

## 2020 SHIPPING CRATE CONSTRUCTION

Your robot crate is an important component for your team to consider. Your crate should be sturdy enough to withstand the rigors of shipping and being moved multiple times by multiple carriers. Be sure to follow the instructions, specifically the size and weight parameters. Failure to do so may result in damage, delay and/or heartache, something no one wants to experience!

*FIRST* allows each team attending a Championship event to ship only one (1) crate containing their robot. If your team has a need to ship more than one (1) crate, your team is responsible for all the shipping and drayage costs for the additional crates.

Our friends at FedEx generously sponsor the cost of shipping the robot crate for every team who attends *FIRST* Championship. Be sure to say thank you to FedEx!

### Sizing Information

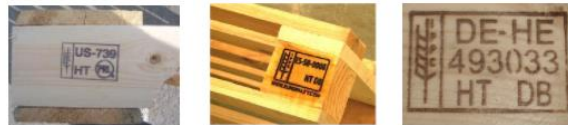
- Your robot crate needs to follow these restrictions.
  - **Not be taller than 60" high.** This is for ALL teams this year. Crates that are taller than that run the risk of being turned on their side for shipping.
  - **Weigh less than 400 pounds when fully loaded.**
    - This limit of 400 pounds includes the weight of the crate itself.
  - In addition to being less than 400 pounds actual weight when fully loaded, crates shipping via Air Shipment must be less than 995lbs dimensional weight.
    - What is **dimensional weight**?
      - Dimensional weight is calculated by taking the dimensions of the crate (in inches) and dividing by 139 ( $L \times W \times H / 139$ )
        - That means that a crate that is 48" x 48" x 60", your dimensional weight will be 995.
        - A crate that is 36" x 48" x 54" is also fine, as that will have a dimensional weight of 671.
  - Have a footprint of no greater than 4' x 4'. The footprint of the crate is the base, or bottom, measurements.

### Construction Information

- "Sit" on 2 pieces of 4" x 4" lumber, spaced at least 28" apart so it can be moved by a forklift or pallet jack.
- Be aware that your crate may be stacked during transport and storage.
- Use the following recommended materials for construction
  - TEAMS SHIPPING CRATES WITHIN THE U.S.
    - Recommended:
      - Use 3/8" or 1/2" plywood OR 3/8" or 1/2" Oriented Strand Board (OSB), a solid panel product of consistent quality with no laps, gaps, or voids.

- Not recommended:
  - Medium density fiberboard (MDF). This material makes crate construction too heavy and MDF can be dangerous to use if the correct safety precautions are not taken.
  - Particleboard. This material collects moisture that adds weight and may cause the crate to fall apart. Remember that your crate may be exposed to the elements when loading and unloading trucks.
- TEAMS SHIPPING CRATES ACROSS COUNTRY BORDERS
  - This includes all international teams shipping a robot to the U.S., AND any teams shipping a robot from their home country to another country to compete.
  - The U.S. Dept. of Agriculture has adopted international guidelines to decrease the potential for the introduction of certain plant pests that may accompany wood materials arriving from other countries. The crate construction and pallet guidelines stipulate that wood packing materials be either heat treated or fumigated with methyl bromide in accordance with applicable rules. These wood materials must have the approved international mark certifying treatment.
    - Crates must be built of materials that are compliant with international shipping requirements, i.e., heat-treated and ISPM 15 compliant (resistant to fire, termites, insects, and any contaminants in general). For additional information, please visit: [http://internationalshippingusa.com/ispm\\_15\\_rules.aspx](http://internationalshippingusa.com/ispm_15_rules.aspx)
    - Use only plywood or other exempted wood materials
    - Be sure the wood used for both your pallet and your crate is marked with the approved international mark.

Below are samples of stamps on wooden pallets used used in international shipping that indicate the ISPM 15 rules compliance.

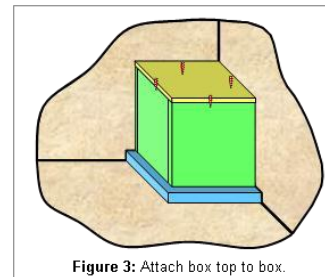
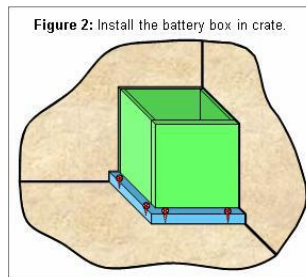
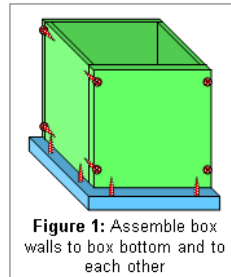


- Make sure you use properly treated and labeled wood for the 4" x 4"s under your crate used for facilitating forklift use.

## Contents Information

- Be filled with ONLY your robot, bumpers and batteries.
  - Do Not ship any tools, first aid kits, t-shirts or other items in your robot crate.
  - For teams shipping across international borders, shipping these additional items causes clearance delays and other problems. Do not run the risk of your robot crate not arriving to your competition event in time by adding items that do not belong.
- Follow guidelines for shipping batteries
  - It is not mandatory that you ship your batteries with the robot. However, if you choose to ship the 12VDC batteries in the crate with the robot, federal regulations require teams to follow the instructions below:
    - Do not leave any batteries mounted on the robot (connected or not).
    - Do not ship Lithium Ion Batteries in your crate. For more information, see here: <http://www.iata.org/whatwedo/cargo/dgr/Pages/lithium-batteries.aspx>

- Place batteries inside their original box or carton packaging.
- Use styrofoam covering with protective caps to cover the battery terminals.
- Ensure that your batteries won't roll around your crate during transport. You can use an "inner battery box" as shown below, or take similar precautions to secure them.



- In the description section of your shipping paperwork, write "NON-SPILLABLE BATTERY INSIDE."
- Attach the proper signage to your crate. Here is the signage that indicates you are shipping the battery that was included in the 2018 Kit of Parts: [http://firstinspires.org/sites/default/files/uploads/resource\\_library/frc/game-and-season-info/robot-transportation/2017/2017-non-spillable-battery-sign.pdf](http://firstinspires.org/sites/default/files/uploads/resource_library/frc/game-and-season-info/robot-transportation/2017/2017-non-spillable-battery-sign.pdf)
- For any other battery shipped, the team is responsible for getting their own proper signage for the crate according to the IATA standards.

## Other Important Information

- Have "TEAM # XXXX" (insert your team number) painted or stenciled in letters at least 6" high on at least one side of the crate. Shipping labels and paperwork often get lost in shipping. Painting your team number clearly on the crate will help to ensure that it arrives at your team's Pit Area on time.
- Have a method of attaching and displaying the shipping documents on the outside and on each side.
  - Affix sheets of plexiglass, plastic, or a sheet protector securely to the outside of your crate for a place to put the shipping documents before shipment. Failure to do this may result in lost or delayed robots, due to missing or ripped shipping documents.
  - We recommend purchasing a Job Ticket Holder (one example here: [https://www.staples.com/Staples-Heavy-Duty-Job-Ticket-Holders-3-Pack-15949-75255/product\\_923625](https://www.staples.com/Staples-Heavy-Duty-Job-Ticket-Holders-3-Pack-15949-75255/product_923625).)
- *FIRST* Championship – Borrowing Crates
  - Teams are allowed to borrow a crate from other teams to ship their robot to the *FIRST* Championship, however the following items must be followed:
    - Cover original team number
    - Affix or apply your team number
    - Cover or remove any other stickers, labeling, or documentation
    - Ensure the sturdiness of the crate you are borrowing.

## Questions?

- Email [frclogistics@firstinspires.org](mailto:frclogistics@firstinspires.org)
- Contact Customer Service at (603) 666-3906 or (800) 871-8326