

Robot Game Updates

Remember to read all three parts of the Robot Game - Field Setup, Missions, and Rules.

This page is the first place to go for answers to Robot Game questions if you've already read the Robot Game page. You should also visit here often for answers to questions you never even thought of, because the postings here contain official information that will be in effect at tournaments.

Robot Game support beyond this page is available directly from the designer/author (Scott) at flrobotgame@usfirst.org (usual response in 1-2 business days). PLEASE SEE RULE 29.

TO VETERAN TEAMS: Don't draw false conclusions about yourselves or this year's game just because scores are lower this year. The lower scores don't mean you're "not as good" as you were last year, and they don't mean the game is "too hard." More thought and more effort still increase your score, and performance rankings reflect this as always. To understand how this game is different than games in the past, imagine a jumping game. You stand in place and jump as high as you can, and you can see how high you jump by looking at marks on the wall. For years, teams that got REALLY good at jumping were hitting their heads on the ceiling, and had no idea how high they could have jumped if the ceiling wasn't there. So the room has been rebuilt. And the new ceiling is twice as high - higher than any team can jump - this way we're SURE all teams are free to jump as high as they possibly can and still be measured. To complete the renovation, the marks on the wall are spaced by a new measurement no one is familiar with.

TEMPORARY NOTE: Update 30 has been added to.

36 - AIMING JIG DEFINITION

An aiming jig is a frame you design as a launching pointer to line your robot up just the way you need it to go, so you don't have to do that by eye. It aims and sometimes guides the ROBOT out of Base. It is NOT something that guides bacteria to the sink. Update 34 does not give an exception to anything but aiming jigs as defined here. By the way, remember that if a funnel or backboard is part of your sink delivery system, that object needs to be totally in Base when the bacterium it's supposed to guide starts to leave Base. That's true for every individual bacteria - all 48 possible trips.

35 - GROCERY WEIGHT / STATICS

SUMMARY: Some teams are putting vertical guard walls near the grocery table. The weight of the guard walls is not on the table. This is fine. And once in a while, a delivered grocery on the table is leaning on one of these walls. This Update is to say that when that happens, the grocery does count.

DEEPER READING: Picture a cereal box standing upright on a scale. Now let's say you're asked to push on the box

with one (dry) finger, such that the scale registers a weight increase. You would of course have to push DOWNWARD on the TOP of the box. You couldn't exert measurable downward force by pushing on the SIDE of the box, even trying various angles (tribology experts please refrain from e-mailing me on this). The cereal box would register the same weight whether it was leaning on a wall or not. Back to the game, even if a grocery would fall off the table if a guard wall was removed, that doesn't mean the wall was bearing the grocery's weight. The wall was just stopping the grocery from rotating / moving sideways.

34 - AIMING JIG EXCEPTION

Fact: When an aiming frame/device ("jig") is used for a delivery to the sink, that jig counts as "equipment involved" with that delivery.

Fact: Due to Update 33 and its referenced rules about Base and storage, only the robot can change the status of an object from being IN Base to being totally OUT of Base.

Fact: If an exception were not granted, the robot would have to take your aiming jig out of Base on every trip to the sink, or you couldn't use one.

Fact: That's insane.

Exception Granted: A jig used purely for aiming the robot is hereby excluded as "equipment involved" with a bacterium's trip to the sink, and can stay in place during bacterium deliveries.

33 - STORED OBJECTS ARE IN BASE

By Rules 14 and 15, when something is in Base it's understood that the kids "own" it, and can hold it or put it in a non-strategic storage spot on or off the table to free up room in Base. So whether on or off the table, stored objects count as being in Base - even when the match ends. Please ignore the word "temporary" in Rule 15. Since there's no robotic skill involved with hand-transferring objects back and forth between storage and Base, it's meaningless to the game, and not something worth denying points over.

32 - GERM DISPENSER DUAL LOCK

For people still struggling after Update 12, here's a picture of what is meant by "...move the front Dual Lock as far forward as possible."



31 - SPILLED TRUCK

For the yellow truck to score in Base, here's what needs to be in Base: The yellow truck. If the truck's produce is spilled and scattered outside Base, that doesn't mean anything for the truck mission. See Rule 3.

30 - RESCUE WITH GERMS WHICH HAVE NOT BEEN TO BASE

Germs which have not been to Base are defined or assumed to be cargo (see Rules 11 and 18) upon a robot touch if any of these are true:

- They are obviously being transported by the robot (touching the mat or not).
- They are on the robot.
- They are on the mat, surrounded, fenced in, or otherwise staged for sliding transport by the robot or things it was obviously in control of.

These germs are NOT considered cargo in any other circumstances.

At the end of the match, if there's no bacteria touching the mat outside Base, your empty dispensers are worth 12 points each, period. Referees please note: Even in those cases where you yourself had to take bacteria off the field (when it was cargo which had not been to Base yet, at the time of a robot touch), then by Rule 3, it's off the field and thereby off the mat. You don't later count it as touching the mat.

29 - DROOPY BACTERIA DISPENSERS

True enough, the small fixes applied to the bacteria dispensers weren't enough to stop them from leaning. Better fixes would have either been too difficult to describe, or would have interfered with the robot's path under the bin. Luckily the droop is pretty consistent, and the dispensers work exactly as intended. This post is official acceptance of the droop. You've all been working with the droop for about two months now, and we're not going to mess with it on you. To teams: Expect the same droop at tournaments as you're used to in practice. To tournament officials: Prepare the bacteria dispensers as per Update #12, and don't try to lessen the droop in any other way (no tape, Dual Lock, weights, further redesign, etc.) - it would hurt teams more than it would help.

28 - RATS AND CORN MALFUNCTION

Don't expect a benefit-of-the-doubt ruling if you gently push on a rat slide and the rat doesn't come down. Even with a slide in perfect condition, you have to give that model an honest smack to get the rat's weight off the slide (lighten up, rat!), and guarantee its descent. That's just the nature of the model, and all correctly built models behave the same. However, it is well known by now that the rat slides and corn harvester do need maintenance (see "Field Setup") in order to work like they did when they were correctly built (clicked pin connections for the slides, and spread walls for the harvester). This post is to remind you about Rule 14's "Quality Control" procedure. You share the responsibility for being sure the models are in tip-top shape if those models are critical to your game. It so happens that when the robot interacts with these particular models, it's only half way toward earning full credit for the associated missions, so benefit-of-the-doubt is much harder for the ref to give. The ref can still give you that favorable call, but it has to be REALLY obvious that a failure was the model's fault. So do your part to reduce your chance of depending on a benefit-of-the-doubt call.

27 - BABY FISH REMOVE-AND-RESTORE

It's one of the Top 3 most frequent questions this year (by people who have read the materials): "Is it okay if the baby fish comes off its mark temporarily?" I thought Rules 3 and 23 dictate an easy "Yes," but now I know what the problem was. It's been the word "still," which hints toward the need for uninterrupted contact. Sorry about that! Please ignore the word "still" with regard to fish-dependent scoring, and know that Rule 23 applies: The baby fish only needs to be on its mark at the END of the match.

26 - OKAY TO SHIFT BALLS AND RINGS

Rules 14 and 19 redundantly say objects can't be moved out of the robot's way by hand. But here's an exception: If there's a [ball on the mat] in the robot's way, or a [ring with no ball] in the robot's way, it can be shifted out of the robot's way. You should ask the referee to shift these objects, but if there's no way for the ref to get there in time, you may do it yourself. Neither the movement nor the new location of these objects is allowed to be a part of any strategy other than simply clearing the robot's path.

25 - GERM CLUSTER ENTERING BASE

If a cluster of several objects is entering Base but not all individuals are in yet, and you touch the robot, Rule 18 Bullet #3, and Rule 21 together mean the ref should take away the ones that hadn't made it to Base yet (correct, but REALLY?) In practice though, it's tough to win an argument about which ones were in or out, so referees usually either treat the cluster as a single object, (nice, but incorrect), or they stretch the Benefit-Of-The-Doubt rule too much (nice, but sloppy, and inconsistent). This needs to be repaired in the Rules, but here's your exception for now: When the robot is moving a continuous cluster of germs into Base, they are to be treated as one object. As soon as the first is in, they're all in. Two separate clusters are assessed separately, and fish, rats, pizza, and ice cream will still also be assessed individually.

24 - MULTI-PART MODELS

It is unclear from the Rules how to treat multi-part models in certain situations. Update 7 clears one situation up, and now here's another: If the yellow truck has reached Base, and you're taking it into Base by hand, its contents can come too, no matter where in the truck they were. The same is true with the refrigerated truck and its contents. Be careful though, overall, models still follow Rule 21.

23 - DISINFECT METHOD

Looking at Rule 3, Bullets 1 & 3... You are free to empty a germ dispenser without using the lever. BUT BE CAREFUL - No matter how you empty a dispenser, if you break the model, peel up any of its Dual Lock connections, or permanently force the lever out of its normal range of action, that is field damage, and Rule 14 says that missions benefitting from destruction are marked scoreless. Specifically, when germs come out of a dispenser that was damaged in the process, missions related will be scored unfavorably as follows:

--The dispenser they came from will not score as empty.

--Germs of that color ending up in the sink won't count.

--Germs of that color on the mat outside Base at the end of the match will still reduce the value of any other empty dispensers from 12 points to 7 points.

This update does not cover damage caused to a dispenser which was already emptied in a separate, earlier interaction.

22 - CHANGING THINGS OUTSIDE BASE

Where Rule 14 says that only the robot may make changes outside Base, this wording is new, but the rule is not. Like last year, a separate [whatever] can be sent to do things, but the point of this rule is to say that the motion of all things leaving Base must be initiated by the robot. Your hands can set things up, then start the robot, but it is the robot that must start all processes. NOTE: This is not some cryptic way of telling you a cart is or is not a good tool for the sink mission.

21 - ROBOT IS EQUIPMENT

Since the robot always initiates the movement of anything leaving Base, the robot is always part of the equipment that has to be totally in Base when each bacterium starts to move out, and totally out of Base when each bacterium comes to rest at the sink.

20 - MEAT MODEL

The "meat" model is the solid brown 2x4 crate with smooth top seen in pretty much every picture of the Base area. You built it with the yellow truck, but don't let that throw you; the Field Setup instructions tell you the meat goes in Base.

19 - NORTH OF WHITE LINE

The area where wheels must touch the mat is directly north of the applicable white line on the dock - that's between the fences.

18 - DISTANT TRAVEL

The robot itself must be touching the east wall when the match ends. The "robot" is the controller and anything joined with it in any way by hand which is designed not to separate from it except by hand. Separate objects are never considered part of the robot. Translation: Neither a separate craft sent to the wall, nor a separate object left there can substitute for robot.

17 - CONTROLLER ALLOWANCE

Though it was dropped to save text, it is understood that exactly one NXT controller is part of the allowable electrical parts list. In addition to your motors and sensors and wires and batteries, you may have exactly and only one NXT

controller OR one RCX controller. Simultaneous apologies to people A) who were confused by the omission and B) who think this post is silly.

16 - YOU CAN GRAB BOTH RATS

You won't find it written anywhere that one rat or the other is "your" rat. You are free and expected to grab either one or both. To go for both is a competitive move, but it's not ungracious.

15 – "BETWEEN" BASE AND THE SINK

The place where the constraints on a bacterium's trip apply is not limited to the direct line between Base and the sink, but rather anywhere along that bacterium's entire route from Base to the sink, wherever that route may go. Stated another way: The correct between: "I can't believe I got lost between home and work." The incorrect between: "The defender was between me and the goal."

14 – LEGO MANUFACTURED SENSORS

Rule 4 says you are only allowed to use certain LEGO-manufactured MINDSTORMS motors and sensors, but it's hard to tell them from others, so here's the list in pictures. It shows all motors and sensors allowed, the only ones allowed, and the exact ones allowed. They are... Top row: The NXT touch, light, ultrasonic, and color sensors. Middle row: The RCX touch, light, and rotation sensors. Last row: The NXT motor, and the RCX motor. Don't buy or use any sensor or motor not looking exactly like one of these, even if it's from an official LEGO source, and even if it says "LEGO" on it. There are two reasons for these limits: 1) These are the components from the standard "Education" and/or "Commercial" MINDSTORMS sets, and therefore have the highest probable availability everywhere FLL is present. 2) This selection provides excellent and appropriate functionality, and a reasonable place to "draw the line" to keep the competition robot-centered as opposed to wallet-centered.





13 – BABY FISH MARK

With Rules 3, 22, and 23 in mind, the baby fish needs to actually touch the white outline, even if it's just a tiny bit, and this touching needs to be observable at the end of the match.

12 - MATS PULLING UP

Please move the outer beams of your Bacteria Dispenser models one more space forward beyond the fix described in the Field Setup instructions (see new picture here), and be sure to move the front Dual Lock as far forward as possible. Thanks. The original instruction for where to put the model still applies. Thought the front feet of the models have grown, the rest of the model stays in place. The BACK of these models are to be lined up with their marks on the mat.



11 - YELLOW BACTERIA IN SINK

Since it is unclear from the Good Bacteria mission if yellow bacteria would be worth 3 points in the sink, you are welcome to put them there, but you'll be cutting their value in half, and they will still be taken as touch penalty objects as needed.

10 - FISH IN TRAILER

When you send fish out of Base hoping to get 6 points for each in a scoring trailer at the dock, you're giving up the 3 points they were worth in Base. It's either 3 or 6 but not both. So when you send them out, you have to ask yourself... "Do I feel lucky?"

9 - "ALL" NEED TO HAVE BEEN IN BASE

Here, the "all" is only referring to the bacteria in question - the ones reaching the sink. You don't have to bring 48 to Base unless you're trying to score all 48.

8 - SPILLED BACTERIA

One or more bacterium on the mat outside Base reduces the value of all empty dispensers from 12 points to 7 points. Color's not mentioned, so color's not a factor. The bacteria are only colored to help the field resetters avoid counting.

7 - SPILLED GROCERIES

There are three units of groceries that can spill their contents: the bread, and the two crates of produce. For a model of this type to score on the table, each individual piece (including the container) needs to meet the general scoring conditions, but the food pieces need not be in the container.

6 – BACTERIA MOVEMENT

The constraints placed on the bacteria's movement to the sink are designed to make the mission take forever. You are free as always to spend time trying to find a legal way around the constraints. With whatever time you have left over, you'll probably want to become masterfully efficient at: Bacterium #1 - Load, Out, Drop, Return. Bacterium #2 - Load, Out, Drop, Return, Bacterium #3 - Load, Out, Drop, Return... This way, formerly "perfect" teams can now enjoy the same season-long continuous improvement process other teams and real engineers engage in.

5 – FARM ANIMALS

After lengthy and complicated contract negotiations, the farm animals have won exemption from all mission participation until July, 2017.

4 – THEORETICAL MAXIMUM SCORE

452

3 – BACTERIA POINTS ARE FOR *EACH*

Despite the absence of "each" where the point value is given, bacteria moved to the sink legally are worth 3 points EACH.

2 – THERMOMETER LEVER

The Field Setup page shows the thermometer's lever pointing east and its gauge showing hot. This is the correct

way, even though it is different than the building instructions. Please reposition your lever so the model can be set to match the pictures on the Field Setup page.

1 – BORDER WALL HEIGHT

The Field Setup instructions now allow you to make your table border walls anywhere between 2.5 and 3.5 inches high. Existing tables are 3.5 inches, and they're fine, but you now have the OPTION of using shorter walls. This relaxation in the height specification is to accommodate internationally differing standard lumber sizes. All borders on a particular setup must be the same, whether the table is a single/half/practice table, or a double/full/competition table.