

RoboHockey Rules (2v2)

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RoboHockey is hockey played with LEGO robots, controlled remotely. Adults and kids of all ages are welcome and encouraged to play. Rules may be subject to clarification or adjustment. Suggestions and questions: catsarisky@gmail.com.

Returning players: Please note the changes in maximum dimensions.

The teams:

Each team consists of two human players with two remotely-controlled robots.

The robot hockey player:

- The robot hockey player must be constructed of LEGO parts, with the usual exceptions allowed for third party sensors, batteries, and alternate controllers like SBrick.
- Motors (any number) can be any type produced by LEGO, including PF, 9V, WeDo, or any era of Mindstorms.
- Robots must be no larger than **a circle with an 11 inch diameter**. (Alternately, your robot can fit in a **7 3/4 inch x 7 3/4 inch square**.) There is **no height maximum**. Robots may not expand beyond the maximum dimensions during the game.
- Any LEGO parts may be used.
- The robot hockey player should have a 2x4 studded surface somewhere on the top of the robot not obstructed by other parts, to be used for attachment of team colors

The remote controller:

- The remote control method chosen must not interfere with other robots. Players should confer on channel selection if similar technologies are in use by other players.
- Remote controls must provide at least 8 feet of range, with 12 feet encouraged.
- The remote controller may not be physically connected to the robot hockey player.
- Allowed controllers include:
 - A second Mindstorms brick capable of Bluetooth transmission
 - Any "remote control" produced by LEGO, including PF, EV3, RC, IR etc.
 - An app on a cell phone or tablet or laptop that sends commands to your robot.

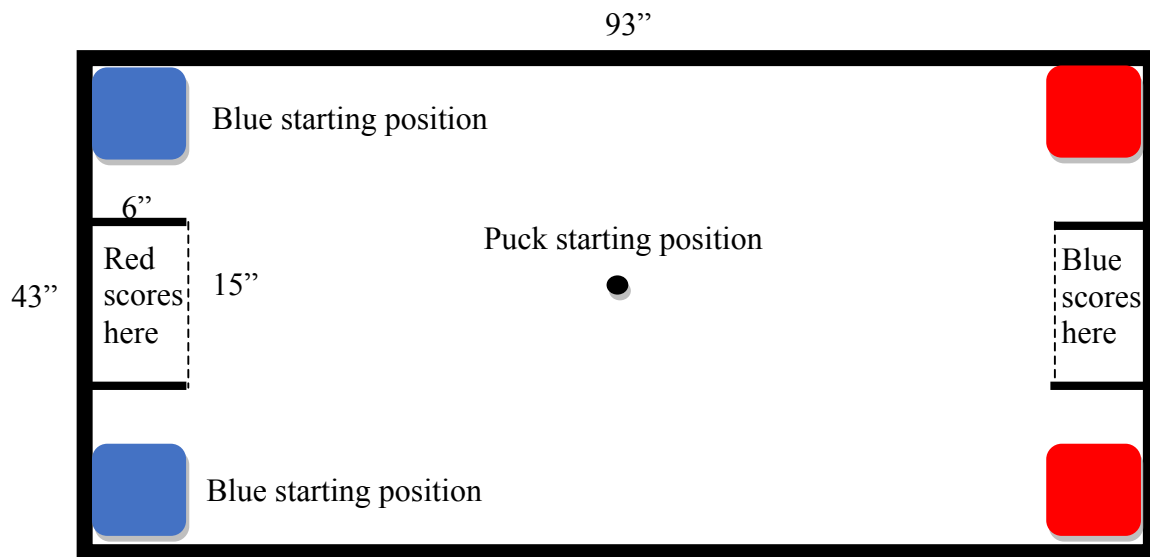
The playing field (see figure below!):

- The playing field is a standard FLL table.
- The goals are fifteen inches wide (inside dimension), six inches deep, and six inches high, located at each short end of the playing surface.
- Robots may drive almost anywhere on the playing field at any time. However, the goal areas (behind the dotted lines) are subject to special rules, below:
 - Robots may only enter the goal area while pushing or carrying the puck. A robot not in control of the puck may not enter the goal area.

- Robots defending the goal may sit in front of the goal, but not in it. A defending robot pushed into the team's own goal or accidentally entering due to navigational error should promptly drive back out to avoid a penalty.
- Robots deliberately entering the goal area without the puck will be removed to the starting position if the puck is towards the other team's side, or to the middle of the board if the puck is on the team's own side. Gameplay will not stop while a robot is moved.

The puck:

- The puck is a wheel hub (part #56145). The puck starts out on its flat side in the middle of the playing field. The puck is provided by the referee.
- Robots may control the puck in any way, including pushing it, grabbing it, picking it up, or throwing it.



Game play:

- Robots begin on their side of the field, on either side of the goal. At the signal from the referee, players may begin driving their robots.
- A team scores one point each time the puck enters the other team's goal, crossing the dotted line on the diagram from the front side.
- When a goal is scored, all robots and the puck are returned to the starting position, and the game continues at the referee's signal.
- Robots may block or push other robots.
- Robots may manipulate and control the puck in any way desired, provided the puck remains in the playing field.
- The game clock begins at the first signal from the referee. The clock is paused briefly after scoring for robots to be returned to the starting position. When the game clock reaches 2.5 minutes, the game ends and the team with the highest scores wins the game.

Miscellaneous:

- Non-critical lost parts are removed by the referee while play continues.
- A disabled or stuck single robot will be moved to the starting position without stopping the game clock. Robot drivers may attempt any quick repairs before re-joining the game in progress.
- If two robots are stuck together in a way that their drivers cannot free them remotely, the game will be paused while all robots and the puck are reset to the starting position.
- Robots deliberately entering the goal area without the puck will be removed to the starting position if the puck is towards the other team's side, or to the middle of the board if the puck is on the team's own side. Gameplay will not stop while a robot is moved.
- If the puck is stuck in a corner of the field that it is inaccessible to all four robots, the robots and puck will be returned to their starting positions.
- If a robot throws the puck out of the field, it will be treated as a goal scored for the opposing team, and the robots and puck will be returned to starting positions.

League play:

If there are enough interested players, RoboHockey will be run in two separate leagues, described below. Leagues are determined by ability, not by age.

- D-league is for smaller kids and any bigger kids with limited robotics experience. (A good-natured adult committed to making sure the kids have fun may join a D-league tournament if needed to complete a team.) The focus of D-league is to have fun. Rules will be relaxed. The tournament structure (round-robin or similar) will allow everyone to play through the end, regardless of ability. Serious competitive behavior is a no-no in D-league.
- A-league is for bigger kids with robotics experience and teens and adults of any experience level. A-league teams are formed by players at the start of the tournament and don't change during the tournament. While good sportsmanship is always expected, A-league players are allowed to let their competitive sides show a bit more. Creative ways of moving the puck, SUMO-style disabling of opponent robots, and having a strategy for winning are all encouraged in A-league. Rules will be more strictly enforced. The tournament style will depend on the number of players participating.
- Parents, please help steer your kids to the right league. A kid with a lot of competitive spirit and a pretty functional robot hockey player belongs in A-league. A kid whose robot won't reliably navigate the field belongs in D league.

Ways to play RoboHockey that you might already have sitting around:

- An IR remote, IR receiver, PF motors, and battery box scavenged from a motorized train set.
- A remote control (IR or RC) and receiver, power source, and motors scavenged from any remote-controlled set.
- An EV3 (31313) set using the IR beacon and IR receiver
- An EV3 (any version) using the phone/tablet Robot Commander app to communicate by Bluetooth (<https://www.lego.com/en-us/mindstorms/downloads>)

- A NXT set communicating with some Android phones by Bluetooth. See <https://www.smashingrobotics.com/mobile-apps-for-interacting-with-your-mindstorms-nxt-robot/> for a dated list. (*trickier*)
- A NXT set communicating with a second NXT brick serving as remote control. (<http://www.damienkee.com/home/2013/2/22/nxt-nxt-bluetooth-tutorial.html>) (*trickier*)
- An SBrick, motors, power supply, and SBrick phone app.
- There are probably others! Be creative!