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PURPOSE: To establish rules and responsibilities for packaging development and approval

SCOPE: Applies to all TMI suppliers

EXPLANATION: This packaging approval process ensures that packaging is properly designed, ordered, and available so that program launches or changes are not delayed or interrupted. Target for delivery of the returnable packaging to the supplier is preproduction 2A trials.

REQUIRED DOCUMENT:

TMI PACKAGING PROPOSAL FORM - APPENDIX 23A

RESPONSIBILITIES:

DESIGN OF INBOUND PACKAGING:

- TMI general office buyer will work with suppliers to identify carryover packaging that can be used. All carryover packaging that can be identified before additional packaging can be ordered.
- Suppliers must submit the TMI PACKAGING PROPOSAL FORM (TM-PU-FM-06-501) to the individual TMI general office buyer immediately upon notification that business has been awarded.
- One (1) Packaging Proposal Form is required to be submitted for each part number.
- Design must be in accordance with TMI specification standards contained herein.

PACKAGING DESIGN APPROVAL - Suppliers must submit designs to TMI general office buyer based on standards herein. Design must be submitted electronically via e-mail or cd.

- TMI general office buyer will review TMI PACKAGING PROPOSAL FORM (TM-PU-FM-06-501) to ensure packaging design follows TMI packaging standards.
- TMI plant personnel will review the design proposal to ensure packaging will meet transportation, lineside application, safety limitation, and part integrity requirements.
- Part integrity, packaging performance, and packaging longevity are the sole responsibility of TMI's suppliers.

PURCHASE AND OWNERSHIP:

- Once TMI has approved a specific design and calculated the required packaging for production, TMI General Office Purchasing will order with direct delivery to the supplier (returnable only).
- TMI will, however, retain ownership of all inbound packaging.

LABELING AND KANBAN CARDS:

- Suppliers must place either kanban cards or AIAG labels on each container shipped to TMI plants. The kanban cards or AIAG labels will be removed to generate part orders.

MAINTENANCE AND REPAIR:

- TMI suppliers must implement a preventative maintenance program for maintaining packaging. This includes maintenance, cleaning, and repair on containers, racks, pallets, topcaps, and kanban card holders. Maintenance and repair must be performed immediately upon receipt from TMI. A cleaning

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program must be in place to prevent excessive buildup of dirt, oil, etc. in or on the packaging, as foreign substance may affect product's quality status.

- Expenses for maintenance, cleaning, and repair on TMI packaging will not be reimbursed to TMI suppliers unless it is proven that TMI is negligent.

GENERAL GUIDELINES for PROTOTYPE LEVEL:

- 1) Packaging design is at supplier's discretion.
- 2) Packaging must protect part integrity - size and quality.
- 3) Parts must be easily removable upon receipt at TMI.
- 4) Packaging must be properly labeled with part number and revision level.
- 5) At Phase 1 - individual parts must be labeled according to the approved Inspection Standard.

GENERAL GUIDELINES for MASS PRODUCTION LEVEL:

- 1) All packaging designs should be in accordance with AIAG specifications. For clarification, please contact the Automotive Industry Action Group at (248) 358 – 3570. Please note that all specifications herein are in accordance with AIAG specifications.
- 2) Every effort should be made to avoid use of expendable packaging. If expendable packaging is deemed the most cost effective packaging by TMI, it must be of a reusable or recyclable material
- 3) Handtote packaging must not exceed 35 pounds (13.62 kilograms) gross weight (including the tote).
- 4) Please refer to the following table identifying some measurements required for preparation of the Packaging Proposal Form:

LENGTH (Inch)	LENGTH (Millimeters)	WEIGHT (Pound)	WEIGHT (Kilogram)
1	25.4	1	0.454
5	127	5	2.270
10	254	10	4.540
20	508	50	22.70
30	762	100	45.40
32	812.8	200	90.80
45	1143	250	113.5
48	1219.2	300	136.2
60	1524	400	181.6

- 5) All containers must be fully cubed unless the weight of the part being packaged prohibits this.
- 6) All palletized loads must accommodate 4-way entry. All palletized loads must be secured with use of stretch wrap or plastic banding.

NOTE: METAL BANDING IS PROHIBITED UNLESS APPROVED BY TMI PLANT PRODUCTION CONTROL MANAGER AND SAFETY COORDINATOR.

- 7) A listing of preferred packaging vendors to be utilized for prototype and production packaging is provided below:



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PACKAGING STYLE	SUPPLIER NAME	LOCATION	PHONE NUMBER
HDPE Returnables	Orbis	Urbana, OH	(513) 737 – 9489
Fabricated racks	AFCO Mfg.	Covington, KY	(859) 261 – 3585
Fabricated racks	McCullough Fabricating	Heltonville, IN	(812) 834 – 5555
Plastic corrugated	Concept Packaging	Cynthiana, KY	(859) 234 – 5500
Plastic corrugated	Nipac	Huntington, IN	(260) 356 – 9660
Corrugated board	Concept Packaging	Cynthiana, KY	(859) 234 - 5500

RETURNABLE PACKAGING SPECIFICATIONS:

A) INTERIOR DUNNAGE:

- 1) Interior dunnage must be of a reusable or recyclable material.
- 2) Interior dunnage must eliminate part wrapping and bagging.
- 3) Interior dunnage must provide easy operator access to parts and not hinder workability.
- 4) Every attempt must be made to design interior dunnage that is not removable from the container as the likelihood of damage and loss is increased with removable dunnage.

B) HDPE HANDTOTE PACKAGING:

- 1) All packaging must be stackable and have the capability of being palletized on a 45” x 48” pallet.
- 2) All packaging must accommodate one (1) 8.5”x 4” kanban card or one (1) 6” x 4” AIAG label.
- 3) All packaging must be labeled using the TMI Packaging Marking Standard contained herein.
- 4) Suppliers and TMI plants must make every attempt to commonize packaging styles for each supplier.
- 5) The following chart identifies the HDPE handtote packaging approved by TMI for use:

Container Identification	Outside Container Dimensions LxWxH (Inside Dimensions LxWxH)	Container Tare Weight (Pounds)	Supplier Name
NSO1215-4	12” x 15” x 4” (9.4”x13”x3.4”)	1.5	Orbis
NSO1215-7	12” x 15” x 7.5” (9.4” x 13” x 6.8”)	2.2	Orbis
NSO2415-4	24” x 15” x 4” (21.4” x 13” x 3.4”)	2.6	Orbis
NSO2415-7	24” x 15” x 7.5” (21.4” x 13” x 6.8”)	3.6	Orbis
NSO2415-11	24” x 15” x 11.5” (21.4” x 13” x 10.9”)	5	Orbis
NSO2415-14	24” x 15” x 14.5” (21.4” x 13” x 13.8”)	5.7	Orbis
NSO2422-7	24” x 22” x 7.5” (21.4” x 20.5” x 6.8”)	5.5	Orbis
NSO2422-11	24” x 22” x 11” (21.4” x 20.5” x 10.4”)	6.3	Orbis
NSO2422-14	24” x 22” x 14” (21.4” x 20.5” x 13.8”)	7.1	Orbis
NSO3215-7	32” x 15” x 7” (9.4” x 13” x 6.7”)	5.8	Orbis
NSO4815-7	48” x 15” x 7.5” (9.4” x 13” x 6.3”)	7.5	Orbis

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NSO4815-11	48" x 15" x 11" (9.4" x 13" x 9.6")	9.3	Orbis
4845 B-Pallet	48" x 45" x 5"	37	Orbis
4845 B-Cap	48" x 45" x 4"	19	Orbis

- 6) Cut and weld HDPE packaging is available only if every attempt has been made to utilize the standard packaging identified in the chart above.
- 7) Corrugated plastic handtote packaging is available only if every attempt has been made to utilize the standard packaging identified in the chart above.

C) PALLETS AND TOPCAPS:

- 1) All pallets must be accessible from all four (4) sides.
- 2) All pallets are to be 45" x 48" and be labeled in accordance with the TMI Packaging Marking Standard. 32" x 45" Pallet / Cap combinations can be utilized if size of container warrants for most efficient stacking pattern.
- 3) All palletized loads must be level and be secured utilizing a 45" x 48" topcap and either plastic banding or stretch wrap.
- 4) Suppliers must receive advance written approval to utilize wooden pallets with returnable hand tote containers.
- 5) Maximum height for any palletized load must not exceed 50" maximum height due to safety and ergonomic issues.


D) FABRICATED RACKS:

- 1) All racks must be accessible from all four (4) sides.
- 2) All racks are to be labeled in accordance with TMI Packaging Marking Standards.
- 3) All racks must have metal plates attached by either rivet or weld to hold kanban holders or AIAG labels.
- 4) Every attempt should be made to design racks to ensure maximum utilization of transportation. This includes designing racks so they can be double stacked for shipping.
- 5) If casters are to be utilized, a review of the supplier's loading / unloading area will be required prior to approval.

E) TOTAL CONTAINERS PURCHASED BY TMI:

- 1) TMI will reference the chart below to determine total number of days containers will be required. TMI will review logistics further case by case to ensure the proper amount of packaging is issued for each supplier. With TMI Plant PC approval, TMI can deviate from the reference table below:

DELIVERIES PER WEEK	# DAYS CONTAINERS REQUIRED:
1	15
2	11
5	6
10	5
10 +	4

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- 2) If at any time during production a supplier does not have enough packaging to support operations for any reason, the Production Control Manager at the appropriate TMI plant must be notified immediately to approve alternate packaging.
- 3) TMI plant and supplier personnel must immediately determine the reason for shortage and implement a countermeasure to prevent the shortage from occurring in the future.
- 4) It is both TMI's and the supplier's responsibility to remove damaged containers from the fleet immediately. TMI must return damaged containers to the appropriate supplier clearly labeled with the following verbage:

“DAMAGED PACKAGING / REPAIR UPON RECEIPT”

EXPENDABLE PACKAGING SPECIFICATIONS:

A) CORRUGATED BOARD HANDTOTE:

- 1) Expendable packaging will only be approved by TMI if return freight costs for returnables are excessive.
- 2) Expendable packaging must not require cutting by TMI operators at the storage area or line side.
- 3) All packaging must be stackable and have the capability of being palletized on a 45" x 48" pallet.
- 4) All packaging must arrive at TMI with one (1) 6" x 4" AIAG label attached.
- 5) All packaging must be labeled using the TMI Packaging Marking Standard.
- 6) Suppliers and TMI plants must make every attempt to commonize packaging styles for each supplier.
- 7) The dimensions identified in the previous chart for returnable handtotes should be followed. This allows TMI plants to commonize line side racks and storage roller sizes.

B) FORKLIFT CARRIED EXPENDABLE:

- 1) In some rare instances it is necessary for a supplier to utilize specialized packaging methods such as wooden bases with metal banding straps to secure product.
- 2) All specialized packaging must be accessible from all four (4) sides
- 3) All specialized packaging must accommodate one (1) 8.5" x 4" kanban card or one (1) 6" x 4" AIAG label.
- 4) All specialized packaging must be reviewed and approved by the TMI plant safety coordinator.


PACKAGING TRIAL GUIDELINES:

A) REQUEST AND SUBMITTAL:

- 1) Upon initial approval of Packaging Proposal Form, TMI plant production control manager will request a packaging trial for one (1) full container of each part to be supplied by the supplier.
- 2) If no sample packaging for the proposed and approved style is available to the supplier, TMI General Office Purchasing will obtain a sample for the supplier.
- 3) The supplier must attach a label (yellow in color) identifying the package as a packaging trial shipment.
- 4) TMI plant PC and QC will review the packaging trial upon receipt. If the trial is approved, TMI plant PC will sign the Packaging Proposal Form and fax to supplier. If not approved, TMI will request another packaging trial which may result in a new design to be reviewed.

B) PACKAGING TRIAL SHIPMENTS:

- 1) Suppliers currently supplying parts to TMI **MUST NOT** utilize existing logistics for shipping trials. Refer to the JCI Approved Carrier Listing for preferred carrier.

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PACKAGING PROPOSAL FORM - STANDARD COMPLETION FORMAT - Please complete each section of the Packaging Proposal Form (TM-PU-FM-06-501) as identified below:

SECTION	INFORMATION TO BE PROVIDED	TO BE COMPLETED BY
1	TMI plant to which product will be shipped	Supplier
2	Company name of supplier	Supplier
3	Address from which product will be shipped	Supplier
4	Person(s) managing production shipments	Supplier
5	Phone number(s) of person(s) in Section 4	Supplier
6	Fax number(s) of person(s) in Section 4	Supplier
7	Initiator of Packaging Proposal Form	Supplier
8	Part number as it will be ordered by TMI	Supplier
9	Part description as identified on production drawing	Supplier
10	Carry over packaging exists	Supplier
11	Sketch of production part	Supplier
12	Sketch of container	Supplier
13	Sketch of interior dunnage (if required)	Supplier
14	Sketch of load as it will be shipped to TMI	Supplier
15	Part length in inches	Supplier
16	Part width in inches	Supplier
17	Part height in inches	Supplier
18	Part weight in pounds	Supplier
19	Material of part (ex: plastic, metal, vinyl, foam, etc.)	Supplier
20	Toyota standard of material identified on part drawing	Supplier
21	Container size/type	Supplier
22	Packaging length in inches	Supplier
23	Packaging width in inches	Supplier
24	Packaging height in inches	Supplier
25	Packaging tare weight in pounds	Supplier
26	Material of packaging (ex: HDPE, steel, corrugated board, etc.)	Supplier
27	Material of dunnage (ex: corrugated board, corrugated plastic)	Supplier
28	Daily usage estimated (= Annual volume / 245)	Supplier
29	Quantity per container proposed	Supplier
30	Containers per day (= Daily volume / quantity per container)	Supplier
31	Gross weight of container (container weight plus parts weight)	Supplier
32	Delivery cycle of supplier to TMI	Supplier
33	Number of packages per load	TMI PC
34	Quality control approval	TMI QC
35	Manufacturing approval	TMI MFG
36	Engineering approval	TMI ENG
37	Production control approval	TMI PC
38	Safety coordinator approval	TMI SAFETY COORD
39	General Office Purchasing approval	TMI PURCHASING
40	Final TMI approval after packaging trial is reviewed	TMI PC

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TMI PACKAGING MARKING STANDARD:

1) All packaging must be labeled according to the following guidelines:

- Returnable packaging (containers, pallets, and topcaps) will be identified with the following verbage on two (2) sides - **“Property of Trimmasters”**
- Expendable packaging must identify supplier name and TMI location to where product is being shipped. Identification to be placed on two (2) sides.
- **Routing labels will be placed on containers to designate TMI plant and supplier packaging is to be used for. “TMI (Plant) < -- > Supplier”**

REVISION	REVISION DATE	SECTION	DESCRIPTION OF CHANGE
0	08/09/04	ALL	Initial Release
1	03/01/05	RESPONSIBILITIES & MARKING STANDARD.	<ul style="list-style-type: none"> * Added TMI general office buyer responsibilities to design and design approval. * Revised handtote packaging identification and sizes * Added requirement for rack design * Added marking requirements