



Doing Business With Harley-Davidson, Packaging

Original Equipment Manufacturing and Assembly Operations
Updated: August 2016

INTRODUCTION

This document details the minimum acceptable packaging requirements for purchased components used at Harley-Davidson's Manufacturing and Assembly facilities. The principal objective of these requirements is to guarantee part quality, maximize production efficiency, and ensure safety while minimizing overall packaging and transportation costs.

There are additional packaging requirements for Harley-Davidson Parts & Accessories. More detailed specifications are presented in the "Packaging and Labeling for Inbound Parts & Accessories" document on H-DSN.

Suppliers interested in more information regarding these requirements, or seeking technical assistance should contact their Harley-Davidson purchasing representative who can direct them to the appropriate packaging resource.



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PACKAGING PART QUOTING

The decision to use expendable or returnable packaging for incoming original equipment (OE) parts takes into account many factors. These factors include safety, quality and cost. To aid in the decision-making process, suppliers should quote the part cost using both expendable and returnable packaging, and record the container size and density assumptions made while quoting.

There are also instances where suppliers will require expendable dunnage inside of returnable containers. The cost of this expendable dunnage should be included in the quote and rolled into the piece price of the part. Contact the appropriate Harley-Davidson Packaging Engineer if there is any question regarding the need for expendable dunnage.

Part quotes that involve a multiple tiered supply chain should quote the part cost with the assumption that any Harley-Davidson returnable packaging is used only for the finished part shipment from the final point of value-added processing, to the Harley-Davidson designated facility.

RETURNABLE PACKAGING

Returnable packaging is considered anything that is used to ship a part multiple times. Harley-Davidson is responsible for the design, development, and implementation of returnable packaging.

Returnable Container Design Process:

The Harley-Davidson Packaging Engineer will develop concepts, drawings and samples as needed for review with the appropriate internal and external stakeholders. Following final approval, container system quantities will be determined and purchased by Harley-Davidson.

Returnable Packaging Sketch Forms:

The returnable packaging sketch form is developed by the Harley-Davidson Packaging Engineers. It is meant as a tool to communicate the concept and/or final packaging plans to both internal and external stakeholders. Supplier input and endorsement will be solicited during the approval process.

Container System Sizes:

Determining the number of returnable containers to purchase is an important part of the process when implementing returnable systems. To ensure process discipline, value stream maps are used to determine the number of containers to purchase. The part supplier will be asked to actively participate in the development and review of value stream maps for all new returnable designs. The goal of the value stream map is to define all internal and external process requirements while minimizing the quantity of returnable containers required to support the delivery of parts to Harley-Davidson.

- Minimizing the quantity of returnable packaging in the system is a conscious effort to control total cost and promote lean manufacturing.
- Harley-Davidson provides returnable packaging for **finished goods only**.
- Suppliers must not use Harley-Davidson returnable packaging for their internal processes, multi-tiered supply chains CKD or P&A without written authorization of Harley-Davidson Packaging Engineer, Material Planner and SBA.
- Returnable packaging is not to be used for bank builds



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Variables of a value stream map may include, but are not limited to the following:

- Days in inventory at the supplier
- Days in transit from the supplier to Harley-Davidson
- Days in inventory at Harley-Davidson
- Days allocated for return/sorting
- Days in transit from Harley-Davidson to the supplier
- Days for flexible manufacturing (Surge)
- Part's average daily usage (ADU)
- Container pack quantity (CPQ)

Once this information is defined the following formula is used to calculate the system requirements:

$(ADU/CPQ) \times \text{Total Value Stream Days} = \text{Returnable Container System Size}$

Volume Rate Increases:

As daily production volumes change, the level of packaging in the system may need to be adjusted to reflect volume changes. It is the responsibility of Harley-Davidson Packaging to make these calculations and determine the required adjustments.

If the appropriate Harley-Davidson supplied returnable packaging is not available, the supplier is required to ship in an approved back-up expendable pack. Plant Packaging Engineer Approval is required prior to shipping in the expendable backup packaging.

Build Events:

After returnable packaging design concepts have been approved by the stakeholders, packaging will be ordered and shipped to the supplier ahead of the MRD date. This packaging must be used to ship the parts to the build events as directed by the Harley-Davidson Packaging Engineer. The Harley-Davidson Packaging Engineers will use this to evaluate the designs and make any necessary modifications before production packaging is purchased.

Container Maintenance:

Both the supplier and Harley-Davidson are responsible for maintaining the integrity of returnable packaging. Suppliers are responsible for maintaining the containers cleanliness and ensuring product is shipped in clean, undamaged packaging.

- It is the supplier's responsibility to notify Harley-Davidson of any damaged containers received within 24 hours of receipt.
- The supplier may not scrap packaging without prior written approval from the appropriate Harley-Davidson packaging representative.
- Harley-Davidson is responsible for expenses incurred for the repair or replacement of returnable packaging caused by normal wear and tear.
- Cost of repairs which are required due to accidents or misuse will be the responsibility of the party causing the damage.



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Items that are to be checked when inspecting returnable containers (including but not limited to):

- Cracks in the corner joints
- Missing or broken access gate hinges
- Extensive damage to the container base
- Broken off pieces
- Pierces or cuts
- Bowing sidewalls
- Excess dirt or debris

Obsolete Returnable Packaging:

Harley-Davidson is responsible for the disposition of all obsolete returnable packaging materials. Suppliers who have any obsolete dunnage or containers at their facility should contact their appropriate Packaging representative. Disposition of Harley-Davidson assets is strictly prohibited without prior written authorization.

Returnable Packaging Expendable Backup

Suppliers are **not** allowed to miss a part shipment because of returnable packaging availability. Every supplier is required to have an expendable backup available to ship product. If the expendable backup is essential to meet a shipping requirement, prior authorization from the appropriate Harley-Davidson representative is required. Failure to communicate and receive approval from the onsite Harley-Davidson Packaging Engineer and Material Planner will result in the supplier being held responsible for the cost of the expendable packaging used.

The backup expendable package design must copy the current returnable packages footprint and container part quantity (CPQ).

The expendable back-up design is required to be completed and submitted to Harley-Davidson Packaging Engineer prior to the PV new model build event. Proper documentation of backup packaging is required and must be completed by filling out the Expendable Backup Packaging Sketch Form tab on the Returnable Sketch Form. Once the form is submitted back to Harley-Davidson the Packaging Engineers will confirm that the CPQ and footprint match that of the returnable pack.

Please refer to the Expendable Packaging section below for design and material guidelines.

EXPENDABLE PACKAGING

The Harley-Davidson part supplier is responsible for the design, development, procurement, and implementation of all expendable packaging. The cost of the expendable packaging is to be included in the piece price of the part provided. Harley-Davidson Packaging Engineers will provide final approval of the footprint and CPQ of all primary and backup expendable packaging.



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The Expendable Packaging Sketch Form is used to communicate the inbound expendable packaging plan between all internal and external stakeholders. The Development Purchasing Analyst will send the sketch form with instructions on how to complete the form. Completed forms must be submitted to the Harley-Davidson Packaging Engineer. The engineer will be copied on the original email from the Development Purchasing Analyst. This submission needs to happen **no later than 8 weeks prior to the first major build event.**

Expendable Design Guidelines

It is the responsibility of the supplier to design and develop the primary expendable packaging and expendable backup packaging. The part supplier should begin the packaging design process as early as possible in the part new product development cycle.

- The part supplier is directly responsible for the performance of the final expendable packaging design.
- Expendable packaging design must provide adequate protection to ensure safe delivery of part components to Harley-Davidson free of damage.
- Multiple part numbers cannot be packaged in the same container.
- Hand held expendable packaging cannot exceed 35 lbs.
- Suppliers are required to ship parts in the production intent expendable packaging as proposed on the expendable sketch form for all production shipments and major build events.
- H-D Packaging Engineers will evaluate the packaging during the build event for revisions or final approval.

Expendable Container Sizes:

The following table contains the preferred container sizes for OE parts being delivered to Harley-Davidson assembly and/or manufacturing facilities. These box sizes cube out Harley-Davidson standard pallet dimensions.

If designing an expendable backup package the optimal sizes correlate with current returnable box sizes. In the chart find the optimal size that the part currently ships in and design the package to fit within the acceptable length, width, and depth.

Acceptable Expendable Container Size Chart:

The following chart displays acceptable expendable container sizes. The ideal length, width, and depth on the left side of the chart match the current returnable container sizes Harley-Davidson uses. These sizes are proven to maximize the amount of containers on a pallet and in a truck. The acceptable length, width, and depth section are the expendable size ranges that all packaging must fall within.

*When designing an expendable backup package, the size of the pack needs to correlate with the current pack size used to ship parts in returnable containers. The box size should match or be as close to matching the ideal sizes. Please make every effort to match the ideal sizes.



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Handheld Totes

Ideal Length	Ideal Width	Ideal Depth	Acceptable Length Range	Acceptable Width Range	Acceptable Depth Range
6"	6"	6"	6"	6"	6"
12"	7.4"	5"	10-12"	6-7.4"	5"
15"	12"	5"	13-15"	10-12"	5"
15"	12"	7.5"	13-15"	10-12"	6-7.5"
15"	12"	9.5"	13-15"	10-12"	6-9.5"
16"	15"	7.5"	14-16"	13-15"	6-7.5"
16"	15"	9.5"	14-16"	13-15"	6-9.5"
24"	15"	5"	22-24"	13-15"	5"
24"	15"	7.5"	22-24"	13-15"	6-7.5"
24"	15"	9.5"	22-24"	13-15"	6-9.5"
24"	15"	11.5"	22-24"	13-15"	9.5-11.5"
24"	15"	14.5"	22-24"	13-15"	11.5-14.5"
24"	22"	7"	22-24"	20-22"	5-7"
24"	22"	9"	22-24"	20-22"	7-9"
24"	22"	11"	22-24"	20-22"	9-11"
32"	15"	7.5"	30-32"	13-15"	6-7.5"
32"	15"	9"	30-32"	13-15"	6-9"
48"	22"	7"	46-48"	20-22"	5-7"

Bulk Containers

32	30	24	30-32"	28-30"	23-25"
32	30	34	30-32"	28-30"	30-34"
48	45	34	46-48"	43-45"	30-34"

Dunnage for Expendable Packaging:

For parts that are non-cosmetic, bulk packing is acceptable and no internal dunnage is required. For cosmetic or fragile parts the use of expendable dunnage should be used only as required to protect the quality of production parts. Bagging, wrapping, masking and taping parts should be minimized to ease the process of removing parts from the packaging.

All expendable packaging material must be legally and economically disposable at all Harley-Davidson locations regardless of the initial location using the packaging materials. Harley-Davidson highly recommends the use of commonly recycled packaging materials.

Expendable Packaging Closures:

- Tape should be used to secure the lid of a container. Paper-packaging tape that can be torn is preferred.
- Do not use reinforced tape, staples, or glue as a box closure method unless approved by a Harley-Davidson Packaging Engineer.



PACKAGING SAFETY AND ERGONOMICS

Safety and Ergonomics are a primary concern for Harley-Davidson in regards to the development of all packaging. When designing expendable packaging, Harley-Davidson suppliers must consider human interaction to ensure safety and prevent injuries both at Harley-Davidson and supplier facilities. Suppliers are highly encouraged to initiate ideas to improve the safety, quality, cost and efficiency of any existing product packaging.

Safety and Ergonomic Design Requirements:

- All manually handled packages must be equal to or less than 35 pounds.
- Expendable boxes that exceed 22 inches in height, including the pallet, will require a drop panel to allow access to the parts. The drop panel must create an opening of 50 percent of the container wall height and 80 percent of the container-wall-width dimension.
- All containers and palletized loads must be stackable unless part configuration and weight requirements do not permit.
- Packaging and pallets must be in good working condition prior to shipment to Harley-Davidson.

PALLETS

Harley-Davidson requires all suppliers to ship in on standard size pallets. Harley-Davidson does not provide expendable pallets for supplier shipments. Below are the specifications that need to be met to ship product to Harley-Davidson.

Pallet Materials:

- Wood, metal and plastics are acceptable materials as long as the pallet meets the criteria in this specification.
- Expendable corrugated pallets are not acceptable unless approved by a Harley-Davidson packaging engineer.

Environmental Issues:

All international wood packaging shipments, including pallets must comply with USDA treatment and labeling standards. These standards can be obtained at on the USDA website.

Pallet Dimensions (Length & Width) & Max Load Heights:

LENGTH (inches)	WIDTH (inches)	MAX HEIGHT (inches)
48	45	50
32	30	37.5
48	32	40



Pallet Capacity:

The loaded gross weight of a pallet load must not exceed 1200 lbs. unless otherwise approved by Harley-Davidson.

All pallets shipments need to withstand being double stacked during transportation. Shipments need to be double stacked in trailers to maximize cube space and efficiency of transportation vehicles.

Pallet Style and Type:

- Pallets must be four-way entry notched stringer pallets.
- Pallets must be flush (not winged) reversible or nonreversible stringer pallets.
- For safety considerations block style pallets are not accepted.
- Pallet construction must meet the standards defined by the National Wooden Pallet/Container Association.

Pallet Loading:

- No overhang of boxes is allowed.
- Under hang is only allowed as long as 90% of the surface is utilized.
- All packages must be secured to prevent the load from shifting during transit.
- Plastic strapping is required on all shipments.
- Metal strapping/banding is not acceptable.
- Stretch film may be required to ensure the load does not shift during transit and should be used in addition to plastic strapping

LABELING AND IDENTIFICATION

All Labeling information can be found on H-DSN under Doing Business with Harley-Davidson, Operations Process Information, Bar Coding Requirements. The link to this document is: <http://www.h-dsn.com/genbus/PublicDocServlet?docID=450&docExt=pdf>

HAZARDOUS MATERIALS

All suppliers and/or shippers are responsible to comply with all applicable international, national, federal, provincial, state or local laws and regulations for packaging hazardous materials (*packing, marking, labeling, describing and certifying*). If you have any questions about these regulations contact the appropriate Harley-Davidson Packaging Engineer.



CONTAINER EXAMPLES



Returnable Hand Held



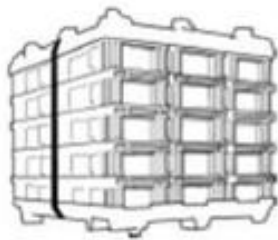
Expendable Hand Held



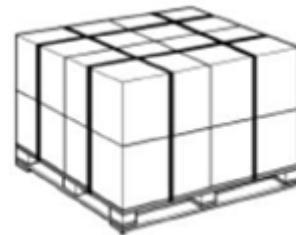
Returnable Bulk Bin



Expendable Bulk Bin



Returnable Palletized Load



Expendable Palletized Load