

# Building Mission Models

for FIRST LEGO League Challenge



# Getting Organized

# Sort Your Bags by Number

For the SUPER POWERED season, you should find the following items in your Challenge set box

Bag #1 - 1	Bag #10 - 2
Bag #2 - 3	Bag #11 - 2
Bag #3 - 2	Bag #12 - 1
Bag #4 - 2	Bag #13 - 2
Bag #5 - 1	Bag #14 - 3
Bag #6 - 1	Bag #15 - 2
Bag #7 - 3	Bag #16 - 1
Bag #8 - 2	3 unnumbered bags
Bag #9 - 1	4 loose black frames

1 sheet of 3M dual lock



Photo Credit: Sharon Tiger Techs

# Open and Sort by Number

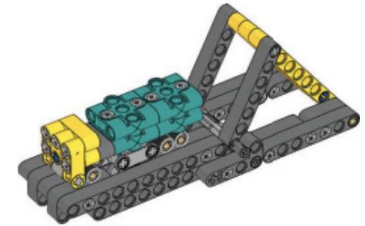
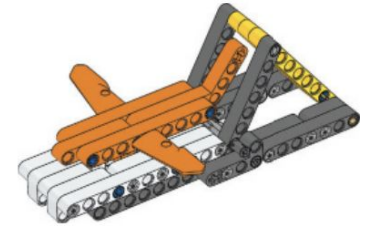
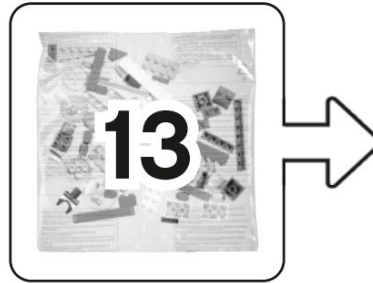
- Open each numbered bag one at a time as you need.  
Instructions (released on August 2) are by bag number.
- Sort the parts into general part types so that they are easier to find (axles, liftarms, frames, pins, etc.)
- You can use LEGO sorting trays, paper plates, small bowls, box lids, trays, etc.

Bag Number
Element Overview
Prepack Overview
Bag 1
Bag 2
Bag 3
Bag 4
Bag 5



# One Bag, Multiple Models

- One Bag number can sometimes produce multiple mission models.
- For example, Bag 13 on the right from Cargo Connect makes 2 models



**Building  
Efficiently and  
Reliably**

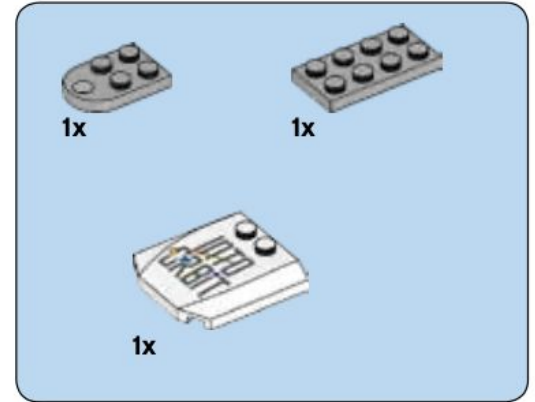
# Build in Pairs

- Building in pairs or small groups works well.
- One person finds the parts for the step, one person puts the pieces together, and one person checks to make sure the step was done correctly.
- Change roles every few steps.



# Multiplier Symbols

- Be sure to pay attention to the multiplier symbols (e.g. X2, X4) symbols at the start of a subset of instructions.
- You can save time by constructing them simultaneously.
- In the example on the right, you will build 4 copies of the item. The parts box (light blue) shows what you need for building one copy.





# Follow the Instructions

- Take your time and always build exactly what the instructions tell you.
- Do not improvise or “improve” the model.
- Your model must look like and behave exactly the same way as the ones at the competition.



# Check Your Work

- Have your coach or adult check the build or compare with another team's set if needed.
- Be careful and use the right part in the right step
- For example, using a black connector peg with friction in this area instead of a grey connector peg without friction will make a huge difference in how the model operates

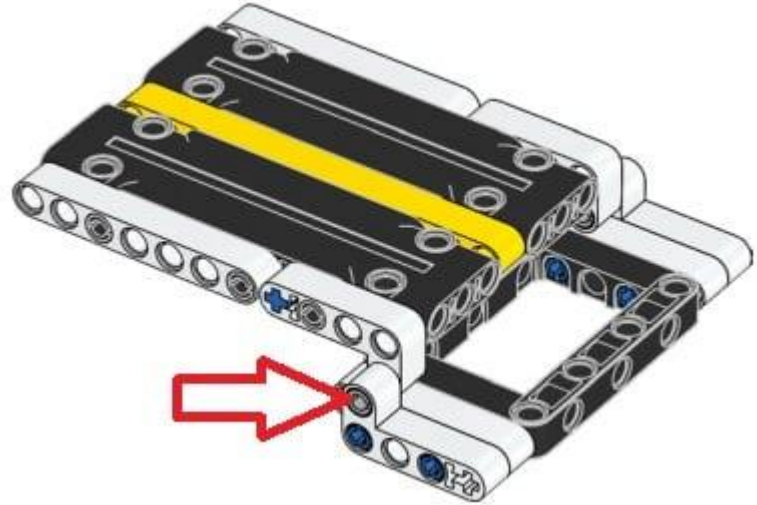
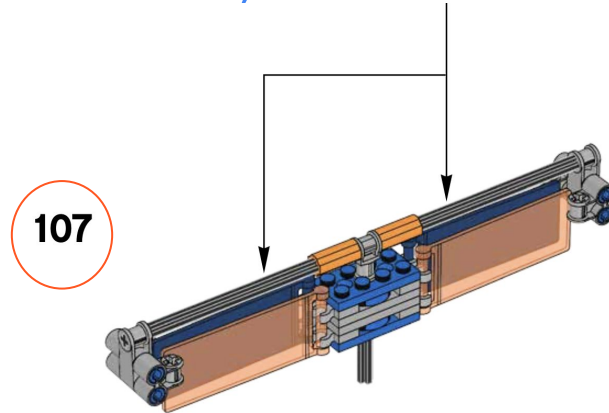
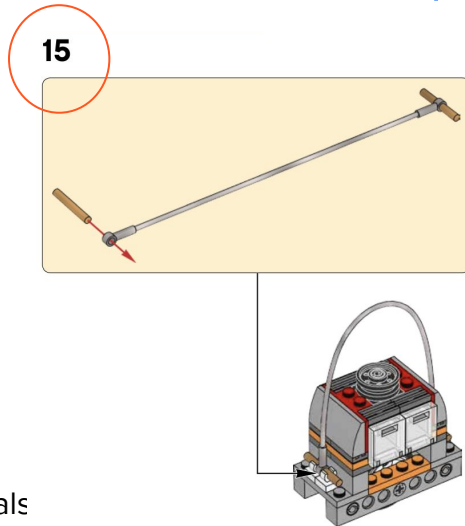


Photo Credit: FLL Challenge: Share & Learn

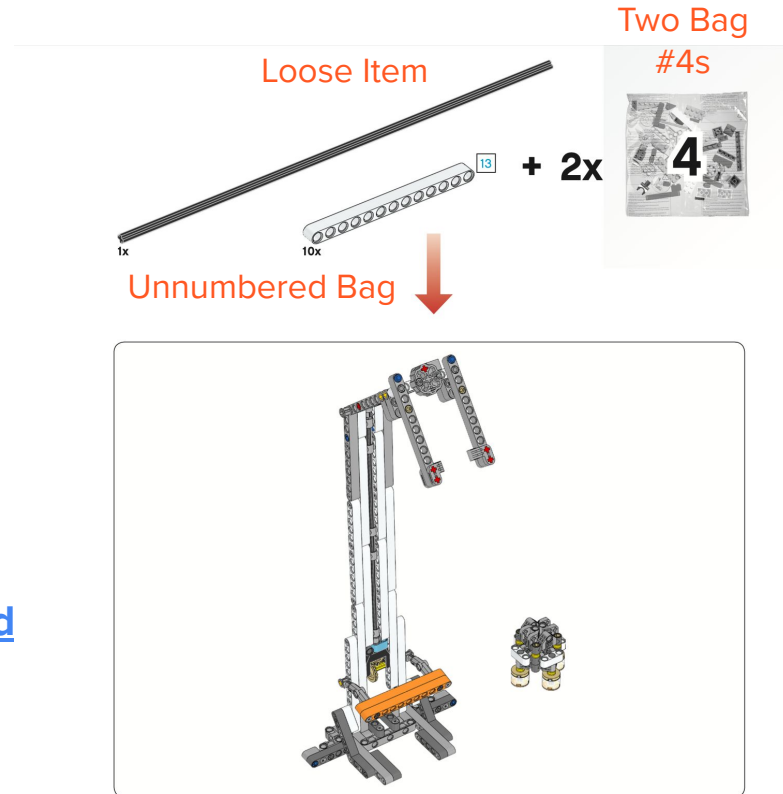
# Some Models Take Longer to Build

- When splitting up the work, note that some models and bag numbers take a lot longer to complete than others.
- You can check ahead and see how many step numbers there are (below, one model has 15 steps vs. another has 107)



# Unnumbered Bags

- Larger elements such as hoses, long axles, and 13M/15M beams are just loose in the box or in unnumbered bags. (M = LEGO Modules)
- Check the top of the instructions page for parts needed before you begin. In the example on the right, the long axle is loose in the box and the ten 13M beams are from an unnumbered bag. Everything else comes from 2 bags marked “4”
- If you are trying to presort by mission model so that a student can take elements home and build be sure you look for all the larger items in the unnumbered bags.



# Setting Up the Mat

# Setting up the Challenge Mat

- Placement of the challenge mat is a very important step before placing the models on it.
- The rules for placement can vary every year. Please refer to the Field Setup section of the SUPER POWERED Robot Game Rulebook for this year's instructions.
- The instructions will tell you how far East-to-West and North-to-South the mat should be placed relative to the table.



# Setting up the Models

- Place finished models loosely on the challenge mat.
- Be sure to follow the text and images in the Field Setup section of the Robot Game Rulebook very carefully. They will tell you which way a model should face.
- Use the markings on the challenge mat itself as alignment points. If it doesn't align, it could be an indication of something wrong with the build itself.



# Pressing Models into Place

- Once everything looks correct, follow the set-up instructions to place the dual-lock (square with X) on the Challenge mat as shown in the Robot Game Rulebook.
- Press the models down in place holding and pressing as close to the dual lock as possible.
- Not all models will need to be dual-locked. Some will stay loose on the markings on the mat.

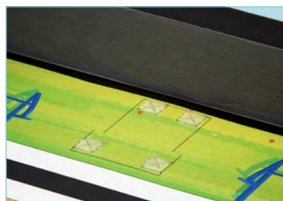
## 3M™ Dual Lock™ Reclosable Fastener



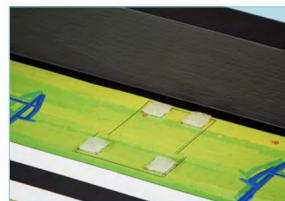
You will find sheets of Dual Lock squares in your Challenge set to secure the models to the mat. Dual Lock is an important part of field setup because if the models are not secured properly, you will have difficulty completing missions.

**SECURING MODELS** – The squares on the mat with the X

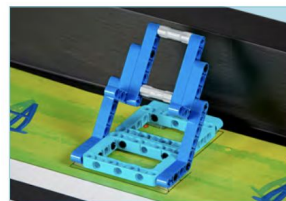
inside show where to apply the Dual Lock. Use the Dual Lock as shown in this example and be very exact. When pressing down a model, press on its lowest solid base instead of pressing from higher up, which might crush the model. To remove the model from the mat, lift it from its base to separate the Dual Lock.



**Step 1:** First Dual Lock square sticky side down



**Step 2:** Second Dual Lock square sticky side up



**Step 3:** Align the model and press down

Example from Cargo Connect



# Packing Away Models

- You can pack up and put away your challenge set if you need to. The models are very durable most seasons and should fit in a small box as shown.
- Remove models from as close to the dual lock as possible.
- One side of the dual lock should come off with the model. The other side stays on the mat.



# **Common Questions and Issues**

# Leftovers

- There are always some small leftover elements
- Although rare, in 2018 there was a grey liftarm that was unused
- In 2021, a whole spare set of cargo contents (liftarms were provided) deliberately.

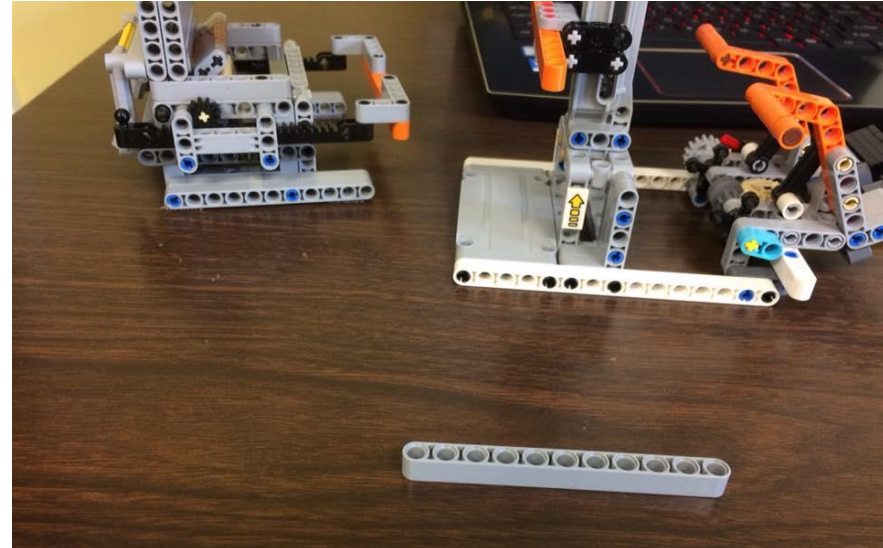


Photo Credit: FLL Challenge: Share & Learn

# No Build Instructions

- No build instructions for a bag number simply means the bricks are used in some other way in the challenge.
- For example, every year, there are no instructions provided for the bags that contain mostly white bricks (Mostly likely, it will be the three Bag #14 in SUPER POWERED)
- These Bag 14 LEGO bricks are used for building the team's Innovation Model that you will bring to your competition (see Robot Game Rulebook for the Innovation Project mission for details)



# Missing Items

- It is very uncommon to be missing a LEGO element or a whole bag.
- Can't find a small part? Check the bags, check the ground, and check to see that the element was not used earlier in another step by mistake.
- Can't find the Dual-lock? Check the box again - it tends to blend in with the cardboard
- Can't find a larger item? Check the unnumbered bags.
- If you really can't find it, call LEGO for help:  
1-800-422-5346 (USA/CAN) or 00800 5346 5555 (International), You can also visit the missing parts/customer service page of the [LEGO website](https://www.lego.com/en-us/customer-service/missing-parts)  
You will need to know the set number (45820) and the part you need. The Element Overview document in the Building Instructions section will tell you the part number.

Bag Number

Element Overview

Prepack Overview

