

Robotics Education & Competition Foundation

Nothing But Net

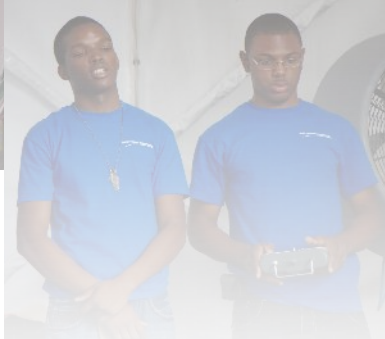
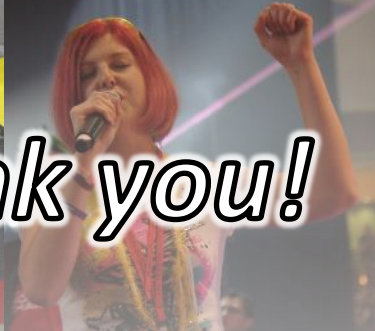
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Read the game manual!

<http://www.vexrobotics.com/vex/competition/competition-resources>

<http://www.roboticseducation.org/vex-robotics-competitionvrc/current-game/>



Thank you!

Game manual – Key points

104 Balls Total – 94 Balls and 10 Bonus balls

4 – Pre Loads – Each alliance will have 24 Driver control Loads
30 balls and 10 Bonus are located on the playing field in specific locations.

1 – Low goal and 1 – High Goal

Game Scoring

Regular Balls in Low goal = 1 pt each

Bonus ball in Low goal = 2pt

Regular ball in High Goal = 5pts

Bonus ball in High Goal = 10 pts

Elevating robots in climbing Zone

Low Elevated = 25 Pts

High Elevated = 50 Pts

Quick Summary

Size is still 18 x 18 x 18 MAY NOT expand bigger at any point except: while completely within the climbing zone during the last 30 seconds.

Driver control loads gently placed on a robot touching the loading zone, or gently entered into the Loading Zone, without the Student drive team member breaking the plane of the field. The ball should stay in the Loading zone.

Robots may NOT enter the opposing Alliances Loading Zone at any time.

Robots may NOT enter the opposing Alliances Climbing Zone during the last 30 seconds.

Fouls during Autonomous result in the bonus going to the other alliance.

The Game Important Definitions

Climbing Zone – The volume formed by the infinite vertical projection of the outer edges of the tape lines and field perimeter bounding the four (4) foam field tiles located in the corners of the field adjacent to the Alliance Stations.

Driver Control Loads – The twenty-four (24) Balls that Student Drive Team Members of each Alliance may load onto their Alliance Starting Tiles or into their Robots during the Driver Controlled Period.

Elevated – A Robot is considered to be Elevated if it is Low Elevated or High Elevated.

Important Definitions cont.

High Elevated – A Robot is High Elevated if all of the following criteria are met:

1. It is touching the other Robot on its Alliance
2. The Robot that it is touching (see criteria #1), is entirely within the Climbing Zone
3. It is not touching any Field Elements
4. The entire Robot is completely above the plane parallel to the foam field tiles, formed by the top of the field perimeter.

Touching the field perimeter negates a High Elevation. Note: A High Elevated Robot does not also count as a Low Elevated Robot Note: Only one Robot on an Alliance may earn points for being Elevated

Important Definitions cont.

Low Elevated – A Robot is Low Elevated if all of the following criteria are met:

1. It is touching the other Robot on its Alliance.
2. The Robot that it is touching (see criteria #1), is entirely within the Climbing Zone.
3. It is not touching any Field Elements, excluding the field perimeter.
4. The Robot is not supported by the field perimeter.
 - a. If criteria #4 is in question, referees will gently pull the supporting Robot away from the field perimeter. If the Low Elevated Robot does not remain Low Elevated and supported by the supporting Robot it is not Low Elevated. (i.e. It must be only supported by its partner, not the field perimeter)
 - b. 5. The entire Robot is completely 4” above the foam field tiles; approximately the height of one Ball.

Preload – The four (4) Balls each team may place on the field such they are touching its Robot, not touching any grey foam tiles, and fully within the field perimeter prior to each Match. Unused Preloads become Driver Control Loads.

General Game Rules

<G2> At the beginning of a Match, each Robot must be smaller than a volume of 18 inches wide by 18 inches long by 18 inches tall. An offending Robot will be removed from the match at the Head Referee's discretion.

<G5> During a Match, the Drive Team Members must remain in their Alliance Station.

- a. Drive Team Members may not bring or use any devices for the storage or loading of Scoring Objects in/into the Alliance Station. Events may provide devices for the storage of Scoring Objects provided they are made available to all Teams at the event.

<G7> Drive Team Members are prohibited from making intentional contact with any Scoring Object, Field Element or Robot during a Match, with the exception of the contact specified in <SG5> and <SG6> . Minor violations of this rule that do not affect the match will result in a warning. Egregious (match affecting) offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the head referee's discretion.

- a. Drive Team Members are not permitted to break the plane of field perimeter at any time during the match, with the exception of the actions described in **<SG5>** and **<SG6>**.

General Game Rules

<G8> During a Match, Robots may be operated only by the Student Drive Team Members and/or by software running in the on-board control system. **During the Autonomous Period Drive Team Members are not permitted to interact with the Robot, the controls on their VEXnet Joysticks, or to unplug from the field, in any way, directly, or indirectly. (e.g. Triggering sensors without touching the Robot is still illegal)** Minor violations of this rule that do not affect the match will result in a warning. Egregious (match affecting) offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the head referee's discretion.

Part of <G12> a. a. If a Robot has expanded beyond its 18"x18"x18" size limitation and is outside the Climbing Zone it is responsible for any type of Entanglement that occurs with an opponent. If an expanded Robot becomes Entangled while fully within its Climbing Zone, its opponent would be responsible.

Forum Clarification GDC: This deals with situations where a team may have accidentally expanded while outside the Climbing Zone. This accidental expansion may only have warranted a warning as per <SG10>, however the team could be further penalized for any entanglement that occurs as per <G12a>

Specific Game Rules

<SG3> A Robot may not expand beyond a volume of 18 inches wide by 18 inches long by 18 inches tall at any point during the Match, with the exception of the allowance listed in **<SG10>** . Minor violations of this rule that do not affect the match will result in a warning. Egregious (match affecting) offenses will result in a Disqualification. Teams that receive multiple warnings may also receive a Disqualification at the head referee's discretion.

<SG5> During the Driver Controlled Period, Student Drive Team Members may handle their own Robot if the robot has never moved. The type of fixes that are allowed are limited to the following:

- a. Turning the Robot on or off
- b. Plugging in a battery and/or power expander
- c. Plugging in a VEXnet Key
- d. Turning the power expander on or off

Specific Game Rules con't

<SG6> Any Scoring Objects introduced during the Match as Driver Control Loads must be either gently **placed** on a Robot of your own color touching the Loading Zone or **gently entered** into the Loading Zone of your own color, by a Student Drive Team Member during the Driver Controlled Period. The intent of this rule is to allow teams to introduce objects into play, but **not to impart energy** on the Scoring Object which will cause it to end up in a position outside the Loading Zone. **It is expected that teams may momentarily break the plane of the field while legally introducing Driver Control Loads.** Teams should be very mindful of during this process.

<SG7> Robots may **not enter** the opposing Alliance's Loading Zone at any time during the Match. Minor violations of this rule that do not affect the match will result in a warning.

<SG8> Robots may not Possess more than four (**4**) Scoring Objects at once.

<SG9> Robots may not enter (i.e. break the plane) of any Goal.

Specific Game Rules con't

<SG10> Robots may expand beyond their normal maximum **perimeter** of 18" by 18" only while **completely** within the volume of the Climbing Zone. Robots may expand above the 18" **height limit** while completely within the volume of the Climbing Zone and with less than **thirty seconds (0:30)** left in the Match.

<SG11> Robots may **not** be in the **opposing** Alliance's Climbing Zone during the last thirty seconds (0:30) of the Match. Furthermore, during the period, Robots may **not contact** an opposing Robot that is **contacting a partner Robot** that is fully within the volume of the Climbing Zone.

Robot Rules

<R4> At the beginning of any match, robots must be smaller than 18" x 18" x 18".

<R4> b. Robots may expand beyond their starting size constraints after the start of a match as per **<SG10>**

<R7> g/h. A small amount of tape may be used for the following purposes:

- 1.** For the sole purpose of securing any connection between the ends of two (2) VEX cables.
- 2.** For labeling wires and motors.
- 3.** Teflon tape solely for the purposes of preventing leaks may be used on the threaded portions of pneumatic fittings.
- 4.** For securing and retaining a VEXnet key to the VEX ARM[®] Cortex[®]-based Microcontroller. Using tape in this manner is highly recommended to ensure a robust connection.

h. Hot glue for securing cable connections.

Robot Rules con't

<R11> Robots may use either:

Option 1: Up to ten (10) VEX EDR motors or VEX Servos (Any combination, up to ten) and a legal VRC pneumatic system. **(See <R18>)**

Option 2: Up to twelve (12) VEX EDR motors or VEX Servos (Any combination, up to twelve) and no pneumatic components, excluding pneumatic tubing.

- a. 2-Wire Motors must be controlled by a 2-Wire Motor Port, either directly on a VEX Microcontroller (P/N 276-2194), or on a "VEX Motor Controller 29" module.
- b. Teams may NOT use multiple 2-wire Motor Ports, 3-wire PWM Motor Ports, or Motor Controller 29 modules on a single motor.

Robot Skills

Robot Skills Loads – The sixty (60) Balls that Student Drive Team Members of each Alliance may load onto the designated Alliance Starting Tiles or into their Robots during the Robot Skills Match.

<RSC1> At the beginning of each Robot Skills Match, the Robot must be placed such that it is touching any single Alliance Starting Tile, not touching any Scoring Objects other than those permitted by **<RSC2>** , and not touching any other foam field tiles.

<RSC2> Prior to the start of each Robot Skills Match, each Robot may use their four (4) Balls available as Robot Skills Preloads. A Ball is considered to be legally preloaded if it is touching the Robot, not touching any other grey foam tiles, and is fully within the field perimeter. Any unused Robot Skills Preloads become Robot Skills Control Loads. Please note, the twelve (12) other Preloads that would be used by other Robots in a normal Match are available as Robot Skills Loads

<RSC3> In a Robot Skills Match, all Goals and Alliance Starting Tiles are considered to be the same color for purposes of any rules or definitions.

<RSC4> In a Robot Skills Match, Robot Skills Loads can only be loaded in the Loading Zone adjacent to where they started the Robot Skills Match.

Programming Skills

Programming Skills Load – The sixty (60) Balls that Student Drive Team Members of each Alliance may load onto the designated Alliance Starting Tiles or into their Robots during the Programming Skills Match.

Programming Skills Preload – The four (4) Balls each team may place on the field such they are touching its Robot, not touching any grey foam tiles, and fully within the field perimeter prior to each Programming Skills Match.

<PSC1> At the beginning of each Programming Skills Match, the Robot must be placed such that it is touching any single Alliance Starting Tile, not touching any Scoring Objects other than those permitted by **<PSC2>** , and not touching any other foam field tiles.

<PSC2> Prior to the start of each Programming Skills Match, each Robot may use their four (4) Balls available as Programming Skills Preloads. A Ball is considered to be legally preloaded if it is touching the Robot, not touching any other grey foam tiles, and is fully within the field perimeter. Any unused Programming Skills Preloads become Programming Skills Control Loads. **Please note**, the twelve (12) other Preloads that would be used by other Robots in a normal Match are available as Programming Skills Loads.

Programming Skills Con't

<PSC3> in a Programming Skills Match, all Goals and Alliance Starting Tiles are considered to be the same color for purposes of any rules or definitions.

IMPORTANT!

<PSC4> > In a Programming Skills Match, Programming Skills Loads can **only** be loaded in the Loading Zone **adjacent** to where they started the Programming Skills Match.

<http://www.vexforum.com/>

Additional Discussions.