



PRESENTED BY   
Gene Haas Foundation

**FIRST<sup>®</sup>**  
**ROBOTICS**  
**COMPETITION**

## Glossary

Term	Definition
<b>ACTIVE DEVICE</b>	any device capable of dynamically controlling and/or converting a source of electrical energy by the application of external electrical stimulus
<b>ALGAE</b>	a 16 in. (41 cm) $\pm \frac{1}{2}$ in. (~12 mm) diameter rubber playground ball.
<b>ALLIANCE</b>	a cooperative of up to 4 <i>FIRST</i> Robotics Competition teams
<b>ALLIANCE AREA</b>	a 18 ft. 1 $\frac{1}{4}$ in. wide by 13 ft. 10 $\frac{3}{8}$ in. deep (~552 cm by 423 cm) infinitely tall volume formed by, and including the ALLIANCE WALL, CORAL STATION AREAS, the edge of the carpet, and white colored tape
<b>ALLIANCE CAPTAIN</b>	The designated STUDENT representative from each ALLIANCE Lead
<b>ALLIANCE WALL</b>	separates ROBOTS from DRIVE TEAM members in the ALLIANCE AREA
<b>ANCHOR</b>	a collection of surfaces at the top of the CAGE and chain assembly
<b>ARENA</b>	includes all elements of the game infrastructure that are required to play REEFSCAPE <sup>SM</sup> presented by Haas: the FIELD, SCORING ELEMENTS, queue area, team media area, designated TECHNICIAN area, and all equipment needed for FIELD control, ROBOT control, and scorekeeping
<b>ARENA FAULT</b>	an error in ARENA operation
<b>AUTO</b>	the first 15 seconds of the MATCH, and the FMS blocks any DRIVER control, so ROBOTS operate with only their pre-programmed instructions
<b>BACKUP POOL</b>	the group of teams willing and able to join an ALLIANCE during the Playoff MATCHES, if needed

Term	Definition
<b>BACKUP TEAM</b>	The team whose ROBOT and DRIVE TEAM replaces another ROBOT and DRIVE TEAM on an ALLIANCE during the Playoff MATCHES
<b>BARGE</b>	a 29 ft. 2 in. (889 cm) wide, 3 ft. 8 in. (~112 cm) deep, and 8 ft. 5 in. (~257 cm) tall structure that spans the center of the FIELD
<b>BARGE ZONE</b>	a 3 ft. 10 in. deep by 12 ft. 2½ in. long (~117 cm by 372 cm), infinitely tall, 4-sided volume surrounding the ALLIANCE'S half of the BARGE. It is bounded by and includes the ALLIANCE-colored tape.
<b>BRANCH</b>	angled or compound extensions from the REEF vertical pipes.
<b>BUMPER</b>	a required assembly which attaches to the ROBOT frame. BUMPERS protect ROBOTS from damaging/being damaged by other ROBOTS and FIELD elements.
<b>BUMPER ZONE</b>	a space between 2 ½ in. (~63 mm) and 5 ¾ in. (~146 mm) from the floor.
<b>BYPASSED</b>	a state applied to any ROBOT which is unable or ineligible to participate in that MATCH, as determined by the FTA, LRI, or Head REFEREE
<b>CAGE</b>	2 ft. tall and 7¾ in. wide (outside dimension) (~61 cm tall and ~19 cm wide) rectangular structures suspended from the truss structure in specific locations
<b>CHUTE</b>	55° sloped tunnel that leads to the opening in the CORAL STATION
<b>COACH</b>	a guide or advisor
<b>COMPONENT</b>	any part in its most basic configuration, which cannot be disassembled without damaging or destroying the part or altering its fundamental function
<b>CONTINUOUS</b>	describes durations that are more than approximately 10 seconds
<b>CONTROL</b>	an action by a ROBOT in which a the SCORING ELEMENT is fully supported by or stuck in, on, or under the ROBOT or intentionally pushes a SCORING ELEMENT to a desired location or in a preferred direction (i.e. herding).
<b>CORAL</b>	a 11 ⅞ in. long (~30 cm) piece of 4 in. diameter Schedule 40 Cellular (Foam) Core PVC pipe. CORAL has a 4-in. (~102 mm) inside diameter and a 4½-in. (~11 cm) outside diameter.
<b>CORAL STATION</b>	assembly through which HUMAN PLAYERS feed CORAL into the FIELD
<b>CORAL STATION AREA</b>	a 5 ft. 10⅞ in. wide by 13 ft. 10⅜ in. ft deep (~180 cm by 423 cm) infinitely tall volume bounded by the CORAL STATION, edge of carpet, and ALLIANCE and white colored tape

Term	Definition
<b>CORAL MARK</b>	1 of 6 4 in. by 4 in. (~102 mm by 102 mm) “+” marks used to identify placement of CORAL before the MATCH. Marks are made with black tape.
<b>COTS</b>	a standard (i.e. not custom order) part commonly available from a VENDOR for all teams for purchase
<b>CUSTOM CIRCUIT</b>	Any active electrical item that is not an actuator (specified in <a href="#">R501</a> ) or core control system item (specified in <a href="#">R710</a> )
<b>DISABLED</b>	the state in which a ROBOT is commanded to deactivate all outputs, rendering the ROBOT inoperable for the remainder of the MATCH
<b>DISQUALIFIED</b>	the state of a team in which they receive 0 MATCH points and 0 Ranking Points in a Qualification MATCH or causes their ALLIANCE to receive 0 MATCH points in a Playoff MATCH
<b>DRIVE TEAM</b>	a set of up to 5 people from the same <i>FIRST</i> Robotics Competition team responsible for team performance for a specific MATCH
<b>DRIVER</b>	an operator and controller of the ROBOT
<b>DRIVER STATION</b>	1 of 3 assemblies within an ALLIANCE WALL behind which a DRIVE TEAM operates their ROBOT
<b>FABRICATED ITEM</b>	any COMPONENT or MECHANISM that has been altered, built, cast, constructed, concocted, created, cut, heat treated, machined, manufactured, modified, painted, produced, surface coated, or conjured partially or completely into the final form in which it will be used on the ROBOT
<b>FIELD</b>	an approximately 26 ft. 5 in. (~805 cm) by 57 ft. 6 $\frac{7}{8}$ in. (~1 755 cm) carpeted area bounded by inward facing surfaces of the ALLIANCE WALLS, CORAL STATIONS, PROCESSORS and PROCESSOR openings, and guardrails
<b>FIELD STAFF</b>	the collective group of people working on or near the FIELD responsible for making sure the MATCHES are cycled through efficiently, fairly, safely, and with a spirit of cooperation, Gracious Professionalism, and generosity of spirit
<b>FMS</b>	the FIELD Management System
<b>FTA</b>	<i>FIRST</i> Technical Advisor
<b>HUMAN PLAYER</b>	a SCORING ELEMENT manager
<b>HUMAN STARTING LINE</b>	a white line spanning the ALLIANCE AREA between the CORAL STATION AREAs that is parallel to and located 2 ft. (~61 cm) from the bottom square tube of the ALLIANCE WALL to the near edge of the tape.
<b>INSPECTOR</b>	a person determined by <i>FIRST</i> to accurately and efficiently assess the legality of a given part of a ROBOT

Term	Definition
<b>KOP</b>	the Kit of Parts (KOP)
<b>LINEUP</b>	the 3 teams participating in the MATCH and their selected DRIVER STATIONS
<b>LEAVE</b>	a scoring accomplishment in which a ROBOT must move such that its BUMPERS no longer overlap its ROBOT STARTING LINE at the end of
<b>LRI</b>	the Lead ROBOT INSPECTOR
<b>MAJOR FOUL</b>	a credit of 6 points towards the opponent's MATCH point total
<b>MAJOR MECHANISM</b>	a group of COMPONENTS and/or MECHANISMS assembled together to address at least 1 game challenge: ROBOT movement, SCORING ELEMENT manipulation, FIELD element manipulation, or performance of a scorable task without the assistance of another ROBOT.
<b>MATCH</b>	the 2-minute and 30-second in which a ROBOT is enabled to play REEFSCAPE
<b>MECHANISM</b>	an assembly of COMPONENTS that provide specific functionality on the ROBOT. A MECHANISM can be disassembled (and then reassembled) into individual COMPONENTS without damage to the parts.
<b>MINOR FOUL</b>	a credit of 2 points towards the opponent's MATCH point total
<b>MOMENTARY</b>	describes durations that are fewer than approximately 3 seconds
<b>MXP</b>	myRIO Expansion port, the expansion port on the roboRIO
<b>NET</b>	a goal in which an ALLIANCE scores ALGAE
<b>OPERATOR CONSOLE</b>	the set of COMPONENTS and MECHANISMS used by the DRIVERS and/or HUMAN PLAYERS to relay commands to the ROBOT
<b>PARK</b>	a state in which a ROBOT'S BUMPERS must be partially or completely contained in their BARGE ZONE at the end of the MATCH
<b>PASSIVE CONDUCTOR</b>	any device or circuit whose capability is limited to the conduction and/or static regulation of the electrical energy applied to it (e.g. wire, splices, connectors, printed wiring board, etc.)
<b>PROCESSOR</b>	A goal with a rectangular opening through which ROBOTS score ALGAE which is 2 ft. 4 in. wide (~71 cm), 1 ft. 8 in. tall (~51 cm), and 7 in. (~18 cm) from the carpet
<b>PROCESSOR AREA</b>	a 3 ft. 7 <sup>3</sup> / <sub>8</sub> in. wide by 7 ft. 6 in. deep (~110 cm by 229 cm) infinitely tall volume formed by, and including, the ALLIANCE colored tape, guardrail, and the PROCESSOR wall.

Term	Definition
<b>PCM</b>	Pneumatics Control Module
<b>PDH</b>	Power Distribution Hub
<b>PDP</b>	Power Distribution Panel
<b>PH</b>	Pneumatic Hub
<b>PIN</b>	an action by a ROBOT that is preventing the movement of an opponent ROBOT by contact, either direct or transitive (such as against a FIELD element)
<b>RED CARD</b>	a penalty assessed for egregious ROBOT or team member behavior or rule violations which results in a team being DISQUALIFIED for the MATCH.
<b>REEF</b>	1 of 2 5 ft. 5 ½ in. (~166 cm) hexagonal structures with BRANCHES that extend from each side where CORAL are scored
<b>REEF ZONE</b>	an infinitely tall 6-sided, 7 ft. 9½ in. wide (face to face) (~237 cm), volume surrounding the ALLIANCE'S REEF. It is bounded by and includes the ALLIANCE-colored tape.
<b>REFEREE</b>	an official who is certified by <i>FIRST</i> to enforce the rules of REEFSCAPE
<b>REPEATED</b>	describes actions that happen more than once within a MATCH
<b>ROBOT</b>	an electromechanical assembly built by the <i>FIRST</i> Robotics Competition team to play the current season's game and includes all the basic systems required to be an active participant in the game –power, communications, control, BUMPERS, and movement about the FIELD
<b>ROBOT PERIMETER</b>	the part of a ROBOT contained within the BUMPER ZONE and established while in the ROBOT'S STARTING CONFIGURATION, that is comprised of fixed, non-articulated structural elements of the ROBOT
<b>ROBOT STARTING LINE</b>	a black line that spans the width of the FIELD between each REEF and the BARGE. It is positioned such that it is 7 ft. 4 in. (~224 cm) from the REEF.
<b>RP</b>	Ranking Points
<b>RPM</b>	Radio Power Module
<b>RS</b>	Ranking Score
<b>RSL</b>	ROBOT Signal Light
<b>SCORING ELEMENT</b>	a CORAL or an ALGAE
<b>SIGNAL LEVEL</b>	a term used to characterize circuits which draw $\leq 1A$ continuous and have a source incapable of delivering $>1A$ , including but not limited to roboRIO non-PWM outputs, CAN signals, PCM/PH

Term	Definition
	Solenoid outputs, VRM 500mA outputs, RPM outputs, and Arduino outputs
<b>STARTING CONFIGURATION</b>	the physical configuration in which a ROBOT starts a MATCH
<b>STUDENT</b>	a person who has not completed high-school, secondary school, or the comparable level as of September 1 prior to Kickoff
<b>SURROGATE</b>	a team randomly assigned by the FMS to play an extra Qualification MATCH
<b>TECHNICIAN</b>	a resource for ROBOT troubleshooting, setup, and removal from the FIELD
<b>TELEOP</b>	the Teleoperated Period
<b>VENDOR</b>	a legitimate business source for COTS items that satisfies criteria defined in <a href="#">Section 8 ROBOT Construction Rules</a>
<b>VERBAL WARNING</b>	a warning issued by event staff or the Head REFEREE. VERBAL WARNING warnings issued by the Head REFEREE are logged
<b>VRM</b>	Voltage Regulator Module
<b>YELLOW CARD</b>	a warning issued by the Head REFEREE for egregious ROBOT or team member behavior or rule violations

