



# Official R/C Rock Crawling Competition Rules (2009)

## Introduction:

This rulebook is intended to standardize the remote control rock crawling competitions that are held at various locations throughout the United States.

### SECTION 1

#### Penalties

##### 1.1

<b>Reverse:</b>	<b>1 point</b>	<b>Gate Marker:</b>	<b>10 points</b>
<b>Rollover:</b>	<b>5 points</b>	<b>Boundary Marker:</b>	<b>10 points</b>
<b>Vehicle Touch:</b>	<b>10 points</b>		

**1.2 - Back Up/ Reverse:** (1 pt) point is given when a vehicle reverses course after making forward progress. Reversing is defined as at any time if any of the tires move the vehicle backward or spin in the reverse direction, whether engaged or in freewheel and/or whether intentional or not. Once a reverse penalty is given, no further reverse penalty can be given until the vehicle makes forward progress. No penalty is given if the backward movement is part of a penalized rollover. (See Reverse examples and explanations, sec. 7.1.)

**1.3 - Rollover:** (5 pts) points are given when vehicles rollover, and cannot be corrected without touching. Vehicles that land back on their wheels are not penalized. No reverse penalties are given until vehicle is back on 4 wheels. A vehicle can only be pushed back on to its wheels from the side. Anything else is a Vehicle Touch.

**1.4 - Vehicle Touch:** (10 pts) All vehicle touches excluding "Rollovers" (See Rollover rule, sec 1.3), intentional or unintentional, are given an automatic 10 points. The judge then will stop time when either the driver calls for a vehicle touch or the judge calls a driver touch. The vehicle is then moved back by the **driver** to the previously cleared gate with the rear axle aligned to that gate. If the vehicle cannot be aligned to the gate due to course design, the **judge** will reposition the vehicle to the next stable location after the cleared gate. This location will be used for all drivers. Note: All gates are still "live" unless a gate has already been deemed "dead".

- **1.4.1** - Vehicle Touches include but are not limited to: repairs, repositions, vehicle driving/falling into the driver.
- **1.4.2** - Time is stopped by the judge to allow for safe reposition of the vehicle only, but is not allowed to be used for driver review of the course or other advantages.
- **1.4.3 - Repairs:** Repairs taking less than 1 minute may be completed on course. Repairs taking longer than 1 minute must be completed off course in the pit area. If repairs cannot be made within 30 minutes the driver is given a DNF minus progress points. If the repair is made in the allotted time the driver may return to the course. 1 minute will be subtracted from the time that is left on the course and the timer will continue once the vehicle makes forward progress.

**1.5 - Gate Marker:** (10 pts each) each gate will be comprised of 2 gate markers. Points are given when 4 wheels do not travel between gate markers or any part of the vehicle or driver touches a gate marker. A gate marker will remain "live" for the entire duration of the attempt on the course. Once any gate marker has been touched or straddled, no more penalties will be given for that gate marker. Only when a gate penalty is assessed will that gate marker be deemed "dead". No further penalties will be assessed at this point for that gate marker. (See Gate Marker and Gate Clearing explanations, sec. 7.2 & sec. 7.3.)

**1.6 - Boundary Marker:** (10 pts each) Points are given when any part of the vehicle touches a boundary marker. Once any boundary marker has been touched or traversed the vehicle must then return to the course with out making forward progress. During this time no additional boundary marker penalties will be assigned until the vehicle is completely back on the course. While attempting to return onto the course all other penalties apply. A boundary marker will remain "live" for the entire duration of the attempt on the course. Course designer may modify the boundary marker rules as needed to reflect the intentions of the course design. Boundary markers are not required in the design of a course.

**1.7 - Maximum Penalty Points:**

- **1.7.1** - The maximum points per gate is 20. Once a driver has reached the maximum of 20-penalty points, they will be placed past that gate. No progress points are given for the gates not cleared. (20 pt maximum per gate is optional)
- **1.7.2** - The maximum points per course are 40. At that time the driver is given a DNF and the run is complete and the vehicle should be removed from the course.

**1.8 - DNF (Did Not Finish):** (40pts) are given anytime a driver cannot complete a course for any reason. (Timed-Out, Point-Out, Vehicle not Repairable, Went Home ...etc) Progress points are awarded for each gate completed.

**1.9 - DNS (Did Not Start):** (50pts) are given anytime a driver cannot start a course for any reason. To start a course the vehicle must break the plane of the start gate.

**1.10 - Progress bonus:** (-1 progress point) will be awarded to drivers for each gate that is cleared by the vehicle during the attempt of a course. Both axles of the vehicle must clear a gate, and not just break the plane of the gate, before progress bonus is awarded. These points are deducted from the total course score. Once a driver has pointed out, no further Progress Points will be awarded. A progress bonus will not be awarded for the start gate or the finish gate.

## **SECTION 2**

### **Vehicle Requirements**

**2.1 - General:**

- **2.1.1** Vehicles are limited to 4-wheeled vehicles only. These 4 wheels can be the only source of propulsion for the vehicle.
- **2.1.2 - Bodied vehicles:** Any support chassis allowed.
  - **2.1.2.1 – Super & 2.2 Class** body must be 3" minimum height on sides. No less than 12.5" total length and full original width, and no less than 5" in the center. All bodies should resemble its original form (Jeep bodies look like a Jeep)
  - **2.1.2.2 – 1.9 Class** body must be 2.75" minimum height on sides. No less than 9" total length and full original width, and no less than 3" in the center. All bodies should resemble its original form (Jeep bodies look like a Jeep)
- **2.1.3 - Bodiless vehicles:** Must be a self-supporting, structurally complete, rigid frame. The roof must be raised a minimum of 1" from the main chassis to resemble a cockpit. The frame sides must be an overall minimum of 1" tall (The cockpit & frame side are to be measured vertically from where the hood intersects the cab). Bodiless vehicles should resemble a 1:1 vehicle.
  - **2.1.3.1** - Bodiless vehicles must have solid hood panel, solid roof panel and a minimum of 2 solid side-panels. Hood, roof and side panels must be separate pieces of solid material installed onto the bodiless vehicle frame. All body panels are to be separate pieces from the complete structural frame. Body panels must be solidly installed in a manner that is representative of a 1:1 vehicle. It is required that at least one point of the side-panel must reach to a span of 1" tall or more & at least one other point of the side-panel must reach to a span of 2.5" long or more. In the case of a Unibody vehicle (See sec. 2.1.3.2 for Unibody definition). The Unibody is considered to have all body panels needed without having to add separate body panels as long as the hood, roof & side panel areas meet all the general panel & side-panel size requirements above.
  - **2.1.3.2 - Unibody** – Constructed of a single piece of solid material (fiberglass, aluminum, plastic, etc) and must be self supporting. A Unibody cannot be fastened together in any non-permanent way such as, nuts & bolts, pins, rivets, zip ties, etc. The roof must be raised from the main chassis to resemble a cockpit and should resemble a 1:1 vehicle.
  - **2.1.3.3 - Super class minimum overall bodiless dimensions** must be 12" overall length, 3" overall width, & 3.75" overall height.

- **2.1.3.4 - 2.2 class minimum overall bodiless dimensions** must be 8" overall length, 3" overall width, & 3.75" overall height.
- **2.1.3.5 - 1.9 class minimum overall bodiless dimensions** must be 6.75" overall length, 2.5" overall width, & 3.25" overall height.
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- **2.1.4** - Winching down of the axles is allowed. The winch line must be attached within a 1/2" of the center of the axle, and by a single attachment point only.
- **2.1.5** - All suspension mounting points must be fixed mounted. This includes all link mounts, and shock mounts.
- **2.1.6** - There are no limitations on the amount of radio channels used on a vehicle.
- **2.1.7 - Active Suspension** is allowed - A suspension that is interlinked (such as the 1:1 Scorpion, excluding the air bags used to raise and lower the vehicle) which by design moves part of the suspension in one direction when moved from another. This does not have any driver input.
- **2.1.8 - Forced Articulation** is allowed – Forced articulation is the use of something such as hydraulics or electronics to literally force the suspension to move in a driver-controlled manner.
- **2.1.10** - If at any point during a run your vehicle falls out of these vehicle specs for any reason you will be required to take a touch penalty and correct the problem.

## **2.2 - Class 1 - Super Crawler Class:**

- **2.2.1** - Vehicle wheelbase is limited to a minimum of 16 inches and a maximum of 18 inches. This is determined by measuring from centerline of front axle stub to centerline of rear axle stub, with all the wheels pointing straight ahead, with the vehicles suspension holding it's own weight.
- **2.2.2** - No limits on tire type or size.
- **2.2.3** - No limits to steering configuration.
- **2.2.4 - Super class bodiless** over all dimension of the complete chassis must be at least 12"overall length, 3" overall width, and 3.75" overall height
- **2.2.5** - If at any point during a run your vehicle falls out of these vehicle specs for any reason you will be required to take a touch penalty and correct the problem.

## **2.3 - Class 2 – Class 2.2:**

- **2.3.1** - Vehicle wheelbase is limited to a maximum of 12.5 inches. This is determined by measuring from centerline of front axle stub to centerline of rear axle stub, with all the wheels pointing straight ahead, with the vehicles suspension holding it's own weight.
- **2.3.2** - Vehicle track width is limited to a maximum of 12.5 inches. This is determined by measuring the bottom of the outer most edge of the front and rear tires while the vehicle is sitting on level ground.
- **2.3.3** - Vehicle is limited to 2.2 inch wheels/rims or smaller at the bead surface. Wheels may be modified provided that the tire bead surface does not exceed 2.2 inches in diameter. Tires may be modified from other sized tires using only a pliable rubber but must not exceed a total uncompressed outer diameter of 6 inches.
- **2.3.4** - Vehicles are limited to 2-wheel steering only.
- **2.3.5 - 2.2 Crawler class bodiless** overall dimension of the complete chassis must be at least 8"overall length, 3" overall width, and 3.75" overall height.
- **2.3.6** - If at any point during a run your vehicle falls out of these vehicle specs for any reason you will be required to take a touch penalty and correct the problem.

## **2.4 - Class 3 – Class 1.9:** *If a Class 3 vehicle violates any of the following requirements it must run in Class 2 or Class 1 respectively.*

- **2.4.1** - Vehicle wheelbase is limited to a maximum of 8.5 inches. This is determined by measuring from centerline of front axle stub to centerline of rear axle stub, with all the wheels pointing straight ahead, with the vehicles suspension holding it's own weight.
- **2.4.2** - Vehicle track width is limited to a maximum of 8 inches. This is determined by measuring the bottom of the outer most edge of the front and rear tires while the vehicle is sitting on level ground.
- **2.4.3** - Vehicle is limited to 1.9 inch wheels/rims or smaller at the bead surface. Wheels may be modified provided that the tire bead surface does not exceed 1.9 inches in diameter. Tires may be modified from other sized tires using only a pliable rubber but must not exceed a total uncompressed outer diameter of 4.25 inches.
- **2.4.4** - Vehicles are limited to 2-wheel steering on front axle only.
- **2.4.5** - Vehicles are limited to the use of 2 channels radio control (one for steering & one for throttle) only. Neither channel can be used to perform more than one function. Radio systems with more than 2 channels are allowed but only 2 channels can be used to control the vehicle.
- **2.4.6** - Vehicles are limited to 1 ESC & 1 servo only.

- **2.4.7** - Vehicles are limited to 1 motor powering both of the axles.
- **2.4.8** – No driver controlled devices, other than steering and throttle control, will be allowed. Independent throttle control to the front or rear axles (“burn” or “dig”), winching down the axles, and forced articulation are not allowed in this class.
- **2.4.9** – A battery is limited to 8.4 nominal voltage (7 cell nimh/nicd & 2 cell lipo/limoly).
- **2.4.10 – 1.9 Crawler class bodiless** overall dimension of the complete chassis must be at least 6.75" overall length, 2.5" overall width, and 3.25" overall height.
- **2.4.11** - If at any point during a run your vehicle falls out of these vehicle specs for any reason you will be required to take a touch penalty and correct the problem.

### **SECTION 3**

## **General Event Rules & Event Management**

- 3.1** - USRCCA recognizes that some events/clubs may need some local rules to accommodate there terrain and group size. Please post these exceptions in event notifications.
- 3.2** - Lowest total score wins.
- 3.3** - Scoring starts as the vehicle breaks the plane of the first gate of a course. Scoring stops when the Vehicle breaks the plane or receives progress of the last gate of a course, depending on course lay-out.
- 3.4** - No pre-running the courses. Drivers that pre-run a course will receive a DNS for that course.
- 3.5** - Starting order will be a random draw for the first course. The running order of subsequent courses will be run with the first place driver driving first, and the next lowest driving next, and so on.
- 3.6** - Winching (other than that done to the suspension) or ramping of any kind is not allowed. Using any device (other than the tires) such as ramps or other objects to make progress in any direction is prohibited and will result in a DNF for that course.
- 3.7** - No vehicle may be run in more than one class at an event.
- 3.8** - The vehicle must run a course entirely with the same wheelbase, track width, ride height, and tires it started that course with. Any changes to the vehicle (other than winching down the suspension or forced articulation) by the driver, another person, or any device, while on the course are prohibited.
- 3.9** - Vehicles cannot be exchanged for another vehicle during the competition.
- 3.10** - Drivers may make changes to wheelbase, track width, ride height, and tires between course runs, as long as the vehicle remains within the specs for it's class.
- 3.11** - No modification to the course is allowed by the driver. This includes, but not limited to, removing of rocks, stacking of rocks, purging a puddle of water, removing of vegetation, or other types of modifications.
- 3.12** - Any violations of event rules are subject to disqualification by judges and/or event organizers.
- 3.13** - **Tie Scores:**
- **3.13.1** – Nationals Style: In the event of a tie score the competitor with the lowest score on the final course run is considered the winner. If both competitors are also ties of the final course then the second to the last course run will be used, and so on.
  - **3.13.2** – Optional: In the event of a tie score the competitor with the lowest time on all courses will be chosen the winner over the other competitor(s) with the same score.
- 3.14** - **Timed Event:** There is a time limit on each course to be determined by the course builder, if the driver does not finish the course in the allotted time he will receive a 40pt. DNF penalty. Time starts when vehicle breaks the plane of the first gate of a course. Time stops when the vehicle breaks the plane of the last gate or finish line of a course. Methods of timing events may vary from club to club to meet the needs of that club. Make sure at that event drivers meeting drivers are informed of this.

## SECTION 4

### Recommended Course Design

4.1 - Gates with Tennis Ball halves

4.2 - Minimum of 20 inches apart for Super Class, a minimum of 16" apart for 2.2 Class and a minimum of 12" apart for 1.9 Class. All measurements are from inside to inside of each gate marker.

4.3 - (3-10) Gates per course

4.4 - (1-3) Courses per event

4.5 - Gates that are in close proximity to each other should be distinguished by color or markings.

#### 4.6 - Optional:

- **4.6.1 - Bonus Gates:** (up to -10 points per course) award negative points against the total score if the driver is successful in clearing these gates. Bonus Gates have special rules. No Reverse or Rollover penalties will be assessed while attempting a bonus gate. If a driver needs to Reposition or hits a Gate Marker a Bonus Gate will not be awarded. Although grouped with a course, bonus gates are not part of an actual course, but may be attempted after completing the course where the bonus gate is located (within the time limit of that course - if applicable).
- **4.6.2 - Alternate Gates:** (up to -10 points per course) are a secondary set of gates that is part of the course. These gates will be very difficult. Normal Scoring rules apply with the exception of (1) Free Reverse/Back Up, this is used in order to abort your attempt and continue on the regular course.

## SECTION 5

### Judging

5.1 - Judges are responsible for watching vehicles while on the course, and to penalize drivers that commit penalties while competing.

5.2 - Judges should call out penalties when they occur.

5.3 - Judging should be done by at least 2 people per driver. One Judge to call out penalties and one Judge/Score Keeper, to record penalties, tally maximum penalties, keep time (if applicable), etc.

## SECTION 6

### Glossary of Terms

6.1 - **Event/Competition:** The coming together of drivers at a certain place and time to compete on single or multiple courses.

6.2 - **Course:** A course is the terrain that consists of a start gate, an end gate, and all the terrain in between them. Every course has an intended direction of travel, or "flow", through the gates.

6.3 - **Gate:** A gate is used to mark an obstacle within a course and/or guide the vehicle through the course. A gate consists of 2 gate markers measuring no less than; 20" for the Super class, and 16" for the 2.2 class, from inside edge of one marker to the inside edge of the opposite marker. Every gate has an intended direction of travel, or "flow", through the gate. This direction will either be marked, explained or implied by the course designers. All gate markers are "live" until touched.

6.4 - **Wheelbase:** is measured from axle nut center to axle nut center.

6.5 - **Vehicle track width:** is measured from the outer most edge of a tire to outer most edge of a tire.

## SECTION 7

# Penalty Examples and Additional Penalty Definitions

## 7.1 - Back Up/ Reverse Examples:

- **7.1.1** - If the driver intentionally drives the vehicle in reverse, a reverse penalty will occur.
- **7.1.2** - If the vehicle stops on an incline and then rolls backwards a reverse penalty will occur.
- **7.1.3** - If a vehicle is climbing an obstacle and is bounced backward by the terrain but the tires are still moving forward, no reverse penalty will occur.
- **7.1.4** - If a vehicle flips over backward, without the driver reversing, no reverse penalty will occur.
- **7.1.5** - Once a reverse penalty has been assessed, no further reverse penalty can be assessed until the vehicle makes forward progress.
  - **7.1.5.1 - Example:** Reversing, stopping, and then reversing again will only result in one reverse penalty.
  - **7.1.5.2 - Example:** When high-centered, Reverse, forward, and then reverse again to rock the truck back and forth will only result in one reverse penalty until forward progress is made.
- **7.1.6** - Reverse penalties are assigned at the Judge's discretion if the actions performed by the vehicle/driver are not clearly defined by the rule.

## 7.2 - Clearing of a Gate:

- **7.2.1** - A gate is considered cleared when at least one front and one rear wheel passes between the two gate markers only in the intended direction of the gate.
- **7.2.2** - All gates must be cleared in the intended sequence of the course layout (gate 1, then gate 2, then gate 3, and so on).
- **7.2.3** - A vehicle may travel through a gate while it is in reverse and still clear that gate as long as it only travels though in the intended direction (reverse penalty(s) will be assessed as necessary).
- **7.2.4** - The first time through any un-cleared gate must be in the intended direction **and** in the correct sequence of the course layout until that gate is cleared.
- **7.2.5** - You cannot attempt any un-cleared gates out of sequence. If you intentionally enter an un-cleared gate out of sequence you will receive a DNF for that course.
  - **7.2.5.1 - Example 1:** If all four wheels of a vehicle pass between two gate markers that gate is considered a cleared gate with no penalties and a gate progress bonus is awarded.
  - **7.2.5.2 - Example 2:** If one wheel from the front axle and one wheel from the rear axle passes between two gate markers (vehicle straddles a gate), that gate is considered a cleared gate. This however will result in a Gate Marker penalty of 10 points and a gate progress bonus is awarded.
  - **7.2.5.3 - Example 3:** If one wheel only from the front axle or one wheel only from the rear axle passes between two gate markers (vehicle straddles a gate) that gate is not considered a cleared gate. This will result in a Gate Marker penalty of 10 points and no gate progress bonus is awarded.

## 7.3 - Gate Marker penalty:

- **7.3.1** - At any time a gate marker is touched by a vehicle or by a driver, a Gate Marker penalty is assessed.
- **7.3.2** - If at any time the axle of a vehicle (facing in any direction) passes over any part of a gate marker and both tires of that axle are touching the ground (or any object on the ground) on opposite sides of the gate markers, it is considered a straddle and a Gate Marker penalty is assessed.
- **7.3.3** - A driver can only continue with the course when a gate is cleared or 20 pts at that gate is accumulated.
- **7.3.4** - If a wheel floats above a gate marker, the driver must correct it before that gate is deemed clear and progress is awarded. If the driver fails to correct the position of the tire, such that it is not located above the gate marker, and continues to clear the gate, a gate penalty will be assessed at that time in addition to the gate progress. All 4 tires must go between the gate markers to not receive a gate penalty.

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