

TOYOTA MOTOR MANUFACTURING
NORTH AMERICA

Supplier Packaging Policies & Standards

September 2002

Table of Contents

1. Background..... 2

2. Purpose.....2

3. Scope.....2

4. Packaging Operations Manual.....2

5. Policy.....3

6. Expectations.....4

7. Process (Excludes NUMMI & TMMC).....5

8. Standards.....6

Appendix A – Tote Standards.....7

Appendix B – Label Standards.....9

Appendix C – Rack Standards.....12

1. Background

Toyota generally requires that all parts shipments to our manufacturing facilities be made using returnable packaging. This packaging includes steel racks, plastic totes and dunnage that may be required to secure and protect the parts within the tote.

Recently, TMMNA has reflected on the total cost of returnable packaging on past vehicle programs. The reflection highlighted 2 main points:

- There are significant cost reduction opportunities available.
- A major portion of the total cost is determined by the procurement activities of our parts suppliers.

As a result, returnable packaging has been identified as a major cost reduction opportunity for you, the supplier, to meet Toyota expectations for total cost reduction. This manual has been developed to help you meet those expectations.

2. Purpose

This manual aims to:

- Communicate TMMNA Returnable Packaging Policy
- Communicate TMMNA Procurement Expectations
- Communicate TMMNA Standards
- Provide a reference

3. Scope

| | | |
|-----------------------|-----------------------------------|---|
| Policy & Expectations | All NAMC's except NUMMI | |
| Payment Process | TMMAL, TMMBC, TMMK, TMMI, & TMMWV | |
| Specifications | Racks | All NAMC's |
| | Labels | All NAMC's |
| | Totes | All NAMC's (NUMMI has additional types & sizes) |

4. Packaging Operations Manual

This document is for Policies and Standards. Each NAMC has its own Pkg Operations Manual to cover Packaging Quality and Operational issues in addition to this document. If you find anything conflicting between this document and the NAMC Pkg Operations Manual's, please contact TMMNA PC for clarification.

5. Policy

TMMNA's policy regarding returnable packaging is outlined in our Terms and Conditions. It has been copied verbatim for your reference.

- Reference Terms and conditions, Section 2.4d

2.4 (d) Packing Requirements

1. Unless otherwise instructed by Toyota Party, all items are to be prepared and packed according to packaging specifications provided by Toyota Party, and are to meet all carriers requirements. The quantity of packaging is determined by Toyota Party, and any additional quantities are Supplier's responsibility.
2. In the event returnable packaging is deemed by Toyota Party to be advisable or necessary for the delivery of items ("Returnable Packaging"), TMMNA shall reimburse Supplier for the acquisition costs of such Returnable Packaging on mutually acceptable terms. The Returnable Packaging shall be the property of Supplier unless otherwise designated by TMMNA. The price for such Returnable Packaging shall be set forth in a separate Purchase Order and paid for in accordance with the general payment terms as set forth in Section 2.3. **Supplier is responsible for cleaning, replacing or repairing any lost or damaged Returnable Packaging.**

6. Expectations

Each and every supplier is expected to:

1. Take full responsibility of their returnable packaging cost and to commit to reducing it significantly.
2. Select the lowest cost option available that will ensure part quality.

Specifically:

| | |
|----------------------------|---|
| Cost Control | <ol style="list-style-type: none">1. Reuse obsolete or extra packaging rather than purchase new.2. Competitively bid at least 3 sources for all packaging unless the source has been pre-determined by Toyota.3. Consider the total cost of the packaging when making your sourcing decision including freight, labels, kanban holders, etc. |
| Simple Design | <ol style="list-style-type: none">4. Utilize standard tote & rack sizes unless part design or other criteria make in impractical.5. If a non-standard size packaging is approved by Toyota, follow all other standard specifications such as color, stacking feature, etc.6. Design / redesign packaging to reduce cost. Some items to consider are:<ol style="list-style-type: none">a. Eliminating or reducing dunnageb. Using alternate, less costly materialsc. Increasing box efficiency.d. Simplifying the design for ease of manufacturee. Utilizing same design for each NAMC1. Target less than 2 hours production per container. <u>(Note: some NAMC's may have lower targets.)</u>2. Do not exceed a total weight of 15 kg. Per tote including dunnage & parts. <u>(Note: Some NAMC's may have a maximum box weight limit that is less than 15 kg.)</u>3. During the design phase consider the following options in the sequence shown below.<ol style="list-style-type: none">a. Option 1: Utilize the most efficient, smallest standard tote first without dunnage.b. Option 2: Utilize the most efficient, smallest standard tote with dunnagec. Option 3: Utilize the most efficient, smallest standard rack without dunnage. Target 48 x 45 footprint.d. Option 4: Utilize the most efficient, smallest standard rack with dunnage. Target 48 x 45 footprint. |
| Procurement Process | <ol style="list-style-type: none">1. Actively seek potential packaging suppliers in order to find the most competitive sources, other than TMMNA sourced packaging (totes)2. Begin the procurement process (up to the point of ordering) as soon as the packaging has been approved so that the best price can be achieved.3. Do not place the order until authorization has been received from the NAMC.4. When a quote is requested by TMMNA, utilize the WARP Returnable Packaging quote form and provide as much detail as possible.5. Consider lead time when quoting to ensure on time delivery. |

7. Process

Excludes: NUMMI & TMMC

Responsible Target Timing

General Flow

Note: N = Month of SOP

NAMC PC N - 14

NAMC PC N - 14

SUPPLIER N - 10

NAMC PC N - 9

NAMC PC N - 9

SUPPLIER N - 8

NAMC PC N - 7

SUPPLIER N - 6

SUPPLIER N - 6

NAMC PC N - 5

SUPPLIER N - 5

SUPPLIER N - 2

SUPPLIER N - 2

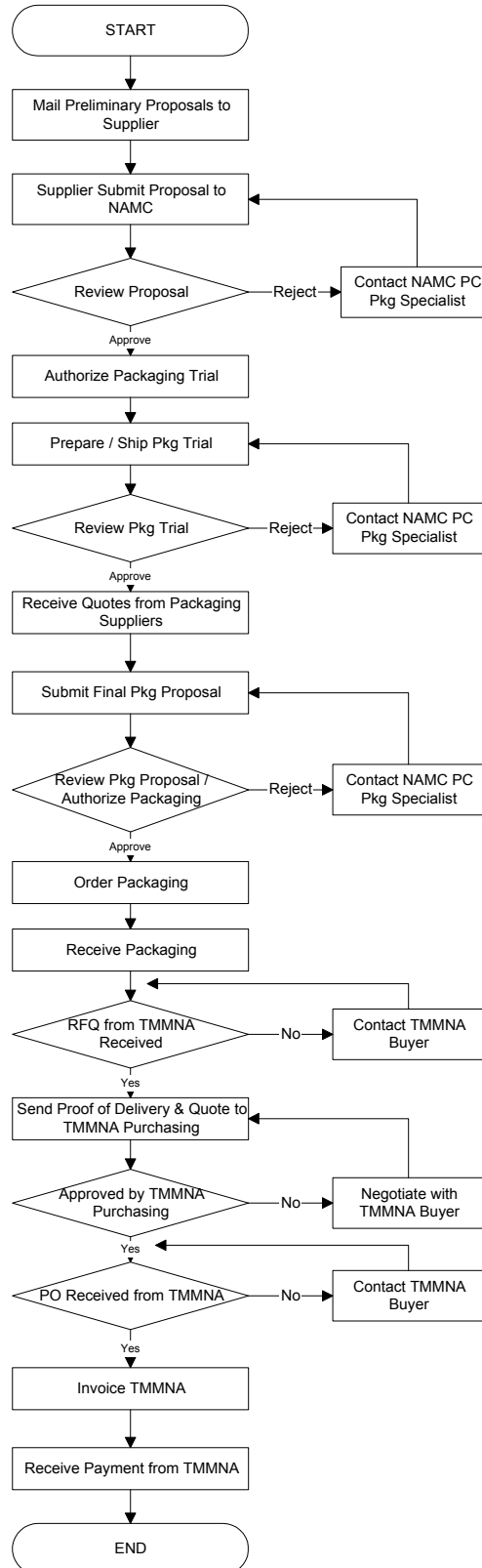
SUPPLIER N - 2

NA PURCHASING N + 2

NA PURCHASING N + 2

SUPPLIER N + 3

SUPPLIER N + 4



8. Standards

In an effort to reduce overall logistics costs, Toyota has implemented standard totes, labeling, and rack specifications.

The standard totes have been in place since 1997. The biggest recent change is the standardization of the color between NAMC's to Charcoal Grey. It does not obsolete any containers of different colors. It is a running change for future orders. This improves efficiency of container manufacturers to reduce lead time and cost.

The container identification standards are important to help improve the visual controls of the container, to improve the return accuracy to our Suppliers. It also improves flexibility for the re-use of containers in the future.

The biggest change to our standard containers is the agreement of rack standards between all NAMC's. The 2 critical points of agreement include the dimensions of the racks, and the stacking points. The reason for standard racks is to reduce overall logistics cost by doing the following:

- a. Improving stack ability of the trailers to increase the cubic efficiency of our routes
- b. Allows for competitive bidding
- c. Facilitates the re-use of racks for future models

Appendix A: Tote, Pallet, & Hot Stamp Standards

Tote Standards:

| # | Dimension: In. | | | Dimension: mm | | | Labels / Tote | Orbis | Schaefer |
|-----|----------------|------|------|---------------|-----|-----|---------------|----------------|---------------|
| | L | W | H | L | W | H | | | |
| 1 | 12 | 15 | 4 | 305 | 381 | 102 | 2 | NSO 1215-4RQ | AF 1215-04XC |
| 2 | 12 | 15 | 7.5 | 305 | 381 | 191 | 4 | NSO 1215-7RQ | AF 1215-07XC |
| 3 | 24 | 15 | 4 | 610 | 381 | 102 | 2 | NSO 2415-4RQ | AF 2415-04XC |
| 4 | 24 | 15 | 7.5 | 610 | 381 | 191 | 4 | NSO 2415-7RQ | AF 2415-07XC |
| 5 | 24 | 15 | 11 | 610 | 381 | 279 | 4 | NSO 2415-11RQ | AF 2415-11XC |
| 6 | 24 | 15 | 14.5 | 610 | 381 | 368 | 4 | SO 2415-14RQ | AF 2415-14C |
| *7 | 36 | 15 | 4 | 914 | 381 | 102 | 2 | NSOT 3615-4RQ | AF 3615-04CWC |
| *8 | 36 | 15 | 7.5 | 914 | 381 | 191 | 4 | NSOT 3615-7RQ | AF 3615-07CWC |
| *9 | 36 | 15 | 11 | 914 | 381 | 279 | 4 | NSOT 3615-11RQ | AF 3615-11CWC |
| *10 | 48 | 15 | 4 | 1219 | 381 | 102 | 2 | NSOT 4815-4RQ | AF 4815-04CWC |
| 11 | 48 | 15 | 7.5 | 1219 | 381 | 191 | 4 | SO4815-7RQ | AF 4815-07XC |
| 12 | 48 | 15 | 11 | 1219 | 381 | 279 | 4 | SO4815-11RQ | AF 4815-11XC |
| 13 | 24 | 22.5 | 7.5 | 610 | 572 | 191 | 4 | NSO 2422-7RQ | AF 2422-07XC |
| 14 | 24 | 22.5 | 11 | 610 | 572 | 279 | 4 | NSO 2422-11RQ | AF 2422-11C |
| 15 | 24 | 22.5 | 14.5 | 610 | 572 | 368 | 4 | NSO2422-14RQ | AF 2422-14C |

* = Cut n weld container, NUMMI does not utilize these sizes

- Container Color: Charcoal Grey (NUMMI Blue)
 - Labels / Tote: See Above. NUMMI: 2
 - Kanban Holders / Tote: 2
 - Hot Stamps:
 - TMMAL, TMMBC, TMMI, TMMK, TMMWV: "TOYOTA SHIPMENT" 1/tote
 - TMMC: "TMMC [TOYOTA]" 2/tote
 - NUMMI: NUMMI Logo, Property of New United Motor Manufacturing, Container Height 2/tote
- NUMMI utilizes additional sizes. Please refer to following page for NUMMI only containers.

Pallet & Top Cap Standards

| # | Dimension: In. | | | Dimension: mm | | | Orbis | Schaefer |
|-------------------|----------------|-------|-----|---------------|------|-----|---------------------------------|---------------------|
| | L | W | H | L | W | H | | |
| Plt Toyota | 48.75 | 45.75 | 6.8 | 1238 | 1162 | 165 | 45 x 48-B MI CISF LP (with lip) | AFP 4845 (with lip) |
| Plt NUMMI | 48.75 | 45.75 | 6.8 | 1238 | 1162 | 165 | 45 x 48-C CISF (with lip) | N/A |
| Top | 48.75 | 45.75 | 1.5 | 1238 | 1162 | 50 | 45 x 48 MP-2 Top Cap CISC | AFT4845 |

- Color: Black
- Hot Stamps: 2. One on each 45" side of pallets & top caps
Hot stamp information is the same as above. The hot stamp is surrounded by a white square that simulates a load stripe. NUMMI has hot stamp "Property of NUMMI" on 48" side.

NUMMI TOTE STANDARDS

NUMMI utilizes TMMNA Standard containers for local California suppliers. The primary containers utilized by NUMMI for most suppliers are listed below.

Orbis FC-4845 Folding Containers

| Model | Outside Dimensions | | | Stack Height | Inside Dimensions | | Product Clearance | Collapsed Height | Weight Pounds (Kg) | K.D. Ratio |
|------------|--------------------|---------------|---------------|--------------|-------------------|-------|-------------------|------------------|--------------------|------------|
| | Length | Width | Height | | Length | Width | | | | |
| FCSO1215-4 | 12.0 (305) | 15.0 (381) | 4.0 (102) | 3.6 | 13.0 | 9.4 | 3.0 | NA | 2.0 (.91) | 1:1 |
| FC1215-075 | 12.0 (305) | 15.0 (381) | 7.5 (191) | 7.2 | 13.5 | 10.6 | 6.8 | 2.6 | 3.7 (1.7) | 3.1:1 |
| FC1215-089 | 12.0 (305) | 15.0 (381) | 8.9 (226) | 8.6 | 13.5 | 10.6 | 8.2 | 3.5 | 4.0 (1.8) | 2.7:1 |
| FC2415-075 | 24.0 (610) | 15.0 (381) | 7.5 (191) | 7.2 | 22.5 | 13.6 | 6.8 | 2.6 | 5.3 (2.4) | 3.1:1 |
| FC2415-089 | 24.0 (610) | 15.0 (381) | 8.9 (226) | 8.6 | 22.5 | 13.6 | 8.2 | 2.6 | 6.0 (2.7) | 3.7:1 |
| FC2415-111 | 24.0 (610) | 15.0 (381) | 11.1 (282) | 10.8 | 22.5 | 13.6 | 10.4 | 2.6 | 6.7 (3.0) | 4.7:1 |
| FC2415-147 | 24.0 (610) | 15.0 (381) | 14.7 (373) | 14.4 | 22.5 | 13.6 | 14.0 | 3.5 | 8.3 (3.8) | 4.5:1 |

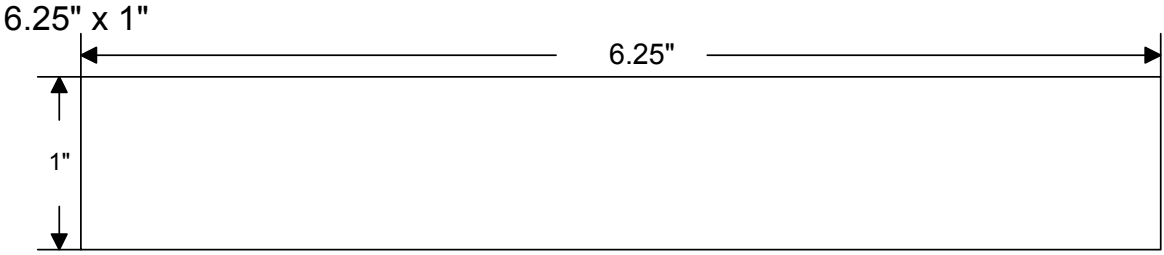

Orbis FC-4845 Folding Containers with Storage Bottom (containers with storage bottoms for custom interiors)

| Model | Outside Dimensions | | | Stack Height | Inside Dimensions | | Product Clearance | | Collapsed Height | Weight Pounds (Kg) | K.D. Ratio |
|--------------|--------------------|---------------|---------------|--------------|-------------------|-------|-------------------|-----------|------------------|--------------------|------------|
| | Length | Width | Height | | Length | Width | Assembled | Collapsed | | | |
| FC2415-111-4 | 24.0 (610) | 15.0 (381) | 11.1 (282) | 10.8 | 22.5 | 13.6 | 10.4 | 3.6 | 6.2 | 7.0 (3.2) | 1.8:1 |
| FC2415-147-4 | 24.0 (610) | 15.0 (381) | 14.7 (373) | 14.4 | 22.5 | 13.6 | 14.0 | 3.6 | 6.2 | 8.5 (3.9) | 2.4:1 |
| FC2415-147-7 | 24.0 (610) | 15.0 (381) | 14.7 (373) | 14.4 | 22.5 | 13.6 | 14.0 | 7.0 | 9.8 | 8.4 (3.8) | 1.5:1 |

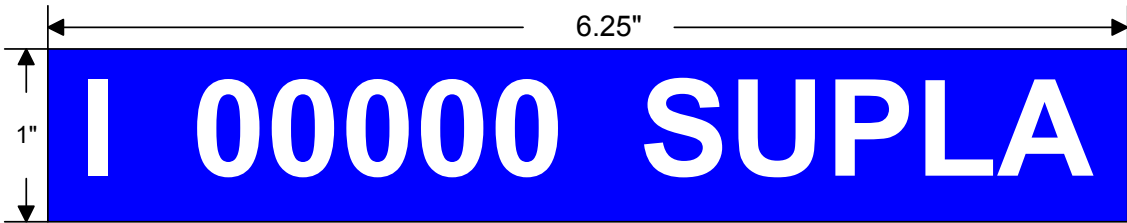
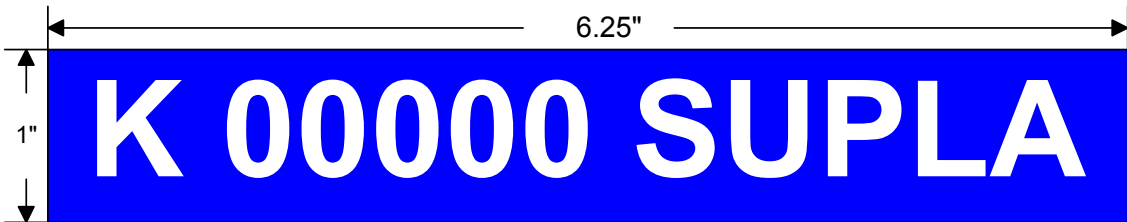
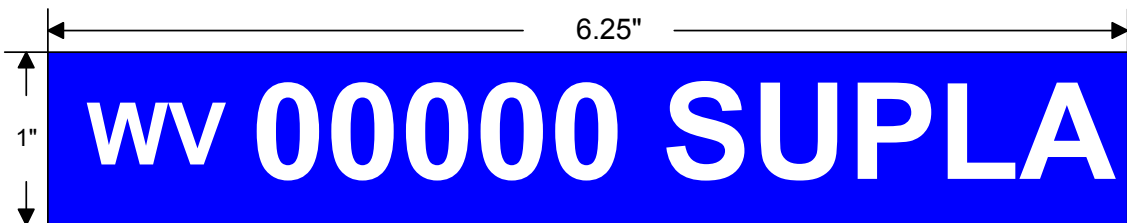
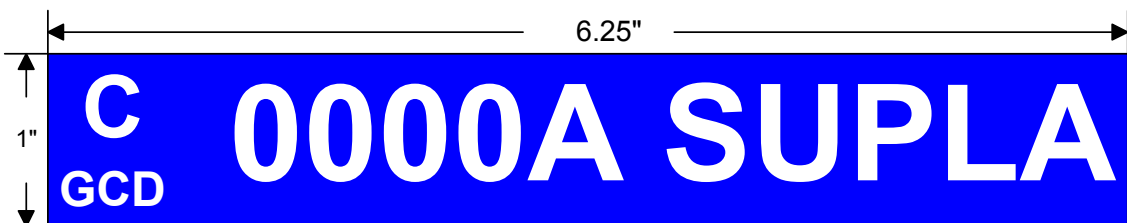
Buckhorn Bi-Color Stack & Nest Containers

| Model | Outside Dimensions | | | Inside Dimensions | | Storage Bottom Height | Weight Pounds (Kg) | K.D. Ratio |
|----------|--------------------|---------------|---------------|-------------------|-------|-----------------------|--------------------|------------|
| | Length | Width | Height | Length | Width | | | |
| BC24229 | 24.0 (610) | 22.5 (572) | 9.0 (229) | 21.8 | 20.5 | 4.5 | 7.1 (3.2) | 2:1 |
| BC242211 | 24.0 (610) | 22.5 (572) | 11.0 (279) | 21.8 | 20.5 | 5.5 | 7.6 (3.4) | 2:1 |

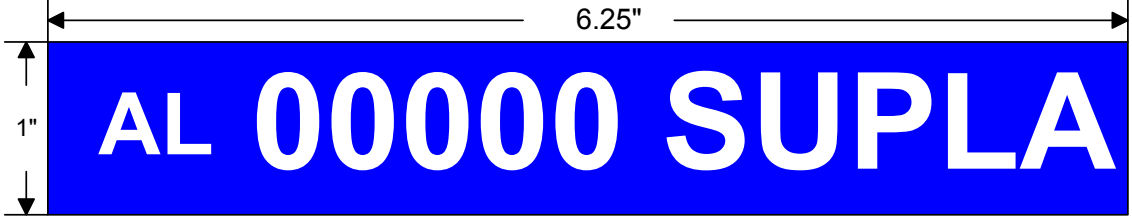
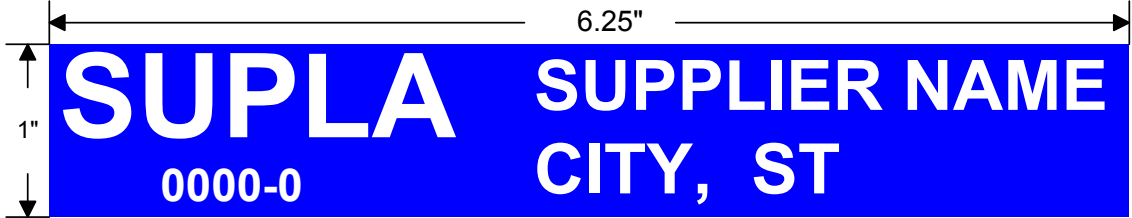
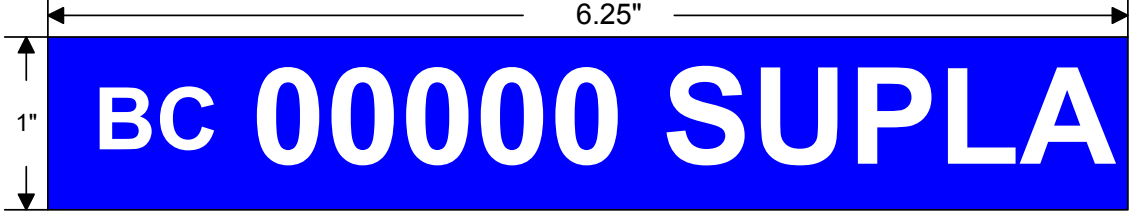
Appendix B: Container Identification

| Item | Container ID Label Specifications | | | | | |
|--|--|-------------|----------------|------------|-------------------------|--------------------------------------|
| Dimension |  | | | | | |
| Location | 1) Stack Only Totes: 4 sides, except 12" x 15" x 4" - 2 sides sides 2) Nesting Totes: 4 sides 3) KD Totes (NUMMI): 2 sides | | | | | |
| Colors | # | Label Color | | Font Color | Cross Dock (NA Network) | Consolidation Center (NUMMI NETWORK) |
| | 1 | Blue | Process Blue | White | GCD | Detroit |
| | 2 | Red | Red 187 | White | RCD | Southern California |
| | 3 | Green | Green 354 | White | BCD | Northern California |
| | 4 | Orange | Orange 144 | Black | KCD | El Paso |
| | 5 | Purple | Pantone Purple | White | OCD | |
| | 6 | Yellow | Pantone Yellow | Black | MCD | MCD |
| | 7 | Pink | Pantone 223C | Black | Direct | |
| | 8 | White | | Black | | Chicago |
| Direct & Cross dock label: Some suppliers ship to 1 NAMC through both a cross dock and direct. In this case, the top half of the label is the color of the cross dock, the bottom half of the label is Pink 223c to reflect direct. Font color is always black.  | | | | | | |
| Layout | See pages 2 & 3 for each NAMC's label layout. | | | | | |

Container Identification Continued

| NAMC | LABEL LAYOUT |
|-------|---|
| TMMI |  <p>All Fonts: 56 point Arial Bold; NAMC Code, Supplier Code; TLMS Code</p> |
| TMMK |  <p>All Fonts: 56 point Arial Bold; NAMC Code, Supplier Code, TLMS Code</p> |
| TMMWV |  <p>NAMC Code: 36 point font; Supplier Code: 56 point font; TLMS Code: 56 point font; All Arial Bold</p> |
| TMMC |  <p>NAMC Code: 36 point font; Supplier Code: 56 point font; TLMS Code: 56 point font; Cross dock: 20 point font; All Arial Bold</p> |

Container Identification Continued

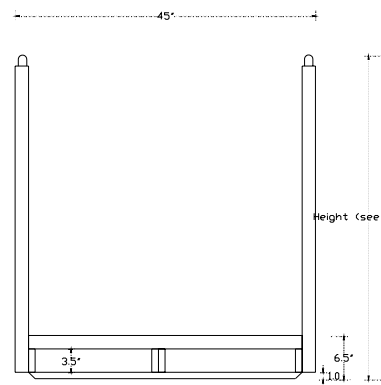
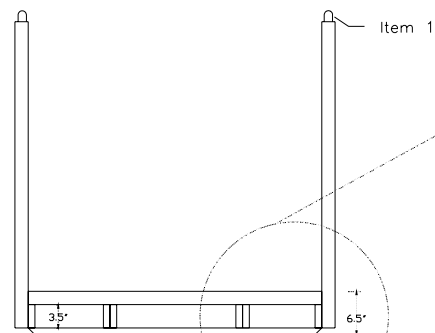
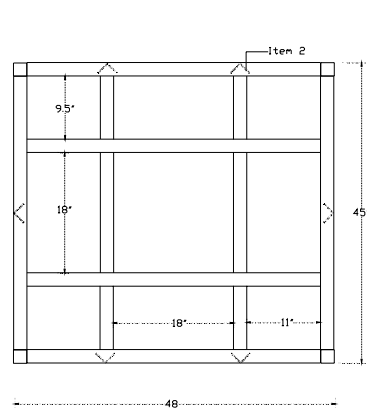
| NAMC | LABEL LAYOUT |
|-------|---|
| TMMAL |  <p>NAMC Code: 36 point font; Supplier Code: 56 point font; TLMS Code: 56 point font; All Arial Bold</p> |
| NUMMI |  <p>TLMS CODE: 49 pt font; Supplier Code: 19 point font; Supplier Name 29 point font; City/State: 29 point font; All Arial Bold</p> |
| TMMBC |  <p>NAMC Code: 36 point font; Supplier Code: 56 point font; TLMS Code: 56 point font; All Arial Bold</p> |
| | |

Appendix C: Rack Standards

| Item | Detail | | | | | | | | | | | | | |
|---|--|-----------------|----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|------------------|------------------|--|--|--|
| Footprint | The 13 footprints shaded box's & denoted with "0" are standard sizes. Always specify 45" x 48" footprint as first choice. | | | | | | | | | | | | | |
| | Standard Rack Footprints | | Length | | | | | | | | | | | |
| | | | 30" (762mm) | 45" (1143mm) | 60" (1524mm) | 75" (1905mm) | 90" (2286mm) | 105" (2667mm) | 120" (3048mm) | 150" (3810mm) | 180" (4572mm) | | | |
| | Width | 32" (813mm) | 0 | | | | | | | | | | | |
| | | 48" (1219mm) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| 96" (2438mm) | | | | 0 | 0 | | 0 | | | | | | | |
| Note: 45 x 48 footprint should always be first choice | | | | | | | | | | | | | | |
| Height | The height is based on a trailer opening of 98" tall. It takes into consideration 1.75" of nesting for the stacking cap, and 1" of nesting for the recessed bottom. | | | | | | Stack Height | Height (in) | Height (mm) | | | | | |
| | | | | | | | 1 | 98.0 | 2489 | | | | | |
| | | | | | | | 2 | 50.0 | 1270 | | | | | |
| | | | | | | | 3 | 34.0 | 864 | | | | | |
| | | | | | | | 4 | 26.5 | 673 | | | | | |
| | | | | | | | 5 | 21.5 | 546 | | | | | |
| | | | | | | | 6 | 18.5 | 470 | | | | | |
| Color | All NAMC's except NUMMI: Light Grey NUMMI: Blue <u>Paint Type:</u> ESD | | | | | | | | | | | | | |
| Rack ID | <u>ID Color:</u> Black, NUMMI Color: White <u>Size:</u> 1.5" (38mm) Block Capitals Font <u>Information:</u> TOYOTA or NUMMI, NAMC Code, Supplier Code, TLMS Code <u>ID Location:</u> All 4 sides of the base. <u>Sequential Number:</u> All racks must be sequentially numbered. Two digit year code preceding the number. Located on the corner post. | | | | | | | | | | | | | |
| Stacking Caps | Pin Post Design: Livonia Tool, 1738 B Stacking Cap location: Top, Recessed Bottom (1", 25 mm) | | | | | | | | | | | | | |
| Rack Frame | Frame: 2" x 2" 11 gauge Steel | | | | | | | | | | | | | |

Rack Standards continued

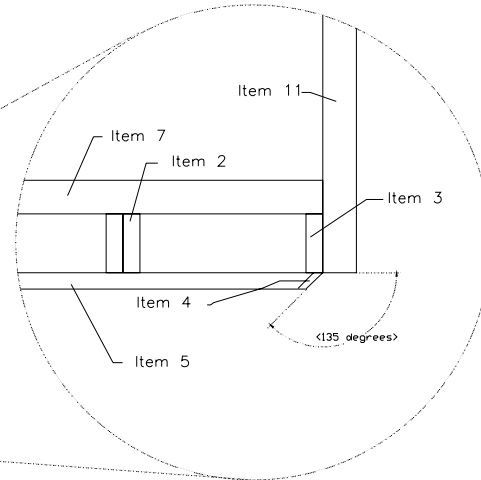
| Item | Detail |
|--------------------------|--|
| Kanban Holders | <p>Kanban holders on 2 adjacent sides located near corner post. Holders must be visible.</p> <p>Contact specific NAMC to confirm location and specification for kanban holder.</p> |
| Bottom Strap | <p>4 way entry Opening Clearance: 3.5" (89mm) 1" x 2" (25mm x 51mm) bottom strap. Located around the perimeter of the base.</p> |
| Walk In Feature | <p>Walk in design should target an 18" width and a depth of 1/2 the distance into the rack.</p> |
| Knock Down Design | <p>Current Standard: Pin on the bottom. Working to develop a design with the pin on the top</p> |



HEIGHTS (OD of Rack Height)

| Stack Height | Height (in) | Height (mm) |
|--------------|-------------|-------------|
| 1 | 98" | 2489 |
| 2 | 50.0" | 1270 |
| 3 | 34.0" | 864 |
| 4 | 26.5" | 673 |
| 5 | 21.5" | 546 |
| 6 | 18.5" | 470 |

NOTES: Grind all sharp corners
Complete Welds Around all items
Grind welds flush in stacking areas



| | | | |
|----|---|----------------|---------------------------------|
| 12 | 1 | Paint | ESD Light Grey |
| 11 | 4 | 2" x 2" 11 ga. | OD Height minus 2.9" |
| 10 | 4 | 2" x 2" 11 ga. | 9.5" Length |
| 9 | 2 | 2" x 2" 11 ga. | 18" Length |
| 8 | 2 | 2" x 2" 11 ga. | 41" Length |
| 7 | 4 | 2" x 2" 11 ga. | 44" Length |
| 6 | 2 | 1" x 2" 11 ga. | 41" Length |
| 5 | 2 | 1" x 2" 11 ga. | 44" Length |
| 4 | 8 | 1/4" Plate | 1" x 2" |
| 3 | 8 | 1" x 2" 11 ga. | 3.5" Length |
| 2 | 6 | 3/16" Ang. | 2" x 2" x 3.5" 3/16" Angle |
| 1 | 4 | Purch. | Livonia Tool 1738B Stacking Cap |

| ITEM NO. | QTY. | MATERIAL | SIZE/DESCRIPTION |
|---|---------|----------------|------------------|
| BILL OF MATERIALS | | | |
| 45" x 48" Rack Base | | | |
| Toyota Motor Manufacturing North America, Inc. | | | |
| 25 Atlantic Avenue | | | |
| Erlanger, KY 41018 | | | |
| THIS DESIGN IS THE PROPERTY OF TOYOTA MOTOR MANUFACTURING NORTH AMERICA, INC. IT IS TO BE KEPT IN CONFIDENTIALITY AND ITS DISCLOSURE OR REPRODUCTION IS PROHIBITED. | | | |
| CHECKED BY: | DATE: | DWG NO. | REV |
| T. Ballard | 9/20/02 | TMMNA-PK-R0001 | |