



LARSON
PACKAGING
COMPANY

The Complete Crate Buyer's Guide

How to ensure you get the right crate that
will help your cargo arrive safely and intact



Reduce Costs and Damage, Gain Efficiencies, and Enjoy Flexibility with a True Packaging Partner.

Larson Packaging Company designs and produces unique crating solutions. We design our crates to exceed your most demanding specifications using only quality materials to ensure a superior enclosure that safeguards your shipments without over packaging.

Why write a complete Crate Buyer's Guide

There are important considerations when designing and ordering crates for shipping cargo.

Problem is, buyers of crates are sometimes not fully aware of this. They think a crate is just a crate, and that pretty much any old crate will do the job.

As a result, they give their manufacturer inadequate or incomplete specifications. The manufacturer subsequently unknowingly makes a skid or crate that's not suited to its intended purpose. At best, this can cause delays and potentially expensive rework; at worst, it can result in improper packing, damaged products or machinery, transit delays, production downtime, or even worker injuries.

Sometimes the opposite occurs too, and they order crates that are over-engineered, hence more expensive than required.

At Larson Packaging Company, we believe an educated and informed buyer is the best customer. That's why we've prepared this guide.

This guide is not comprehensive, since there are many details that we, as the crate designer, are responsible for specifying. Instead, our goal is to get you to consider what you really need in your crate. That way, you're better equipped to give us the critical data that is the foundation for manufacturing a crate or shipping base that is optimal for your specific application.



How you can get the most out of this guide

Crates and heavy-duty skids are designed for the size, weight, shape, fragility, and sensitivity of the item being shipped, as well as the rigors of transportation and their destination.

Depending on these requirements, they may include floater bases and foam lining, or supports for shock and vibration protection. Or the manufacturer might suggest specialty hardware, blocking, and ramps to facilitate reuse or loading. Each requirement affects design, construction and cost.

On the flip side, if your products or machinery is more robust and less sensitive to damage, or smaller in dimensions, your crating may well require less (or lower-grade) wood, and fewer cuts or modifications, plus less complicated hardware and support. This translates into lower crate cost.

“Crates” can also include wire bound boxes, bins, open crates, nailed wooden boxes, and cleated panel boxes.

Cleated panel boxes comprise the bulk of commercially used crates and offer superior protection against weather hazard. They are also stronger and more rigid than open crates.

These types of crates are our focus in this guide. There are dozens of glossary terms in the crating business, but you need to know only a few to specify the characteristics of your crate needs.



These 16 steps are the most effective way to ensure you get the right crate the first time

1 Get On Top Of Crate Design Fundamentals

The 601A-style cleated-panel design is commonly used for light- and medium-duty applications (see Figure 1).

This light-duty crate is suitable for most purposes and can be further strengthened with intermediate cleats (additional boards between the edge cleats) and/or thicker sheathing (this is the wood, usually plywood, that makes up the four enclosing panels and the top.)

When top loading is difficult or front loading is preferable, or if the item to be crated is heavy or bulky, a 601A D/E (Drop End) crate may be a better option (see Figure 2).

Once the item is on the base, the cap (the top, two sides and two ends) is placed over it and fastened to the skids, usually with lag screws. Depending on the type of item and its weight, the base may be plywood or lumber. A shock absorbing floater base (a platform raised up from the base of the crate by compressible material, usually polyurethane, polyethylene or polypropylene foam) might also be needed.

Similarly, risers, rails, removable supports or blocking, and ramps to facilitate loading and unloading may be useful or required.

SPECIFICATION TIP

If you have an existing drawing or specification, you should provide that to your crate manufacturer. Frequently, design, engineering, and manufacturing can take that to revise the specifications for better performance and reduced cost. And if you know you need a MIL-SPEC design, you should tell the manufacturer.

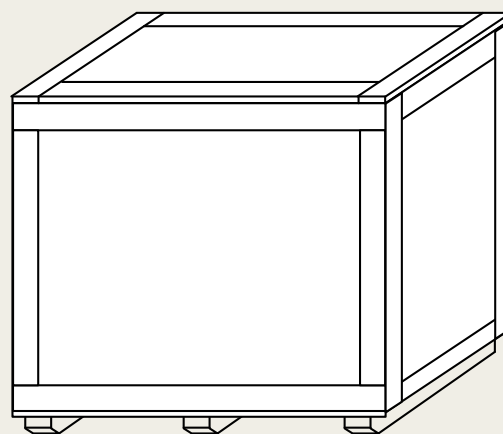


Figure 1: 601A Crate

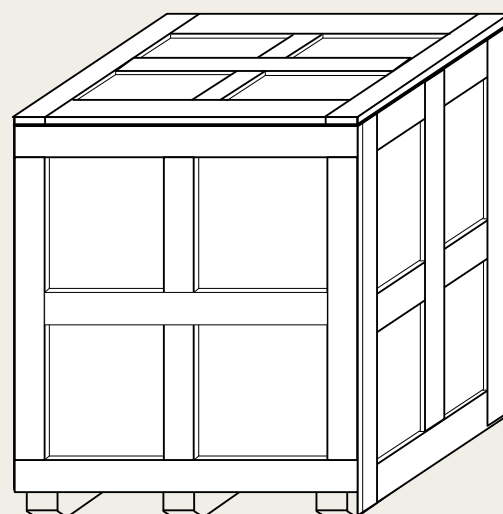


Figure 2: Drop End Crate

2 Decide Your Degree Of Packaging Protection

Depending on what you are shipping, whether it is a box, a sensitive product, a machine, or miscellaneous items, you might only need a pallet or a skid. A skid is a pallet with no bottom deckboards (see Figure 3). Skids can also refer to the timbers under a crate or base that allow for forklift entry.

Alternatively, your product may require full protection from the elements and potential damage. This requires a crate. However, a standard plywood crate does not necessarily provide complete weather/moisture; consider referring to an enclosed crate with an optional moisture-barrier system. In some cases, a base with a corrugated sleeve or cap may be sufficient.

SPECIFICATION TIP

Tell the manufacturer whether you require a skid or a crate and the level of moisture protection required.

3 Finalize The Item You're Crating

What are you shipping? Is it a product? A machine? Something else? What is it called? What does it look like? Is it uniform or odd-shaped? Does it have legs or wheels? Knowing all of this is critical to the engineers who'll design your crate.

SPECIFICATION TIP

Many things that need to be crated must be measured and examined by the crate manufacturer, but you should provide a brief description of the item(s).



4 Know Your Required Crate Size

If you know the inside dimensions (ID) of the crate you'll need, please specify that. This is also known as the cavity size if the crate includes internal foam or blocking.

Sometimes you may know the outside dimensions (OD) required. Length is specified first and is always the longer of the horizontal dimensions. Specify length, width and height. Note that if you specify OD, the height is measured from the ground. Otherwise, how big is the item or items?

You should also include the measurements of any protrusions, handles, attachments and so on, and note if the item is odd-shaped, or off-balance.

SPECIFICATION TIP

Specify the dimensions of the item to be crated, or, if known, the inside crate dimensions.



5 Know Your Item's Weight

What is the weight of the item you need crated? Its weight is crucial in deciding whether you need a lumber or plywood base, and how thick the wood needs to be to provide adequate support.

The weight of the item will also determine the quantity and size of skids required and whether or not reinforcement is required to prevent twisting or flexing of the base.

SPECIFICATION TIP

Specify the weight of the item or the maximum weight the crate will contain.

7 Know The Likely Number Of Crate Uses

A crate that is to be used multiple times is built stronger than a crate for one-time use. In addition, reusable crates must be sealed and opened multiple times. Some crates may require no tool to open them (tool-less).

SPECIFICATION TIP

How many times will this crate be used?



6 Decide On Transportation Method And Destination

Mode of transportation and destination can have substantial effects on crate design and how your items are protected.

For instance, different countries have various phytosanitary requirements, and the lumber (possibly heat treated) and documentation required to allow solid wood packaging material to enter a country must conform to precise requirements.

The professionals at Larson Packaging Company are familiar with all the current requirements and will prepare the crates and the paperwork to help minimize customs and compliance-related delays.

Similarly, ocean-going crates frequently require additional protection from the elements and moisture such as a barrier or corrosion inhibiting film or bags, desiccant or vacuum sealing. On the other hand, air shipments should be made as light as possible.

SPECIFICATION TIP

Indicate whether the destination will be domestic or international and if the latter, what country or countries the crates will transit and enter. Be sure to specify all modes of transportation.

8 Do You Need Specific Shock And Vibration Protection?

Many products and types of equipment are sensitive to shock and vibration.

Floater bases with appropriate types and quantity of foam can alleviate the effect of these forces. Crates can also be foam lined or products can be blocked or braced with foam to absorb lateral and vertical shock.

Finally, indicator devices and special labeling are available to ensure that you know how your item was handled, telling you if a shock or tipping violation occurred. While shock and tilt indicators can indicate that a handling threshold may have been exceeded, but they do not show exactly how an item was handled.

SPECIFICATION TIP

Indicate whether the item to be crated needs to be protected from vibration and/or shocks, and to what degree.

9 What Are Your Loading And Unloading Ramp Requirements?

How you load and unload your product(s) into the crate is an important part of the design.

In simple terms, crates can be put together in a variety of ways to facilitate loading and unloading. On small crates, the top can be removable. On the other hand, if your product is heavy, you may opt to have the side loose. If the product needs to be fastened to the base for some reason, you may want to have the entire cap loose.



Finally, if your product is particularly large and heavy or difficult to load and fasten to the base, the cap and front can both be loose and slid over the product and closed once loaded (see closure device). This is particularly useful for drop-end crates and for packing equipment for transport.

For example, for many medical devices or server/storage racks, the crates are built in such a way that the product is shipped complete and rolled into the crate. In these instances, a ramp built into the crate can be very useful.

For heavier products, the ramp may need structural supports, or steel runners or a tip to ensure durability. The ramp can be hinged on the base in which case the structural supports will be on the outside, or the ramp can be removable for a cleaner look and better truck cube utilization.

In the case of a crate with an internal floater base for shock and vibration protection, it is important to not hinge the ramp on the floater base. Many manufacturers design their crates that way for convenience, but when the crate is closed, the hinge locks in that portion of the floater base, thus rendering a portion of the shock/vibration protection system ineffective.

SPECIFICATION TIP

Consider how your product will be loaded onto the crate. By hand? Overhead by crane? Forklift? Can it rest on the base or might it need specialty blocking, rails, a well, or strapping/ hold-downs to secure it? Are tools okay to use, or must it be tool-less?



10 What Level Of Assembly Do You Need?

Crates can be furnished either set up (nailed together) or what is known as “knocked down” (KD). Aside: in the crate industry, the front and back panels are called “sides,” and the left and right panels are called “ends” (See Figure 1).

SPECIFICATION TIP

Tell your manufacturer whether you prefer the crate set up, or left KD. If set up, indicate which panel(s) you would like left off: the cap (the five panels over the base), the top only, front only, or top and front.



11 Choose A Closure Device For Your Crate

When one or more panels is left off, it is up to the customer to package and close the crate.

Crate can have all sorts of different closure options: nails, screws, lag bolts, or even reusable fasteners that do not require any tools at all. The latter includes devices such as Klimp fasteners (L-shaped clips that snap in place) or LinkLocks (cam operated devices that clamp together).

The crate manufacturer should be able to install these or provide them to you, and provide exterior strapping when necessary.

SPECIFICATION TIP

Indicate which type of closure device you prefer.

12 Decide Whether You Need A Packing Service

At Larson Packaging Company, we offer a full line of packaging services to ensure that your item is crated properly for maximum in-transit protection. This includes wrapping, vacuum-packing, desiccants, strapping, blocking, foam lining, enclosure, and sealing and labeling your crate ready for shipment.

We can pack for you at your site or at our facility.

SPECIFICATION TIP

Indicate whether you require packing assistance for your products or whether you can perform this yourself in-house.

13 Consider Your Logistics And Shipping

If you're arranging packing at the crate manufacturer's facility, you'll need to decide whether you'll be able to deliver the items, or if you need to arrange to have them picked up. In the latter case, consider that an Air-Ride truck and/or lift gate might be required if your product needs shock and vibration protection.

If you've outsourced packing, you may just arrange for the crated items to be picked up and delivered to you, or you might need to investigate full logistics and insurance with third parties so they arrive at their destination safe and sound.

At Larson Packaging Company, we have extensive in-house packing and logistics capabilities.

SPECIFICATION TIP

Indicate whether you require logistics and shipping help.

14 Is External Appearance Important?

Crates are typically designed to be functional — prioritizing in-transit protection from shock, vibration and impact.

However, depending on your need, different grades of wood can be used in the fabrication process to emphasize an aesthetic in addition to pure structural, protective performance. This may or may not be important to you, or perhaps to your customer.

In general, an “industrial” appearance is least expensive. The increased cost of a “standard” appearance results from a higher grade of wood, while “show quality” offers the best aesthetic impression for application like trade shows or public displays. When required, we can design packaging to applicable military specifications and industry standards.

SPECIFICATION TIP

Indicate the level of visual look you want from your finished crates.

15 What Stencils Or Markings Do You Need?

Exterior crate markings or stencils can be useful. Common markings are the standard international symbols — “this end up” (Up Arrows), “fragile” (broken wine glass), “keep dry” (umbrella) — To and From Address, Part Numbers and Rev Levels, Weight and Dimensions.

SPECIFICATION TIP

Indicate what stencils or markings you would like, and the specific details.



16 Does Your Packaging Need Pre-Production Testing?

In many cases, experience and engineering expertise can help you design an effective crate for successfully shipping your product and closely monitoring and measuring field performance might be sufficient.

However, for certain applications, it may be critical to empirically and independently test your packaging before deploying it in the field. For example, you might need to certify it for UN requirements, for international shipping, to applicable ISTA or ASTM procedures, and so on.

Or, you may just want to go a step further to gain a thorough understanding of your packaging's performance, and whether it meets specific shock and resonant frequency damping requirements for your product.

SPECIFICATION TIP

Indicate whether you require independent objective packaging performance testing.

Special Considerations For Server Racks And Medical Devices

Crates for server and storage racks and medical devices are often reused to transport high-value equipment. They must protect the equipment through frequent handling and repeated shipments. The crate's design must account for both performance requirements and the practical needs of receiving teams in data centers, hospitals, and doctors' offices.

For many receiving departments this means a tool-less crate that is easy to access, easy to load and unload, and a crate design that provides reliable protection for repeated use.

Because Laron Packaging Company crates are custom-engineered, many configuration options are available. The examples below highlight several of the most popular choices. For more detailed guidance, consult our specialized Guide to Server Racks.



(Tool-less) Rack Crate with Built-In Ramp

DESIGN OPTIONS

1. Heavy Duty Link Locks for secure tool-less access (Klimps can be used for savings but may require tools for removal)
2. Optional rear access panel to facilitate rack removal
3. Top and Side foam for added stability and protection
4. Heavy Duty ramp incorporated into the front panel for loading/ unloading capabilities

(Tool-less) Rack Crate with Removable Cover

DESIGN OPTIONS

1. Metal hold-down brackets with tool-less knobs
2. Heavy-Duty front brace with dual link locks for added shipping security
3. Heavy-Duty ramp shipped separately for off-loading racks
4. (6) Link Locks for quick and easy removal of Top cover

Bolt Down Rack Crate with Hinged Doors

DESIGN OPTIONS

1. Metal Runners recommended for weights over 1,750 lbs.
2. (4) Hold-down bolts to attach rack to floater base (ratchet required)
3. Heavy Duty ramp shipped separately for off-loading racks
4. Hinged front and back panels with link locks for quick and safe access (Doors can also be attached with link locks or klimps for cost savings)

What to Look for in a Crate Packaging Partner



We're business-to-business protective packaging experts specializing in custom shock and vibration protective packaging solutions for high-value, fragile, and sensitive industrial, military, I.T., and technical equipment. Our specialty is fragile, sensitive, and expensive equipment needing a custom solution.

Our engineers collaborate closely to assess your requirements and design a crate that caters to the size, weight, shape, fragility, sensitivity, and destination of the item to be shipped. We use mil-spec and ASTM standards as the quality baseline for all our wooden shipping crates and heavy-duty skids. The ISPM 15 statement should specify that solid-wood components are supplied compliant and marked when required for export.

We are a specialist protective packaging fabricator able to engineer customized foam cushioning, inserts, and assemblies designed to ensure optimal

protection from shock, impact, vibration, abrasion, and even electrostatic discharge. Our people understand the physical properties and cushion curves of polyethylene, polypropylene, polyurethane, and other protective foams and how they interact with the weight, geometry, fragility, and sensitivity of the product being shipped.

Our crate designs account for your product's specialized material handling, loading and unloading, blocking and bracing, and shock and vibration protection requirements. This might include floater bases and foam lining or supports, specialty hardware, blocking, and ramps to facilitate reuse or loading.

We maintain an extensive on-site material inventory and employ just-in-time, lean manufacturing processes in our two state-of-the-art manufacturing facilities to allow packaging supply in days, not weeks. And we back our speed with an industry-first on-time delivery guarantee where we will pay you a penalty for every day we are late.

Speed to Market is Critical. Delays can Cost Dearly.

Customers often tell us the packaging industry rarely fulfills commitments and that promises rarely turn out to be true guarantees.

**We will ship your packaging on the guaranteed date.
Otherwise we will pay you a penalty for every day we are late.**

Our ship dates are guaranteed at the time of order acknowledgment, and we can deliver in as little as 24 hours for some items. We promise faster turnaround times, simplified packaging admin, and a frictionless vendor experience.

What should you do next?

This guide provides an explanation of the basic requirements in order to design an appropriate crate for your item. However, the uniqueness of most products and machinery to be crated, and the number of specialized details required to ensure a successful shipment, generally require a personal visit and analysis of the situation.

Our packaging engineers are capable of considering a multitude of factors and may suggest other items required to protect, load, block and brace, containerize, and prepare your product and/or equipment for shipment and safe arrival anywhere in the world.

Reach out to us and we'll be happy to help.



LARSON
PACKAGING
COMPANY

ISO 9001:2015 Certified
Quality Management System



Bay Area
Milpitas, CA

(408) 946-4971

1000 Yosemite Dr,
Milpitas, CA 95035

**Orange County/
Inland Empire/
Los Angeles**
Ontario, CA

(909) 605-9333

500 S Etiwanda Ave,
Ontario, CA 91761

San Diego
El Cajon, CA

(619) 579-7166

280 Cypress Ln
El Cajon, CA 92020

Memphis
Olive Branch, MS

(662) 240-2404

10291 State Line Rd
Olive Branch, MS 38654

larsonpkg.com