



Judges' Guide

Rev. 2022.0

Changes from Rev. 2021.0 shown in Blue

THE JUDGES' OATH:

I promise that I shall officiate in each BattleBots Tournament with complete impartiality and fairness, respecting and abiding by the rules that govern them, in the true spirit of the sport.

Introduction

At the end of a Match, if more than one Bot has not been counted out, the winner is determined by a vote of the Judges.

Judging a BattleBots competition is challenging in that it requires a thorough knowledge of the rules, keen concentration and, above all, impartiality. Since matches involve a wide variety of BattleBot designs, a Judge must maintain an open and flexible perspective on each BattleBot's operation.

In the end though, judging always involves certain amount of subjectivity. In an effort to add an element of consistency among all the Judges, this document describes the judging criteria and some common questions and issues that come up about judging.

Judging Criteria

Per section 7.7 of the [BattleBots Tournament Rules](#), a BattleBot's performance is based on the evaluation of three criteria. Each of the criteria has a point value, as follows:

Damage 5 points

Aggression 3 points

Control 3 points

Judges should try to think of the three criteria as being as mutually exclusive as possible.

Based on their observations of a Match, each Judge assigns points to one or the other of the competitors. The competitor with the most points is that Judge's choice for the winner. The winner is then determined by the decision of a majority of the Judges.

Each of the criteria is described further below. Read through the questions and answers for suggestions on how to judge specific situations.

Damage

"Damage" means that a BattleBot has sustained a reduction in effectiveness or a loss of functionality. It is considered to be Damage to a BattleBot even if the Bot inadvertently harms itself.

Damage Factors

Use the following factors together to get an overall impression of a BattleBot's Damage:

- **Functionality:** Refers to the inability of a Bot's systems or structure to serve their intended purpose. Examples are a Bot's weapon no longer functioning, a Bot being forced to crab walk to provide mobility, an unusable self-righting mechanism, or the armor being damaged to the point where it no longer provides protection.
- **Effectiveness:** Refers to how well a Bot with damaged systems and/or defensibility is still able to function. A six-wheeled bot with a single broken wheel may still be able to maneuver effectively, whereas a four-wheeled bot with a broken wheel may have very limited mobility. A drum-bot with a missing drum-tooth may only have a minimal loss of effectiveness, whereas a hammer-bot with a missing hammerhead is far less effective. Armor that's badly dented is more effective than armor that has been breached or torn away.

Damage Matrix

Use the chart below to allocate the 5 Damage points between Bots.

		Bot A			
		Minimal	Moderate	Significant	Massive
Bot B	Minimal	**	3-2	4-1	5-0
	Moderate	2-3	**	3-2	4-1
	Significant	1-4	2-3	**	3-2
	Massive	0-5	1-4	2-3	**

** If both Bots appear to have similar damage, determine which Bot did more damage and award it the 3 Damage points.
 If neither Bot has any detectable internal or external damage, award 3 points to the Bot showing less Cosmetic Damage.

Damage Definitions

- Minimal:** Doesn't reduce the functionality or effectiveness of the Bot.
- Moderate:** Reduces the effectiveness of the drive, defensibility, or weapon system of the Bot.
- Significant:** Eliminates the functionality of the drive, defensibility, or weapon system, or reduces the effectiveness of two or more systems of the Bot.
- Massive:** Eliminates the functionality of at least two systems of the Bot.

Functionality Examples

- Drive:** Non-functional drive on one side that forces crab-walking.
- Defensibility:** Large portions of the defensive structure torn off, with exposed internals.
- Weapon:** Spinning weapon no longer rotates, or only rotates slowly.

Effectiveness Examples

- Drive:** Bent axle, chunks or entire wheel missing but still able to travel in a relatively straight line.
- Defensibility:** Torn off wedgelets, significant bends, removal of small supplemental armor pieces.
 Self-righting mechanism is bent, but still functions.
- Weapon:** Missing teeth/head, spinning part imbalance, bent parts, how well it's able to operate.

Damage Point Assignments

If one Bot appears to have less Functional Damage than the other, a Judge should allocate the points depending upon the relative amounts of damage. Damage causing seriously reduced mobility should count more than damage to a weapon system. The possible point assignments are:

5-to-0 score

One Bot does a substantial amount of damage that affects the function of two or more critical systems (mobility, weapon(s), etc...) of the opposing Bot, without itself taking anything beyond cosmetic damage.

4-to-1 score

One Bot does a substantial amount of damage to the function of critical systems of the opposing Bot, but also takes some damage that reduces the effectiveness of its own critical systems.

Alternatively, one Bot does damage that only reduces the effectiveness of its opponents' critical systems without taking anything beyond cosmetic damage.

3-to-2 score

If the apparent level of damage done to each Bot is similar, the Judges have to determine which Bot's actions created damage with the greatest negative impact on the performance of its opponent.

Near the end of a Match, or just after, watch for Teams that "show off" by operating their weapons and/or moving around the Arena to demonstrate that those systems have not been functionally damaged.

Damage Considerations

Judging Damage requires some understanding of BattleBot materials and functionality:

- Some materials such as Titanium will send off bright sparks when hit or cut by saws, but may be largely undamaged. Other materials such as Aluminum might be dented or gouged by the same actions, but with no sparks. Judges should try to not be influenced by things like sparks, but rather how deep or incapacitating a "wound" is.
- Try not to be unduly influenced by highly visual damage that doesn't affect a Bot's functionality, effectiveness or defensibility. A visible gash in a Bot's armor may only minimally reduce the armor's functionality. Loss of a large, non-moving spike may only have a minor effect on the Bot's offensive capabilities.
- Look for damage that may not be visually striking but affects the functionality of a Bot. Some examples:
 - > A small bend in a lifting arm or spinner weapon may dramatically affect its functionality by preventing it from having its full range of motion.
 - > A wobbly wheel indicates that it is bent and will not get as much traction.
 - > Cuts or holes through the armor means there is possibly more Damage inside

In general, the best way to judge Damage is to observe how the Bot functions before and after the damage occurred.

Damage FAQ**Q: What is Ablative Armor?**

A: Ablative armor is an outer non-structural layer designed to absorb the impact of an attack by breaking apart when hit by an opponent. Examples of this are large pieces of wood or plastic. The Judges will assume that, by default, any armor not declared Ablative, is protective. If a Team claims their Bot is using Ablative Armor, the Team must make their case to the Judges prior to the Match and specifically describe which parts of the armor are Ablative and which are protective.

Q: How is damage to Ablative Armor judged?

A: Damage to Ablative Armor should count as more Damage than dents or scratches but less than damage to protective armor. Ablative armor that has been damaged (or torn off) such that it's no longer protecting the Bot should be classified as effectiveness damage to the Bot's defensibility.

Q: What is Cosmetic Damage?

A: Cosmetic damage is visible changes to the Bot's appearance that do not reduce the functionality or effectiveness of the Bot, such as scratched paint, or minor dents and scratches.

Q: How do I know what Cosmetic Damage was done during the Match?

A: Just prior to a Bot entering the Arena, a Team may request that the Judges examine the Team's Bot to note Cosmetic Damage from previous matches. Otherwise, once the Bots have entered the Arena, the Judges should look for any apparent Cosmetic Damage. If there are questions about Cosmetic Damage after the match, a Judge can query other Judges and/or the combatants in accordance with the guidelines in the Tournament Rules document.

Q: How should self-inflicted damage be judged?

A: Self-inflicted damage (such as driving over the Kill-Saws) should be considered to be no different than damage caused by an opposing Bot. Self-inflicted damage could also indicate poor Control.

Q: How is damage handled when a Bot has multiple weapons?

A: It's considered to be functional damage only if all weapon systems are disabled. Flame emitting devices are not considered to be weapons.

Q: What if a weapon is disabled for part of the Match?

A: If a weapon appears to be disabled for a significant portion of a fight but is able to operate at the end this should be considered effectiveness damage.

Q: What kind of smoke is "normal"?

A: Pneumatic weapons may release short puffs of white "smoke" as part of normal operation. Limited amounts of dark smoke coming from skidding tires or slipping drive belts may mean nothing. However, if the smoke is generally continuous, it may mean that something is rubbing against a wheel, or that a rotating weapon has been damaged.

Q: What kind of smoke indicates Damage?

A: Obvious amounts of white smoke (possibly accompanied by flames) coming from a Bot is likely due to batteries or a motor-controller overheating. Even if the smoking and flame stops, the batteries or controller will have lost functionality, and thus such smoke should be considered "Damage", even if the weapon and/or movement do not appear to be affected.

Q: What do flames indicate?

A: If the flames are accompanied by considerable smoke, the Bot has been damaged. If a Bot with a flame system shows continuous flames coming from the interior of the Bot (but little smoke), it probably just indicates that the propane storage tank has been damaged. However, the burning gas may also cause other internal damage, so watch for any reduced functionality.

Q: What about damage due to an opponent's flame system?

A: Typically, flame systems don't cause more than Cosmetic Damage to the exterior of a Bot. However, a flame weapon can burn rubber wheels, ignite wood ablative armor or melt plastic armor. In some cases, the flame may penetrate the exterior of the competing Bot and damage internal components. If a Bot that has been "attacked" by a flame system immediately starts showing reduced capability, there may be internal Damage from the flame.

Aggression

The "Aggression" of a BattleBot is judged based on the frequency, severity and boldness of attacks deliberately initiated by the BattleBot against its opponent.

Aggression Factors

Use all of the following factors together to get an overall impression of a BattleBot's Aggression:

- **Frequency:** The number of attempted attacks during the Match. If the opponent Bot moves to avoid an attack, that should still count as an attempt.
- **Severity:** The intensity or forcefulness of each attack. Is the Bot being used with full effectiveness against its opponent, or just making love-taps?
- **Boldness:** What is the apparent intent of the Bot? Is it intentionally attacking in such a way that it risks damage to itself (such as using a weapon that could be damaged) or is it simply hitting the other Bot with an armored wedge that's far less likely to be damaged?

Aggression Matrix

Use the chart below to decide how to allocate the 3 Aggression points between two Bots, depending upon the relative aggression.

		Bot A		
		Minimal	Moderate	Significant
Bot B	Minimal	**	2-1	3-0
	Moderate	1-2	**	2-1
	Significant	0-3	1-2	**

** If the aggression level of both Bots is similar, evaluate which Bot showed more Aggression and award it 2 Aggression points.
 Generally, using (or attempting to use) a powered weapon should count more toward Aggression than simply attacking by pushing or ramming the other Bot.

Aggression Definitions

- Minimal:** A Bot waits for its opponent to come to it, or else actively avoids contact with the opponent (except when resetting or spinning up its active weapon).
- Moderate:** Bot occasionally demonstrates boldness and/or intent by utilizing its active weapon or ramming to attack the opponent.
- Significant:** Bot shows frequent demonstrations of boldness and/or intent by utilizing its active weapon and/or ramming to attack its opponent.

Aggression Point Assignments

There are two possible Aggression point assignments:

3-to-0 score

One Bot uses (or attempts to use) its primary weapon to make the majority of contacts during the Match, while the other Bot spends most or all of the Match attempting to avoid contact.

2-to-1 score

This is the case where both bots appear to exhibit similar levels of aggression. Some basic situations are:

- 1) Both Bots attack each other using their weapons. Award the **2** points to the Bot that appeared to use its weapon more as the primary means of contact.
- 2) One Bot attacks more often using its weapon than the other Bot attacks without using its weapon (whether or not the weapon is functional). Award **2** points to the Bot using its weapon.
- 3) If both Bots have non-functional weapons. Award the **2** points to the Bot that appeared to instigate more of the contacts.
- 4) If the weapons on both Bots are disabled and the Bots are ramming each other, then the frequency and boldness of the attacks should be considered when deciding which Bot should receive the **2** points.
- 5) If a Bot has a functional weapon but never uses the weapon, or uses it only with little effect, that Bot should not receive more than **2** points, regardless of how much aggression it showed.

Losing weapon power does not count against Aggression.

Aggression FAQ**Q: Should avoiding contact with an opponent always count against a Bot's Aggression?**

A: Not necessarily. If a Bot is moving away from its opponent in order to get its weapon ready for attack, moving away should not count against Aggression. Examples are when a spinner-bot is spinning-up, or when a pincer-bot is repositioning its weapon. However, if the Bot continues to avoid its opponent when the weapon appears to be ready, that should count against its Aggression.

Q: Which is more aggressive: Circling an opponent in an attempt to find an approach angle, or staying mostly stationary while keeping a weapon aimed at the circling Bot?

A: Actively moving around searching for an attack angle is considered more aggressive.

Q: Do pushing and ramming count as Aggression?

A: Pushing or ramming an opponent Bot should count somewhat toward Aggression. However, pushing or ramming should count for much less than attacking using an active weapon.

Q: Does using a flame count as Aggression?

A: Flame systems are not considered to be a weapon and using a flame does not count as Aggression. However, use of a flame system could contribute to Damage.

Control

The Control of a BattleBot is about the ability of the Bot's Operators to attack an opponent at its weakest points, use their Bot's weapons in the most effective way, and avoid being damaged by the opponent or the Arena hazards. Control may also be a factor when two Bots are in a "shoving match" if one Bot is able to have more influence on the combined movement of the Bots.

Control Factors

Use the following factors to get an overall impression of a BattleBot's Control:

- How well is a Bot able to dictate when and how it attacks its opponent?
- How well does the Bot avoid putting itself in the path of another Bot's weapon?
- How well does the Bot avoid the changing Arena Hazards (e.g., the Kill Saws)?

- How well does an Operator compensate for Damage (e.g., a broken wheel) that the Bot may have sustained?

Control is about maneuvering and placement. Don't be overly impressed by a Bot moving quickly in a straight line across the Arena. Observe how well it moves to advantageous locations and how well it avoids opposing weapons and Arena hazards.

Control Matrix

Use the chart below to decide how to allocate the **3** Control points between Bots.

		Bot A		
		Minimal	Moderate	Significant
Bot B	Minimal	**	2-1	3-0
	Moderate	1-2	**	2-1
	Significant	0-3	1-2	**

**If one Bot is consistently able to use its active weapon or Arena hazards against its opponent while the opponent is unable to effectively use their weapon or the hazards, then the attacking Bot should receive the majority of Control points.

** If the control level of both Bots is similar, evaluate which Bot showed more control and award it the **2** Control points.

Control Definitions

- Minimal:** Bot is rarely able (or unable) to initiate physical or weapon contact with, and also avoid attacks from, its opponent. It also may inadvertently hit the guardrails or an Arena hazard.
- Moderate:** Bot can occasionally use its weapon or armor to attack its opponent and sometimes avoids opponent attacks. Generally avoids the Arena hazards.
- Significant:** Bot moves decisively and effectively and is consistently able to attack its opponent and avoid hits by the opponent's weapon or armor.

Control Point Assignments

Since Control counts for **3** points, there are two possibilities:

3-to-0 score

A Bot that is consistently able to manage its interactions with the other bot either by landing attacks with its own weapon, preventing attacks from its opponents weapon, or moving their opponent into advantageous positions it should receive all **3** Control points.

2-to-1 score

Neither Bot is consistently able to manage its interactions with the other Bot. The Bot that appears to have more influence for a large portion of the fight should receive the **2** Control points.

If a Bot has a functional weapon but never uses the weapon (or uses it only with little effect), that Bot should not receive more than **2** Control points.

Control FAQ

Q: How does a Bot getting stuck to the Arena reflect on Control?

A: Bots can become stuck to hazards or other parts of the Arena in many ways. If a Bot gets stuck due to its own action, it was probably due to poor Control. If the Bot got stuck due to the actions of its opponent, that may demonstrate superior Control by the opponent. If the Bot subsequently frees itself, the Control factor would depend upon what actions it used to get unstuck.

Q: Could freeing a stuck opponent reflect on Control?

A: Yes, if freeing the opponent was apparently due to poor driving control. However, if a Bot appears to have deliberately freed an opponent, it should not count against the Bot doing the freeing.

Multi-Bots

A "Multi-Bot" is a group of two or more Bots from the same Team that operate together as a single "Bot". All of the Bots must have a weapon capable of doing damage to an opponent. The only exception is that a "MiniBot" is not required to have a weapon. A MiniBot cannot weigh over 20 pounds and may simply be a box on wheels with a wedge or flame system.

A point to keep in mind is that each Bot that is part of a Team's Multi-Bot will usually have its own Operator.

Configurations

Many configurations of Multi-Bots are possible, but most fall into one of three categories:

- A single large Bot with a weapon, and a single MiniBot.
- Two medium-sized Bots with weapons, possibly with an additional MiniBot.
- Multiple smaller Bots with weapons

A possible MiniBot is a drone-copter with downward flames. Some drones may have other weapons designed to attack an opponent's drone.

In general, due to their small size and weight, MiniBots rarely do any significant damage to the larger Bots.

Multi-Bot Judging

Judging Multi-Bots can be more difficult since there will be more than two Bots in the Arena and there can be a considerable size disparity between the robots. As a result, the judging criteria have to be modified somewhat:

- **Damage:** Concentrate on the Damage to the larger Bots (those with weapons. Damage to MiniBots without weapons should usually be considered to be more like Cosmetic Damage.
- **Aggression:** Attacks by a non-weapon MiniBot should count for very little compared to attacks by larger Bots with effective weapons.
- **Control:** Judging Control is complicated by the fact that there are multiple operators. If there are just two large Bots, try to gauge the control of each and average the two. Actions of the MiniBots generally should not count.

As a general rule, those Bots with effective weapons should be most heavily factored into the scores; ignore the actions of a MiniBot without a real weapon. However, when assigning Aggression and Control points, effective use of a non-weapon MiniBot could affect how the points for each criteria are split.

Rumbles

Judging for Rumbles is slightly different than for the one-on-one matches since, if two or more Bots are functioning at the end, there are no "Knock-Outs".

During a Rumble, a Bot may appear to be temporarily unresponsive, then become functional again. This may be a mechanical malfunction, or it may be a "fake" by the Operator to lure other Bots. In either case, this should negatively affect the Bot's Aggression score.

Keeping Track of Bots

A competition Match can be fast-moving and chaotic, with potentially several Bots moving around. Some BattleBots are very similar looking. You do not want, at the end of a Match between two flipper-Bots, to be uncertain which Bot is which.

It's a really good idea to use written notes during each Match. Some suggestions:

- When the Bots are entering the Arena, draw simple pictures of them along with their names. Note distinguishing marks, features, colors and any existing Cosmetic Damage. For Multi-Bots, note which smaller Multi-Bots are associated with which larger Multi-Bot(s).
- Keep written track of Aggression, Control and Damage from the beginning of the Match until the very end. Don't be unduly influenced by what happens at the end of the Match. These records can be as simple as hash marks made as the fight progresses.

Judges' Responsibilities

In certain cases, the Judges may need to confer with each other, or with other BattleBots personnel.

- Judges may discuss among themselves technical or other information about the identity, starting square color, or features of one or more of the competing BattleBots. They may also discuss robot actions or other Arena events that occurred during the Match. However, Judges must not discuss their final scoring values with one another until after their decisions have been publicly displayed.
- If a Judge has a question for a contestant, they should try first to relay their question through a Referee. If that is not satisfactory, the Judge(s) may discuss the matter directly with the Contestant(s). Any time a Contestant is being questioned, at least one member of the opposing Team must be present as an observer.
- At the end of a Match, but prior to the Arena doors being opened, the judges may request one or both Teams demonstrate the current functionality (or lack thereof) of their Bot's mobility system and weapon system(s).
- If a Judge believes that one Team's BattleBot is violating a Tournament Rule, he or she should inform a BattleBots official of the violation as soon as practical, or else immediately after the Match has completed. Once the official has been notified, the Judge has no further responsibility in the matter.
- Judges have to be familiar with the Appeal process defined in section 2.4.7 of the Tournament Rules. During an Appeal, Judges can confer only with the Match Steward regarding the Appeal, and should avoid contact with any members of the Teams involved in the Appeal.
- Any attempt by a Team to influence, harass or otherwise interfere with a Judge or the judging process should be immediately reported to a BattleBots Officer.