.5 mm	Head Dia.	6.0 - 5.0 mm
Length	80±3mm	Length	40±3mm
Shank Dia.	2.8±0.20mm	Shank Dia.	2.45±0.20mm

Type of Wood	Pinewood / Country wood
Liftable	4 Way
Style	Euro
Treatment	Seasoned and Heat Treated
Moisture Contents	<20%
Compliance to Standard	ISPM-15
Types of Nail & Total no. of Nails / Pallet	1. Screw/ Barbed (Plank with Block) Top side =5/Block
1.Screw Type-180. 2.Generic Nail- 75	1. Screw/ Barbed (Plank with Block) Bottom side =5/Block
Material of Nails Stainless Steel SS-304	2. Generic (Plank with Plank) 5/plank Joint

# Packaging Material Specifications

## Retainer Strip

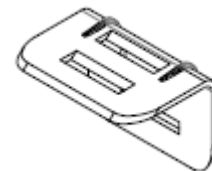
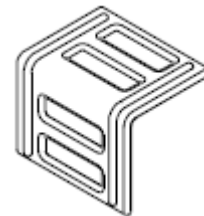
RETAINER STRIP FOR 30mm frame module



### NOTES:

1. MATERIAL : SINGLE WALL 1.4 N/mm<sup>2</sup> (200lbs/inch<sup>2</sup>)  
MINIMUM BURSTING TEST
2. NO OF PLY AND FLUTE TYPE: 3PLY AND "E" FLUTE
3. PAPER GSM: 180,150,180
4. CORRUGATION DIRECTION : HORIZONTAL
5. DOUBLE SIDED TAPE TYPE : 3M 465-XL OR EQUIVALENT

## Plastic Edge Protector



# Approved Vendor List

## For Packaging Material

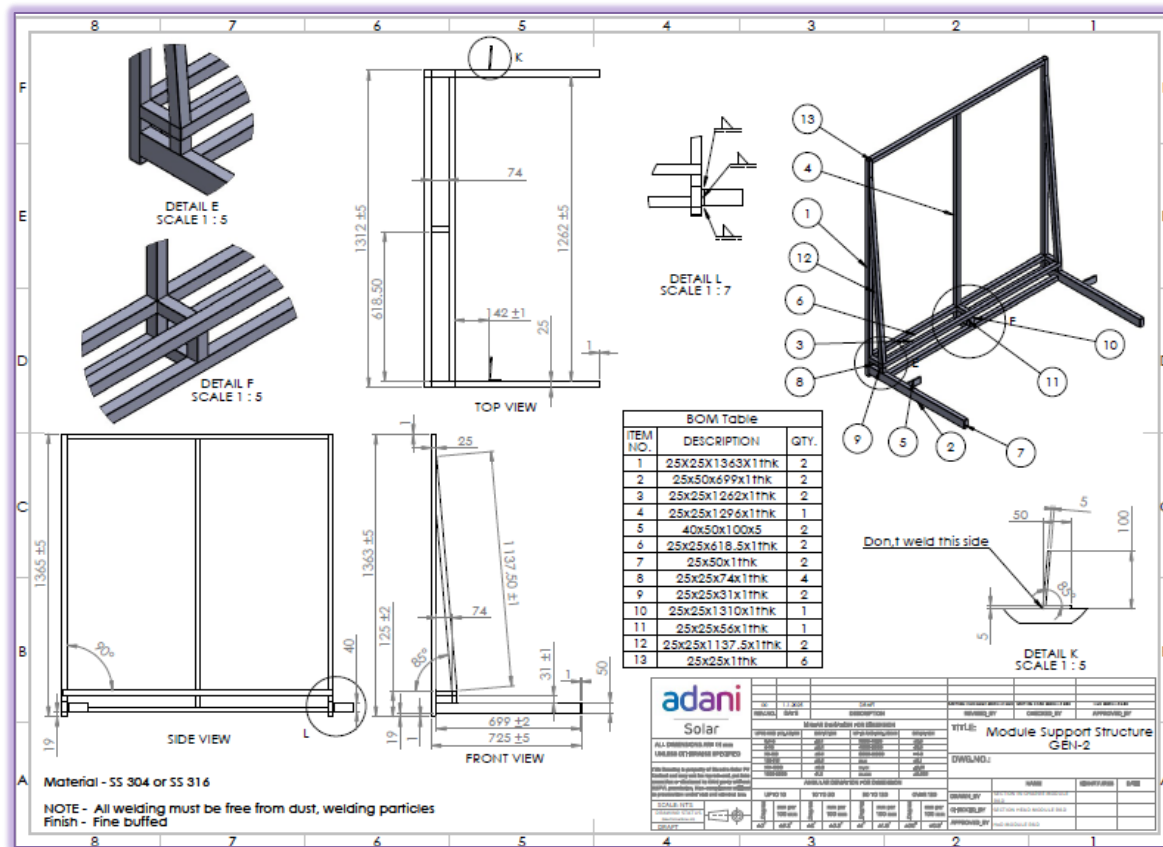
S. No	Supplier Make	Development Status	Location
1	M/s Miracle Group of Companies	Approved	Gandhidham, Gujarat
2	Tech Wrappers Pvt. Ltd.	In progress	Mundra, Gujarat
3	Asean Box	In progress	Gandhidham, Gujarat
4	Adorn Enterprises Ltd.	In progress	OPP. HOTEL NEST, ST. XAVIER'S COLLEGE CORNER, 203/204, GALA BUSINESS CENTER I, OFF. C.G. ROAD NAVRANGPRA, 380009, AHMEDABAD

## For Wooden Pallet

S. No	Supplier Make	Development Status	Location
1	Somabhai Rajabhai Rabari	Approved	Tunda, vandh, mundra, Kachchh, Gujarat, 370435
2	R & R PLANKS & PALLETS LLP	Approved	Heritage Sky, behind Shivalik, near Prahlad Nagar, FF Fourth floor A403. Ahmdabad
3	Asean Green Solution	Approved	Gandhidham, Gujarat
4	M/s. Pragati Packaging	In progress	Survey no 288, Ler Hanuman Road, Kukma - 370105

etc.

# Module Support Structure Design



# Thank you

