

ENGINEERING STANDARD

Trane
La Crosse, Wisconsin



No. ES 4701009
Rev. D
Date June 2015
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TRANE PARTS PACKAGING REQUIREMENTS

1.0 SCOPE

- 1.1 Purpose - This Standard defines the engineering requirements for packaging and protecting service parts being packed by the supplier and Trane manufacturing locations.
- 1.2 Applicability - This Standard applies to pre-packed purchased and manufactured components used for service parts that are packaged by the component supplier or Trane manufacturing location for Trane HVAC Parts and Supply Solutions.
- 1.3 Exceptions - Certain products, such as compressors, have packaging defined in the BOM which takes precedence over this Standard. In addition, some products such as coils have supplemental packaging and/or labeling requirements defined on the purchase order.
- 1.4 Authority - The interpreting authority for this Standard resides with HVAC Parts and Supply Solutions Supply Chain and the Engineering Excellence Manager, HVAC Parts and Supply Solutions.

2.0 APPLICABLE DOCUMENTS

All documents listed in this Section are the latest revision.

2.1 Referenced DocumentsTrane

STD ES 4701007 - Marking Packages - Domestic Shipment

2.2 Related DocumentsTrane

STD ES 3608001 - Corrugated Fiberboard Containers
 STD ES 4701004 - Nailing Procedure for Skids and Shipping Containers - Domestic and Export Shipments
 STD ES 4701012 - Hand Hole Requirements for Corrugated Boxes Used in the Parts Business
 STD ES 4701010 - Packaging Requirements for Service Coils Fin and Tube

3.0 GLOSSARY

- 3.1 Bulk Packed - Parts not individually packaged for resale. Bulk Part numbers would have one of the following Item Types, **RAW**, **ATO WIP**, **EBS ATO WIP** associated with it.
- 3.2 Master Container - Container used to consolidate parts shipments of like items.
- 3.3 Individually Packed - Parts are individually packaged in a retail package but do not include labeling. Individually Packaged part numbers would have one of the following Item Types **AUTO WIP**, **PREPACK (NOT LABELED)** associated with it.

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 Engineering Services, HVAC Parts and Supply Solutions

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*La Crosse, Wisconsin***4.0 REQUIREMENTS****4.1 General**

- 4.1.1 All parts shall be packed in an economical manner with material and package design suitable to protect the part from physical damage and corrosion attack. The package must provide adequate protection from the hazards of the transportation and storage environment and be designed for safe and damage free handling within the warehouse and by the customer.
- 4.1.2 Package shall be developed and supplied by the parts supplier. Resources for assistance in design and testing of package are available by contacting the HVAC Parts and Supply Solutions Engineering Manager.
- 4.1.3 The package dimensions for each part will be documented in the Trane Technologies Business System. The overall length, width, and height of the package may not change without prior notification and approval of HVAC Parts and Supply Solutions.
- 4.1.4 Changes to the package require approval from Procurement and Operations.

4.2 Preservation

- 4.2.1 All items subject to corrosion shall be protected by using one of the following methods:
1. Metal parts shall be protected with the application of an appropriate contact preservative.
 2. Metal parts shall be wrapped in a material containing an appropriate volatile corrosion inhibitor (VCI). Items may be individually wrapped or stacked, nested, and bundled before wrapping.
 3. Metal parts shall be packaged having a liner of VCI material or containing some other means of dispensing VCI vapors within the package with sufficient coverage to protect all enclosed parts.

4.3 Packaging

- 4.3.1 All parts should be packaged in proportional sized packages to minimize shipping cube and must adequately protect the part for LTL and small parcel shipments including air shipment. All parts received at the DC should be able to pass NMFC Rule 180 for LTL Shipments and ISTA 1A for Parcel Shipments. All individually packaged parts received Finished Packaged should be able to pass ISTA 1A when shipped Parcel or NMFC Rule 180 when shipped LTL from the DC. Packages with questionable shipping quality may be tested to these standards.
- 4.3.2 The number of items in a package and the number of packages in a Bulk Pack shall be jointly agreed upon by the supplier and Trane HVAC Parts and Supply Solutions Purchasing and Product Managers.
- 4.3.3 Where applicable, package design orientation must be labeled on the package using universal symbols.
- 4.3.4 All items will be blocked as necessary with filler, cushioning, and dunnage materials to prevent free movement, providing proper protection of the item within small packages and master shipping containers. The use of Styrofoam peanuts as a cushioning in either a package or master container is prohibited.
- 4.3.5 Parts over 50 lbs. require labeling and provisions for moving and handling with material handling equipment and including hand carts and hand holds. Parts over 150 lbs. require provisions for moving with pallet jacks and forklifts.

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4.4 Part Identification

- 4.4.1 Each item shall be labeled, where applicable, with the Trane part number per STD ES 4701007.
- 4.4.2 If items are placed in a bulk pack, the outside of the pack shall be marked with the part number and the quantity enclosed.
- 4.4.3 HAZMAT parts that are regulated by 49 CFR, IATA or IMDG shall be properly labeled and marked in accordance with regulations on both individually packaged and master containers.

4.5 Containers

4.5.1 Carton Requirements

- Cartons cannot be round or irregular in shape.
- Only one PO per carton is permitted for DC Shipments.
- Cartons cannot be individually wrapped in plastic or any other type of shrink-wrap material.
- Cartons must meet NMFC strength requirements. Cartons must be new, sturdy, and able to withstand normal handling for shipping. Cartons should be able to withstand normal compression that occurs in a conveyor system.
- Acceptable forms of dunnage include foam, air pillows and full sheets of paper. Unacceptable forms include crinkle wrap, shredded paper and peanuts of any kind.

- 4.5.2 Master Shipping Container - The master containers shall be selected based on the dimensions, weight, and volume of parts to be shipped. All shipments received (Truck Load (TL) or Less-Than-Truck-Load (LTL)) shall be packed by master cartons of like parts. Shipments received Parcel may have mixed parts in one container. The pallet should be large enough that all oversize loads do not overhang the pallet. This pallet shall be used unless authorization is provided by Trane HVAC Parts and Supply Solutions Engineering and specifically noted on the Purchase Order. It is understood that circumstances arise where this requirement is not feasible due to physical dimensions and/or product weight.

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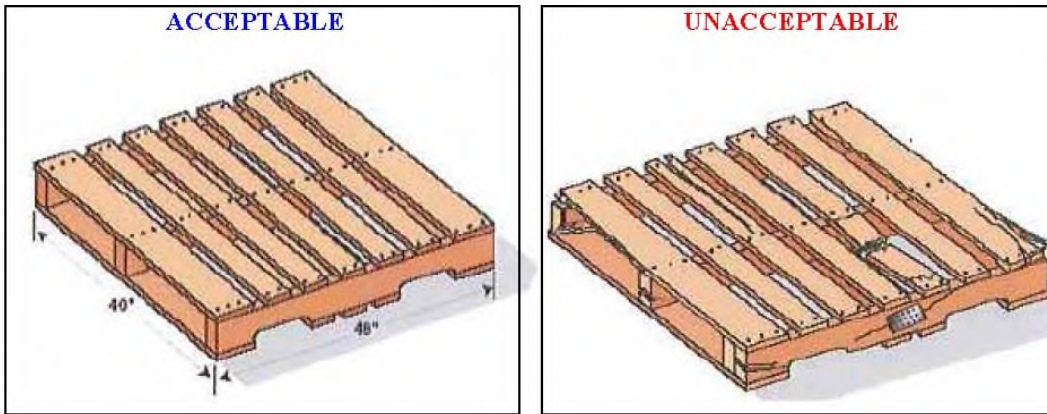


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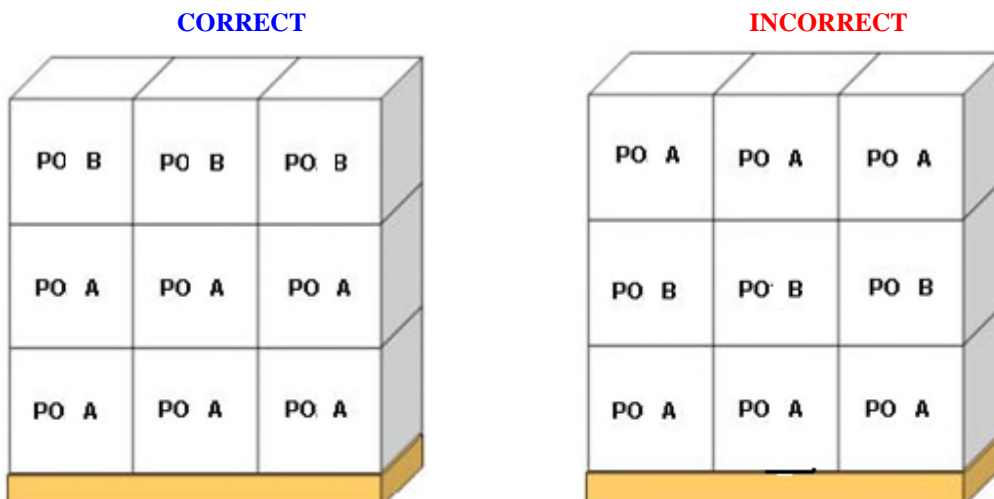
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4.5.3 Pallet Requirements - All vendors must provide pallets and no pallet exchange program exists. All pallets must meet or exceed the Grocery Manufacturers Association (GMA) Grade A or B Pallet Standards. These standards include:

- Pallets must be heat-treated
- Dimensions: 48" X 40"
- Material: GMA, Group III or IV, hardwood, clean saw
- Grade: Grade A or Grade B, 4-way, flush and non-reversible
- Made of sound material that is free of knots
- 7 top boards, 5 bottom boards, 3 stringers
- No missing or broken top or bottom boards
- No double stringers, patched or repaired boards
- No partial footings



Cartons must be loaded onto pallet by PO first, then by SKU



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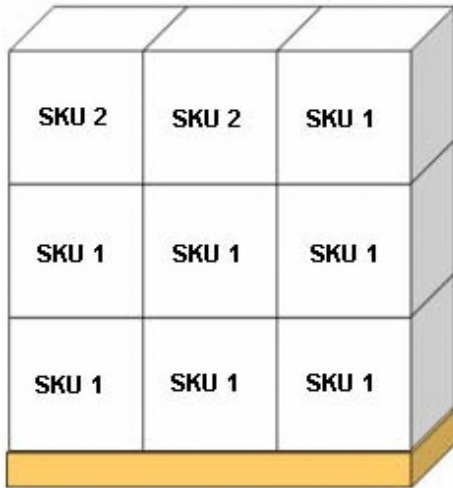


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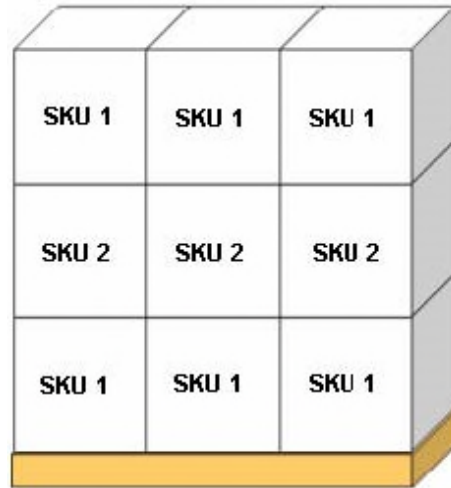
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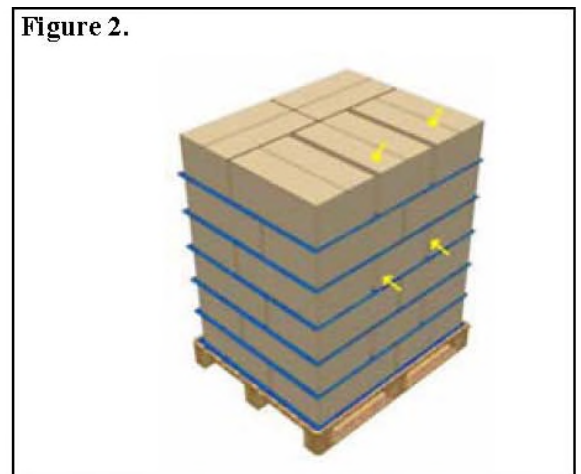
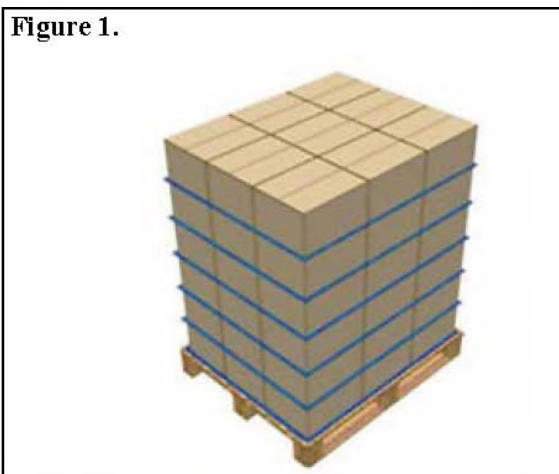
INCORRECT



Pallets should be built using either the Column Stacking method or Interlock Stacking method. Shipment testing should be conducted to determine the best method for each vendor's freight.

Column Stacking (Figure 1) – The best arrangement for carton compression strength is vertical stacking. This method is the best pallet pattern in terms of strength, but makes the pallet less stable. Care must be taken by the vendor to ensure boxes are properly aligned.

Interlock Stacking (Figure 2) – Each layer is arranged in opposing directions and cartons do not align, resulting in reduced compression strength of carton. The four corners of the container do not align. This method is much more stable than column stacking.



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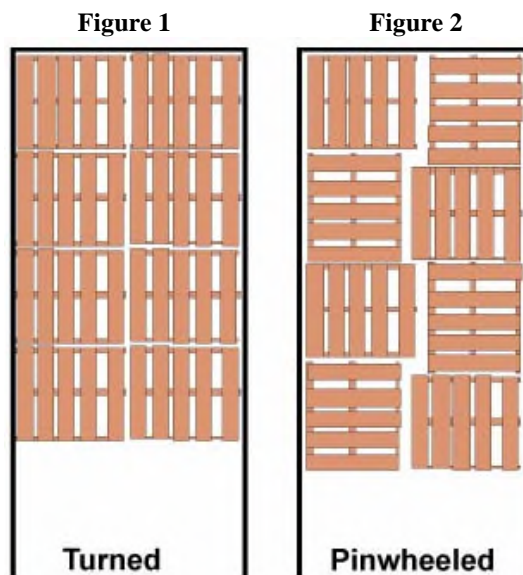
Adhere to these pallet requirements:

- Secure cartons to the pallets with stretch/shrink wrap.
- Every pallet must contain a label that includes the Trane Technologies/Trane Bill of Lading # and PO number(s). This label should be placed on the outside of the stretch/shrink wrap so it can be easily read.
- If your shipment consists of small cartons, you should “chimney” stack these so all the outside cartons have labels pointing out.
- Merchandise must be configured to fit within a 48”X40” pallet footprint. Pallet overhang is not acceptable.

Pallet Positioning Requirements - Trane Technologies/Trane requires using either a Turned or Pinwheeled method of loading pallets or goods slip-sheeted, in order to maximize the usage of space in a trailer.

Turned Loading (Figure 3) - the lift truck will pick up the pallet from the side (perpendicular to the pallet stringers) and place them in the trailer. This will allow two pallets to be loaded side by side in most dry trailers. Turning pallets gives the best space utilization for loading palletized loads and provides better protection from product shifting than straight loading.

Pinwheeled Loading (figure 2) - alter the direction of every other pallet. This is a combination of loading pallets straight and turned. Pinwheeling can be used to more fully utilize the space in a trailer or container when there is inadequate width to allow loading two turned pallets side by side. This is practical when the depth of the pallet is longer than half the trailer width, but the depth plus the width is less than the trailer width.



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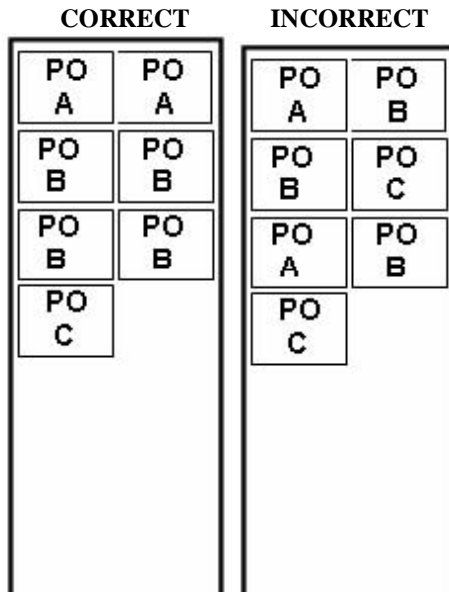
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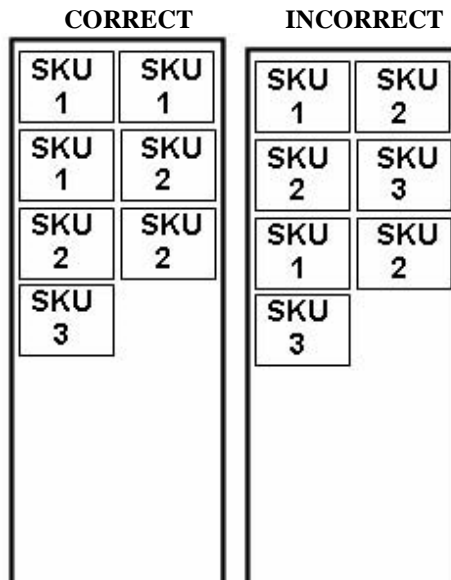
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Pallets must also be separated by PO, and then by SKU within the trailer.

PO Separation within trailer - If there are multiple pallets of the same PO, pallets of same PO's must be loaded together:



SKU Separation within trailer – Within pallets of the same PO, pallets of the same SKU should be loaded together.



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**Loading Requirements by TL or LTL Mode
Truckload (TL) Loading Requirements**

- Pallets should be built no higher than 50"
- If product allows, pallets can be double stacked

It is the vendor's responsibility to ensure full space utilization within a TL trailer.

Less-than-Truckload (LTL) Loading Requirements

- NO top stacking
- Pallets should be built no higher than 50"
- If product allows, pallets can be double stacked

Shipment Documentation Requirements**BILL OF LADING**

The information below must be noted on the front page of the BOL:

- BOL #
- Purchase order number(s) (all PO's included in shipment must be noted on BOL)
- Carton count for each purchase order
- Accurate total shipment weight (total weight of all PO's including pallet weight)

The information below must be noted on the BOL:

- Address of shipping location
- 3rd party billing address
- Freight terms (prepaid or Bill 3rd Party)
- Carrier name and LTL Carriers PRO#
- Carrier trailer number
- Total carton count
- Correct weight for each purchase order
- Correct actual NMFC freight class for each item on the PO (if shipment is LTL).
- Actual cubic feet of shipment
- For all Fed Ex Group Bill Recipient or Bill 3rd Party Shipments, the PO number must be entered into the PO reference field.

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4.5.4 Packing Slips - Trane requires a packing slip for all shipments. The packing slip will identify what is located on each pallet. The packing slip must contain the following information:

- Ship date
- Trane purchase order number
- UPC (if available)
- Trane item number
- Trane description
- Vendor item number
- Quantity shipped
- Total cartons
- Grand total units

Insert packing slips into a removable pouch and place it on the outside of a "Lead Carton" for each shipment. Indicate "Lead Carton" on that carton or place in a "packing slip enclosed" preprinted pouch. The "Lead Carton(s)" should be the last carton(s) placed on the truck.

4.5.5 Pallet Stacking

- Product should be loaded onto the pallet in a manner that evenly distributes the load while maximizing the pallet cube.
- Items shall be positioned in the master container with the larger or heavier items on the bottom. The smaller or lighter weight items shall be placed on the top.
- Items should be placed to provide best utilization of available space and a tight fit.
- The top surface of the palletized load must be flat across the entire load.
- The total height of the pallet cube should not exceed 50 inches in total height including the pallet and not extend beyond the footprint of the pallet.
- Product should be stacked on pallets based on weight and carton size.
- Heavier products (motors, compressors, coils, heat exchangers, etc.) should be stacked on the bottom of the pallet first.
- Multiple cartons or products of the same size that are stacked on the same pallet should be stacked in an alternating pattern.
- All cartons with orientation markings ("THIS SIDE UP", "UP" with arrows, etc.) MUST be stacked according to the markings.
- Maximum stack height for pallets is 50 inches (mixed items on one pallet).
- Cartons cannot extend beyond the edge of the pallet (overhang).
- In the event the item quantity specified on the Purchase Order or ship release does not allow compliance with the requirements herein, notify the Trane HVAC Parts and Supply Solutions Associate designated on the Purchase Order. Trane will review the issue and either change our quantities to optimize the shipping cube or give written authorization to deviate from the requirements herein.

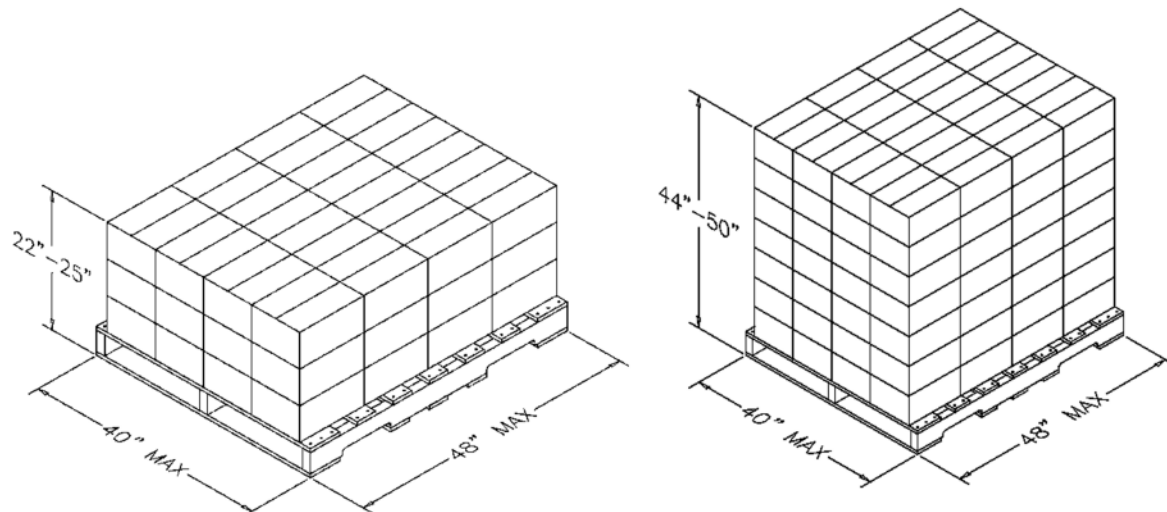
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4.6 Securing Loads

4.6.1 Bulk packs and master containers shall be adequately secured to prevent product from shifting in transit. All palletized loads must be either stretch wrapped to the pallet base or secured using plastic banding. If plastic banding is used to secure corrugate boxes to a pallet base, corner boards must be used to prevent damage to individual packages.

