2021-2022 FIRST® Tech Challenge

Forum Answered Questions - Traditional
How To Use This Document

The *FIRST* Tech Challenge Official Q&A Forum is a place where teams can ask questions and receive official answers from game expert moderators. The official *FIRST* Tech Challenge Question & Answer Forum rulings take precedence over all information in the game manuals.

Moderators will answer team questions beginning each Monday, and close on Thursday at 12:00pm eastern time. The forum answered questions are then converted to PDF (this document) to be easily read by teams and volunteers. This takes place every week for the entire season, so teams should ensure to access the new forum printout each Thursday. Any rule clarifications or changes will apply to events happening that weekend.
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Traditional and Remote - General Robot Rules

Q309 optical mouse sensors

Q:
We want to use an optical mouse sensor and discus about it in our team. Can we use a light from light bulb that came through the mouse lence? Is this a direct light or laser? And could we use an optical from PC mouse?

A:
There are enough different types of optical mice that it is not possible to provide a blanket answer. Things that would would lead to a no answer are lasers (as you mention).

(Asked by 17504 answer published at --)

Q279 Team Number on the Robot Moving

Q:
TL;DR: Do moving numbers violate RG04? One of our team numbers is mounted on a moving structure, which will be turned during endgame. At the beginning of the match, the numbers are 180 degrees apart and satisfy RG04. At the end of the match, the structure rotates, turning the number. Does this violate RG04?

A:
The requirement is that the numbers be visible to field personnel throughout the match. Turning the numbers is not necessarily illegal, providing the visibility is still maintained from multiple viewing angles.

(Asked by 10435 answer published at --)

**Q247 Are Pneumatic Wheels from Andy Mark allowed?**

**Q:**
This question was removed without explanation. Pneumatic devices have been deemed illegal; we were wondering if this extended to wheels with tubes as they are classified as pneumatics?
https://www.andymark.com/products/8-in-pneumatic-wheel

**A:**
We believe Q235 answers your question. If it does not, please rephrase your question and resubmit.

(Asked by 6645 answer published at --)

**Q231 Can a plastic syringe be used as a shock absorber for our arm**

**Q:**
Can a plastic syringe be used as a shock absorber for our cascading arm or does it fall within the vacuum rule? It is to assist with and control the bounce of the arm using air pressure within a standard plastic syringe, no oil or liquid material or motor.

**A:**
Rule RG01.j prohibits the use of pressurized systems of any kind. Using a syringe as a shock absorber involves pressurizing the air inside the syringe, which is not allowed. Therefore, the syringe in the use described is not allowed.

(Asked by 9567 answer published at --)

**Q227 Team Number Placements on Robot**

**Q:**
Our team has a question about the placement of team numbers on the robot. Rule RG04 looks to help refs see the numbers no matter a robot's orientation. However, the rule doesn't account for a triangular robot like ours. We are thinking of placing number plates across all three sides. The plates won't be 180 degrees from each other, but they will be visible from all directions. We understand that this doesn't follow the rule to the letter but still keeps in spirit of the rule. Would this be ok?

**A:**
Yes, putting team numbers on all three sides will satisfy Rule RG04.

(Asked by 14779 answer published at --)
Traditional and Remote - Commercial Off The Shelf Components

Q295 Legality of infrared sensors

Q: Are these infrared sensors legal? https://www.amazon.com/Avoidance-Reflective-Photoelectric-Compatible-Raspberry/dp/B08DR1W3BK/ref=mp_s_a_1_1_sspa The don't look to use focused light.

A: Please be aware that it is not possible or reasonable to expect that we would be able to comment on the specific legality of every possible sensor that might be used by a team. The sensors mentioned do not appear to violate any of the electrical parts rules

(Asked by 16008 answer published at --)

Q284 Is a flexible shaft and a brake cable allowed?

Q: Is a mechanical flexible shaft legal to use in a FTC robot mechanism? They are usually used for bench grinders or Dremel tool. https://en.wikipedia.org/wiki/Flexible_shaft Seemingly in the same league, a bicycle's brake cable was deemed legal in a 2017 FTC Q&A which shows up if I Google. https://ftcforum.firstinspires.org/forum/i-first-i-tech-challenge-game-q-and-a-forum-this-is-a-moderated-forum/first-relic-recovery But may I ask, will a brake cable be legal for this FTC season - 2021-2022

A: Yes, a flexible shaft is a legal COTS.

(Asked by 15167 answer published at --)

Q235 Wheels with tubes

Q: Are tubed tires allowed as they would be classified as a pneumatic chamber? Thinking specifically of the Andymark pneumatic wheels.

A: Pneumatic tires are considered a pressure chamber and are not allowed.

(Asked by 6645 answer published at --)

Q187 Regarding RE03, is gobilda battery 3100-0012-0020 legal?

Q:
Is gobilda battery 3100-0012-0020 (https://www.gobilda.com/nimh-battery-12v-3000mah-xt30-connector-mh-fc-20a-fuse-12-20/) legal?

A:
No. Only the batteries listed in RE03 are allowed

(Asked by 18133 answer published at --)

Q174 <RE13>c interpretation of user programmable microprocessors in LED interface modules

Q:
<RE13>c says COTS LED interface modules are allowed. We think the restriction of user programmable processors is to prevent teams using them to offload robot control tasks that the android controllers should be doing. The K-1000C is advertised as "programmable", but it's really just a way to configure the LED pattern on an SD card. That doesn't make the internal processor cable of running robot control code. Is this module allowed? https://www.amazon.com/dp/B06XJ1J915

A:
Yes. Be aware that LEDs that flash/change colors are subject to the potential limitations listed in the orange box in RE13.

(Asked by 6832 answer published at --)

Traditional and Remote - Raw and Post Processed Materials

Q260 Are parts made of leather allowed? RG01f

Q:
We are using 3" leather straps for our intake "fingers". It is fully processed leather used in making saddles and handbags. We came across <RG01>f and it occurred to us that leather is technically "animal based materials". Are our straps ok? Or illegal parts? Thank you!

A:
No, Rule RG01 specifically disallows animal based materials.

(Asked by 18240 answer published at --)

Q211 Is tungsten cube legal?

Q:
We want to use tungsten cube to add weight. We do not find any rule say this material is illegal. Also tungsten cube is completely non-toxic and environmentally friendly. Want to ask in the QA just to make sure, is this legal?

A:
According to the CDC, Tungsten is non-toxic and therefore it is a legal material and is allowed on the robot.
Traditional and Remote - Miscellaneous Robot Electrical Parts and Materials

Q303 Is the LEDriver I2C LED Controller allowed?

Q: Q240 asks about I2C controllable LEDs, and the answer was that they are allowed. I have two follow up questions:
1) Is a device like the LEDriver (https://nexttechrobotics.co) allowed? This takes I2C input from the Control Hub, and outputs a control signal to 5V addressable LEDs. The Microcontroller on the LEDriver is not user-programmable.
2) Are we allowed to connect multiple 5V addressable LEDs together by soldering our own wires, or do we have to only use the lengths available commercially?

A: The module referenced does not appear to meet the "widely available" aspect of a COTS part. It appears to have been created as an attempt to work around prior year's robot electronics rules and is of limited supply/availability. As such, it fits more into the category of other electronics and falls under RE17 and is not allowed.

(Asked by 365 answer published at --)

Q302 Can we use the digital ports for custom LED lights similar to REV Digital LED Indicators?

Q: <RE13> explicitly lists the I2C ports, but not the digital 3.3v ports. After discussions with REV on current levels and the 5V tolerance of the ports, it's also allowed to power these from the 5V aux output. We've made lights (LED w/series resistor) using both power sources, with the digital port serving as the current sink per REV's guidance. Q1: Is it allowable to replicate a REV Indicator for a better form factor? Q2: Can we source from the 5V Aux, utilizing the digital port for current sink?

A: For this season, the answer is no. We will review the potential alternative connections with the FTC engineering staff with an eye towards possible inclusion in next season's robot electronics rules

(Asked by 10138 answer published at --)

Q263 Handling of Modules that fall under multiple categories of the Robot Electronics Rules

Q: How are modules that have multiple aspects handled under robot electrical part rules deemed legal or illegal? For example, a standard UVC webcam may have an indicator light. However, this light is illegal under <RE13>.d ii as it does not connect to an approved power source. Is the webcam legal due to it being allowed under <RE14> and thus allowed to violate rules of <RE13>? Or is it allowed because it is attached in a legal way to the robot, and thus still must follow the other rules of <RE13>?
A: Indicator/status LEDs that are a standard part of any of the various electronic modules in a robot are not subject to the limitations of RE13.

(Asked by 9902 answer published at --)

Q240 led lights I2C

Q: Are LED lights controlled by I2C allowed? For example: https://www.sparkfun.com/products/18354

A: Yes

(Asked by 14188 answer published at --)

Q199 Is Servo signal booster device legal?

Q: Is https://www.servocity.com/cat6-receiving-board-boosted/ legal in FTC? It is a servo signal booster device to convert servo signal to CAT 6, then convert it back

A: No. This device falls under RE17 "Other Electronics" and is not allowed

(Asked by 12611 answer published at --)

Q163 Is Voltmeter legal

Q: Is Voltmeter legal (to show battery level) in FTC? Example voltmeter is like this: https://www.amazon.com/gp/product/B00B689UGA. We have used it in the previous events. Want to get an official ruling if it is legal or not.

A: Yes. Be aware that this would need to be connected to one of the allowed light source connection points (i.e. an XT30 port from the Control/Expansion Hubs to get battery voltage)

(Asked by 12611 answer published at --)

Traditional and Remote - Motors and Servos

Q275 Motor quantity

Q: Can a 9th DC motor be carried on the robot for balance if it is not plugged into the REV hub?

A:
No. All motors within the robot, regardless of them being wired/connected, count against the limit.

(Asked by 7105 answer published at --)

Traditional and Remote - Control System

Q255 Motorola E5 XT1920 v XT1920DL

Q:
Is the moto E5 XT1920DL legal or does it have to be without the DL? I can't find anything from Motorola that shows they are not the same phone.

A:
The moto E5 XT1920DL is legal. The XT1920 family is what's important, and models of the XT1920 can have up to two additional letters or numbers – this indicates vendor or carrier-specific information.

(Asked by 11093 answer published at --)

Q257 Painting the REV Servo Power Module

Q:
We would like to paint the REV Servo Power Module. We will be careful not to get any paint in the I/O ports, nor on the power terminals, nor on the LEDs. Is painting the REV Servo Power Module allowed?

A:
Yes. RM03 allows for painting of COTS parts as long as no other rules are violated. You should take care to keep paint off the terminals as well as make sure to keep any airflow features from clogging.

(Asked by 9999 answer published at --)

Q205 Follow-up to Q193 - Is REV-31-1152 Control Hub illegal?

Q:
When the answer states "We do not SUPPORT" does that mean that I may have problems using FtcRobotController and others, or that even if I do not have any technical problem with the controller, I am not ALLOWED (ie. it's illegal) to use it on an event (remote or traditional)?

A:
There is no way to make this Control Hub legal for competition as updating the firmware to the version required for inspection would cause the control hub to fail permanently.

(Asked by 20131 answer published at --)

Q193 Is REV-31-1152 Control Hub illegal?

Q:
In the game manual it is listed that the REV control hub is allowed (and the same also in the legal-illegal parts for FTC). However, it does not specify the part number of the control hub. Hence, we were wondering if the old control hub we got our hands on (REV-31-1152) is legal for the FTC or not.

A:
The old control hub with that product ID was the original Beta hub, which included the old dragon board that is no longer being made. We do not support that old control hub, and firmware updates since applied to the board would break it. REV cannot support that control hub

(Asked by 20131 answer published at --)

Q176 Update for FTC DS and RC apps? App versions do not match now.

Q:
Our team is using the new DS hub and the new REV controller. We updated all our software and apps using the REV Hardware client. It updated the Driver Station app to 7.0.1 and the Robot Controller app to 7.0 but now in "self-inspect", they do not match. How can we correct this? (The Hub firmware is 1.8.2 and the Control Hub OS is 1.1.2.) Will you be coming out with a new RC version soon to match the DS? Thanks.

A:
Minor version differences between the robot controller and driver station are acceptable. Inspectors should be aware that the self-inspect feature will flag this and should allow the inspection to pass

Edit: We apologize for the error in the "self-inspect" feature. The FTC SDK versioning system is based on a variation of Semantic Versioning (AKA SemVer), which uses a sequence of three digits (Major.Minor.Point), but in our case the Point value is optional - when it's not included, it's assumed to be zero. Compatibility is determined from Major.Minor components only; "Point" releases are always compatible with their corresponding Major.Minor version, even if it seems that the check in the "self-inspect" didn’t get the memo. FTAs were notified of this issue, so they should not hold this against teams during inspection. We will correct this once we release an updated SDK version sometime after the New Year.

(Asked by 16433 answer published at --)

Traditional and Remote - Sensors

Q306 Legality of IR TOF sensors

Q:
The answers to Q293 and Q295 seem to imply that RE13 does not apply to sensors. Does RE13 apply to IR TOF sensors, which use directed light sources? Does this mean that RE13 applies to sensors at all? Would this mean that any COTS IR TOF distance/beam break sensor would be legal?

A:
RE13 is intended to primarily cover electronics added by teams that do not have functionality beyond generation of light (i.e. not sensors).

Due to the unknown aspects of laser light sources on the playing field, the laser prohibition in RE13 has, in general, been applied to all electronics.
Q293 Clarification 2 of Q286

Q:
In Q286, two cameras (the D435 and D415) are presented. Are these cameras competition legal, considering that they contain IR projectors which seemingly violate RE13? No definite answer is provided in Q286.

A:
RE13 is specifically about light sources, not about sensors in general. The two cameras mentioned do not fall under the limitations applied to light sources.

Q291 Clarification on ruling Q286 (Cameras)

Q:
Given that the T265 contains an IMU accessible over USB, is it legal for competition use? This seems to violate Q286.

A:
Since the T265 was previously approved for use, we will continue to allow it for this season (rather than force teams to make late adaptations). We will re-evaluate its status for the coming season.

Q286 Are Intel D435 (without IMU) and D415 cameras legal?

Q:
Intel D455 and D435i are illegal because they have embedded IMU. However, Intel D415 and D435 don't have IMU, so are they legal? Here is the link for each product: D415: https://www.intelrealsense.com/depth-camera-d415/ D435: https://www.intelrealsense.com/depth-camera-d435/ Additionally, both Intel D435i and T265 use BMI055 IMU, so is T265 still legal in the future?

A:
If a camera does not include additional sensor functionality (i.e. an IMU) and can be connected as required in RE14, then it is a legal camera. Others would not be legal cameras - RE12 limits the sensor to only be connected to specific ports on the REV Control and/or Expansion Hubs.

Q277 Manufacturer Intended Sensor Modification

Q:
We bought a metal detector (induction sensor), but from the manufacturer it came with a buzzer (illegal) and an LED (powered illegally) to show when metal is present. With this sensor came with a sheet from the manufacturer on how to remove the buzzer and LED and solder on a lead to get a 3.3v digital output. Our questions are: 1) is
Q: this an internal modification, or is this allowed, since it only affects the sensor's output? 2) are internal modifications okay if intended by the manufacturer?

A: This would be an allowed set of modifications.

(Asked by 8569 answer published at --)

Q269 More Ultrasonic distance sensors

Q: I am wondering if the following maxbotix distance sensors are allowed: MB1643 HRLV-ShortRange-EZ4 and MB1242 I2CXL-MaxSonar-EZ4

A: It is not possible for us to comment on every possible sensor that is usable within a legal FTC robot. Simply apply the limitations listed in RE12, paying attention to make sure that the sensor does not violate other rules (for example, RE13.a - no lasers)

(Asked by 6165 answer published at --)

Q250 Ultrasonic distance sensor

Q: Is the ultrasonic distance sensor MB1604 HRLV-ShortRange-EZ0T from Maxbotics allowed?

A: Yes.

(Asked by 6165 answer published at --)

Q221 3D Printed Sensor Case

Q: We would like to have a lower profile Rev V3 Color Sensor as the stock cases are large even though the sensor itself is small. Could we 3D print a low profile case and place the sensor in it. We would not alter any electronics in doing this.

A: Yes, as long as no electrical changes are made.

(Asked by 18369 answer published at --)

Q207 Modified touch sensor

Q: We would like to modify a touch sensor (REV-31-1425) by soldering a tilt switch over the push switch and widening the plastic case to fit the tilt switch. This allows us to use the touch switch as a tilt switch and the tilt switch mimics the opening and closing of the touch switch circuit. Will this be legal to use in FTC?
A: This modification falls into the general class of internal modifications to electronics that are disallowed by RE16.

I would suggest working out how to wire the tilt switch as a stand-alone sensor rather than trying to wedge it into a push sensor.

(Asked by 20326 answer published at --)

Q202 Modified touch sensor

Q: Is it legal to use a touch sensor (REV-31-1425) that has been modified to be a tilt sensor?

A: Without more information about what "modified" entails, we are unable to provide an answer

(Asked by 20326 answer published at --)

Q190 Is there a legal way to provide 5 volt input to analog sensors?

Q: As per RE12.a and Q67, it is not legal to connect a sensor to the 5V Power on the REV Hub. RE15.j states that Logic Level Converters that are used to connect a REV Expansion Hub to a 5V-compatible I2C sensor or a 5V-compatible digital sensor are allowed. Can logic level converters be used to power an analog device by bypassing the conversion on the signal pin? If not, this leads us to believe there is no legal way to power 5V analog sensors. Is this the intended consequence?

A: Yes, there is a legal way to provide 5v power to an analog sensor. The method you describe is the allowed method (i.e. via a level-converter).

Be aware that the analog sensor's output range will cover 0-5v ... you will need to take care to scale the value to useful ranges for the analog input on the Control/Expansion Hub. (a properly configured voltage divider would be recommended)

( Asked by 7244 answer published at --)

Q189 Is a 5 volt analog sensor powered by level shifter with signal going to analog port legal?

Q: Is powering an analog sensor via level shifter plugged into a digital/I2C with the analog signal going to an analog port legal? In question 99 you answered - "should be powered via a REV Logic Level Converter" Your answer specifies "powered via" The team that asked the question specifically wants to use the analog input port on the hub for the signal input. This implies that the analog output can go to the analog port. We have Sharp IR 5 volt sensors we would like to continue to use. Thnks
A: Yes
(Asked by 3805 answer published at --)

Q183 Legal sensor?

Q: A few of our team members are discussing if this sensor violates rule RE13.a because it is not a source of visible light. https://www.st.com/en/imaging-and-photonics-solutions/vl53l0x.html Product description: "The VL53L0X's 940 nm VCSEL emitter... is totally invisible to the human eye..."

A: No. The sensor utilizes a laser and is not allowed per RE13.a
(Asked by 18094 answer published at --)

Q173 Tilt switch

Q: Are ball bearing tilt switches used to maintain the level of a robot arm, legal for the FTC competition.

A: Yes.
(Asked by 20326 answer published at --)

Q172 Distance sensor

Q: Since RevRobotics are out of stock on distance sensor, I have been able to find an I2C compatible distance sensor. So is the model HC-SR04 legal for use in FTC?

A: Yes.
(Asked by 20326 answer published at --)

Q148 Is the LED light on the REV color sensor v3 allowed?

Q: please clarify, is the light sensor light source allowed? the answer 'yes' is ambiguous based on the question text.

A: In the original question, [Q144 (qa/144)], the only question asked was in the title to the post, "Is the LED light on the REV color sensor v3 allowed?". The rest of the posting was explanatory text.

We are not sure what is ambiguous about the answer "Yes" to this question.
Q161 promisity distance sensor

Q:
we want to use a sharp GP2YA21-10 80cm infrared proximity distance sensor. is this legal

A:
Yes.

Q165 Distance sensors

Q:
What distance sensors are allowed?

A:
We are not able to provide a listing of legal distance sensors.

When choosing a distance sensor, be aware that sensors that use lasers as a measurement method violate RE13.a and are not allowed, with the exception of the REV 2m Distance Sensor.

Traditional - Gameplay - All Match Periods

Q308 Scoring from inside the warehouse after you completely removed a piece of freight

Q:
After we finished the warehouse operations and we are completely out of the warehouse with a piece of freight in possession, can we partially go back in the warehouse to score on the shared shipping hub, or we have to be out of the warehouse even tho the warehouse operations were completed?

A:
In general, a Robot and its Controlled Freight that completed Warehouse Operations may partially go back into the Warehouse without consequences. For example, a Robot may partially reenter the Warehouse while orienting itself prior to placing Freight onto the Shared Shipping Hub.

Note: Keep in mind the rule GS5b requirement that a Robot must be Completely Outside of the Warehouse to Score Freight.

Q299 Does "easily avoidable" change based on a robot's capability to drive over the barriers?
Q:
Q51 describes a way in which Freight inadvertently positioned near the Warehouse border could be removed from the Warehouse without a Penalty. Question 1: Does the meaning of “easily avoidable” in Q51 change based on whether the robot is capable of driving over the barriers? Question 2: Is Freight removed from the warehouse in this manner eligible to be scored without Penalty?

A:
Answer 1: No. An underlying assumption when applying game rules to a scenario is that all Robots are able to drive over the Barrier, even if they are not actually capable of driving over the Barrier.

Answer 2: We believe Q62 (qa/62) answers this question.

(Question asked by 6436 answer published at --)

Q298 Clarification to Q294

Q:
Clarifying the question. We agree 100% that 'deliberate' placement of an element under the shared shipping hub is a violation of G29. Our question is that guidance has been provided to re-interpret the word 'deliberately' to also mean 'accidentally' for G29. We are trying to understand what kinds of 'accidental' actions would be penalized given G29 as written clearly only states 'deliberately'. Balls roll long distances randomly, blocks bounce unpredictably off the mat, etc...

A:
We understand why you are questioning the ruling in the Q&A Forum and we hope that the following information will help you reconcile the perceived conflicts between the game manual and the forum.

A piece of Freight under the Shared Shipping Hub has a significant effect on gameplay and therefore, consequences need to be applied to the Robot causing this scenario, even if the outcome was not deliberate.

It is difficult to anticipate all gameplay situations when the rules are written before the season starts in September. When we wrote the rules protecting the Shared Shipping Hub state of Balance, we addressed Robot Interference with the Shared Shipping Hub at the End of the Match (GS3). We did not write a game specific (GS) rule that applies to the scenario described in Q294 (qa/294).

Without a game specific rule to provide guidance, we looked to the general (G) rules. The Illegal Usage of Game Elements rule (G29) is close to what is needed. A Game Element (Freight) was moved by a Robot to a location that amplified the difficulty of a Scoring activity. However, rule G29 only addresses deliberate Robot actions. What should a referee do if the Robot's actions are accidental?

Fortunately, there are processes in place to answer questions that are not directly addressed in the game manuals. In this case, a referee posted a question to the referee Q&A Forum and an official answer was provided. Just like the Team Q&A Forum, answers provided in the referee Q&A Forum are enforceable at Competitions. The Head Referee at your Competition appropriately and correctly shared this new information with Teams during the Drivers Meeting. This prompted a Team to post a question to the Team Q&A Forum. The Game Design Committee provided consistent guidance in both the referee and Team Q&A Forums. Everyone in FTC land has access through the Q&A Forums to know the consequences of the scenario at hand.

One might ask, what allows the Game Design Committee to use the Q&A Forum to expand rule G29 to include accidental Robot actions for this scenario? The first paragraph in section 4.6 of the Game Manual Part 2 explains the hierarchy for applying the Game Manual's Safety, General, and Game Specific rules and how they relate to posts in the Q&A Forum. The last sentence of this paragraph states that: "The official FIRST Tech Challenge
Question & Answer Forum rulings take precedence over all information in the game manuals. In place of writing a new GS rule and publishing a new version of the game manual so late in the season, we decided it was best to publish in the Q&A forum the adjustment to rule G29 for this scenario.

We hope that this additional information is helpful.

The question in the post: "We are trying to understand what kinds of 'accidental' actions would be penalized given G29..." is too open-ended to address in the Q&A forum. In general, the guidance in the Q&A Forum is that accidental or deliberate relocation of Freight that effects the Balance state of the Shared Shipping hub is subject to rule G29 consequences at the discretion of the referee. If you have specific scenarios of concern, please ask the Head Referee about them during the Drivers Meeting.

(Asked by 12533 answer published at --)

**Q297 Inadvertent tipping of another robot**

**Q:**
G26 states that some defense gameplay is to be expected. If a red robot pushes the blue robot against the barrier and causes the blue robot to get stuck or even tip, under which of these situations would a major penalty apply? 1. The red robot initiates the contact but pushes the blue robot slowly into the barrier. 2. The blue robot initiates the contact but the red robot pushes the blue robot slowly towards the barrier. 3. The red robot inadvertently runs into the blue robot at a higher speed.

**A:**
It is difficult to provide an absolute ruling for these scenarios. There is certainly a potential for violating rule G26 in all three situations. The ultimate decision would be determined by the referee at your event, with the final call made by the Head referee.

(Asked by 8644 answer published at --)

**Q294 G29 'deliberately' vs 'accidentally'**

**Q:**
It was stated in a driver's meeting that the latest guidance is to assess a G29 penalty for all situations that cause a game element to end up under the Shared Shipping Hub. Regardless of deliberate or accidental. Regardless of whether it is your own side or opponent side that is affected, even if the element is cleared later. We found no change of G29 from 'deliberately' in the latest game manual or Q&A forum. Can we get a rapid clarification here? (Competition is 3/5.)

**A:**
A piece of Freight under the Shared Shipping Hub has a significant effect on gameplay. An immediate Major Penalty for violating the illegal use of Game Elements rule G29 is appropriate in this situation if the referee is able to determine which Robot caused the Freight to "end up under the Shared Shipping Hub."

Note: This question was posted after the weekly cutoff date for publishing answers.

(Asked by 12533 answer published at --)

**Q290 Warehouse Defense**

**Q:**
Per Game Manual Part 2, warehouses are specified as alliance neutral and number 2 in total. Question 1: Is a single robot completely blocking access to one of the two warehouses in violation of g28? Question 2: if #1 is legal, is scoring while fully blocking a warehouse in violation of the "if everyone did this clause" of 7.3.1 due to there being more robots than available warehouses on the field?

A:
Answer 1: Yes.
Answer 2: See Answer 1.

(Asked by 16750 answer published at --)

Q289 Clarification around part 2 of Q282

Q:
The second part of Q282 states that "Parking while Possessing an "incredibly heavy Team Shipping Element" does not violate any rules. Rule G28 will apply if the Parked Robot Blocks access to all of the remaining Freight in the entire Playing Field that is not in a Scoring location." Question: Assuming the same scenario but the defending robot is no longer stationary (IE not parked), does this same ruling apply?

A:
Answer: This scenario is too open-ended to give a definitive answer. It depends on the actions of the Robots. For example:

1) Rule G28 consequences apply If the defensive Robot shadows the opposing Alliance Robot and effectively Blocks all access to an Area.

2) In general, a Robot driving around the Playing Field and playing the Game while Possessing a Team Shipping does not violate any rules. Obviously, all game rules apply. The ultimate decision depends on the Robots actions and any rule violation will be determined by the referee at your event.

(Asked by 16750 answer published at --)

Q285 Possession in the warehouse

Q:
Question 1: The question has to do with the definition of immediately. If we pick up more than one freight in the warehouse but get rid of the extra freight as we are driving and exiting the warehouse, (less than a second of possession), are we subject to <GS8>? Question 2: If the robot crosses the warehouse boundary while possessing more than one freight, but we get rid of the extra freight within one second and before we fully exit the warehouse, would we be subject to a <GS5> penalty?

A:
Answer 1: Yes. To avoid the rule GS8 Penalty, a Robot should not perform any action that is "playing the game" while it Possess or Controls more than one piece of Freight. For example, the Robot moving to exit the Warehouse is "playing the game."

To avoid a rule GS8 consequence, the Robot in this scenario should remain stationary while it releases the extra piece of Freight unless the Robot motion is necessary to release the extra Freight. For example, a piece of Freight is stuck under the Robot's drivetrain and the only way to release the Freight is to move the Robot away from the Freight.
Answer 2: Yes, if the released Freight exits the Warehouse.

(Question asked by 8421 answer published at --)

**Q280 Clarification around Capping Defense**

**Q:**
If a robot is defending another robot in possession of their TSE (not under capping protections yet), and through pushing causes their opponents to drop their TSE on the floor. The defending robot never made direct contact with the opponent's TSE but did directly cause it to be dropped. Would there be any penalties assigned to the defending robot in this scenario? If so, which ones?

**A:**
Answer: The circumstances of the Robot to Robot interaction dictate whether or not a Penalty is applied. The ultimate decision will be determined by the referee at your event, with the final call made by the Head referee. Here are a few examples of how a referee may view defensive gameplay that causes a Robot to drop their Team Shipping Element:

1) A defensive bump (i.e., typical gameplay that does not have an obvious risk of damage) against the opposing Alliance Robot is allowed.

2) Aggressive defensive impacts against the opposing Alliance Robot will likely be viewed as violating rule G26.

Note: Components sticking out from the Robot are part of the Robot and all rules apply. Teams are expected to be aware of the offensive and defensive gameplay risks of Robot extensions and also to design them to be resilient to allowed levels of Robot to Robot contact.

Pro Tip: When in doubt about your Team's gameplay strategy, ask the Head Referee for guidance during the Drivers Meeting.

(Question asked by 16750 answer published at --)

**Q278 unscored autonomous duck**

**Q:**
May an unscored autonomous duck be removed from the carousel and saved for end game?

**A:**
Answer: If the Duck that was placed on the Carousel during pre-Match setup remains on the Carousel at the end of the Autonomous Period, it should stay on the Carousel. This Duck is eligible to be Delivered during the End Game Period. See Q132 (qa/132) for additional information.

(Question asked by 14163 answer published at --)

**Q273 TSE Transitive Control**

**Q:**
The definition of "Control" in Game Manual Part 2 section 4.4 states that if an object is following the same movement of a robot it is Controlled. Question 1: Is this transitive? Question 2: For example, if red robot is holding its TSE and blue robot pushes red robot (causing the red TSE to move in the same path as the blue robot) would this be in violation of GS4c?
A:
Answer 1: It depends on the circumstance. For example, a Robot picks up a Box that has a Team Shipping Element balanced on top of it without the Robot touching the Team Shipping Element. The Robot in this scenario is Controlling the Team Shipping Element.

Answer 2: No. The red Alliance Robot Possession of the Team Shipping Element takes precedence in this scenario.

(Asked by 4366 answer published at --)

Q254 Must we collect the first Freight we control?

Q:
Question 1: If our robot collects a piece of Freight while completely in the warehouse, then drops the Freight while remaining in the warehouse, can we then collect a different piece of Freight immediately and exit the warehouse without getting a penalty? Question 2: Or must we leave the warehouse and restart warehouse operations before collecting a different piece of Freight.

A:
Answer 1: Yes, provided that the first piece of Freight does not exit the Warehouse.

Answer 2: No, provided that the first piece of Freight does not exit the Warehouse.

(Asked by 6436 answer published at --)

Q253 Is a maximum width TSE legal despite making defense harder?

Q:
If a team were to use a maximum width TSE at 8 inches and it remains in its starting location on the barcode, it would be difficult for the opposing alliance to play defense without violating GS4c. Would this be a legal strategy or would this violate G29 despite the TSE being unmoved.

A:
A legally constructed Team Shipping Element located on its Match starting Barcode location does not violate rule G29 or any other gameplay rule.

(Asked by 13648 answer published at --)

Q229 Clarification around Interference

Q:
In game manual 2, interference is specified as "robot to robot interaction". Provided no direct or translational contact between two robots is established, would a) intaking freight from the warehouse adjacent to the opposing alliance station or b) driving into the warehouse adjacent to the opposing alliance station changing the location of freight be considered interference? c) If these two actions are not considered interference, would they be legal to do in the autonomous period?

A:
Answer a: No

Answer b: The answer depends upon the scenario. For example:

1) Rule G29 Penalty: A Robot relocates Freight inside either Warehouse to a strategic defensive location. For example, relocating Freight to obstruct one or both open paths (no Barrier) to the Warehouse.

2) Rule GS8 Penalty: A Robot Herds or directs Freight in either Warehouse above the allowed one (1). Piece of Freight. For example, pushing more than one (1) piece of Freight a time inside the Warehouse to a strategic position.

3) No Penalty: Normal gameplay movement of Freight while a Robot attempts to collect a piece of Freight in either Warehouse.

Answer c: The answers to "a" and "b" apply to both the Autonomous and Driver-Controlled Periods.

Keep in mind the rule GS10 consequences for Interfering with the opposing Alliance's scoring attempts during the Autonomous Period. For example: i) initiating contact with an opposing Alliance Robot during the Autonomous Period is highly likely to be viewed by the referee as violating rule GS10; ii) operating a Robot in the Warehouse adjacent to the opposing Alliance Station risks violating rule GS10 if the Robot Interferes with the opposing Alliance Robot's Scoring attempt.

(Asked by 16750 answer published at --)

Q225 G18 and homing sequence

Q:
G18 states "Robots that start playing the game (Autonomous or Driver-Controlled Period) prior to the start of a Match Period receive a Minor Penalty" Question 1: Does this penalty apply to a homing sequence? After Autonomous, but before driver controlled period our robot moves approximately 5 inches in three axis's to home our turret motors. We use magnetic sensors.to find out exactly where our arm is.. Question 2: Is this considered an advantage in game pay, thus illegal?

A:
Answer 1: Yes, if the Robot or a part of the Robot moves.
Answer 2: Yes.

(Asked by 14188 answer published at --)

Q220 Clarification to Q219 Dropping the Ball

Q:
Question 1: Did the answer to Q219 apply to both questions within Q219. Question 2: In other words, if you do control freight while in the warehouse and you accidentally do something that causes the freight to go outside the warehouse, then all you need to do to avoid a penalty is to exit the warehouse? Question 3: You can reenter the warehouse right after completely exiting. You don't need to touch that lost piece of freight outside the warehouse to avoid the penalty?

A:
Answer 1: The answer in [Q219 (/qa/219)] starts with the following sentence: "The application of the Warehouse Operations rule GS5a is the same for both of these scenarios."
Answer 2: Yes, keep in mind that this only works for one piece of Freight that exits the Warehouse. If two or more pieces of Freight exit the Warehouse without following Warehouse Operations, only one Penalty is avoided by the Robot completely exiting the Warehouse.

Answer 3: Yes.

(Asked by 20370 answer published at --)

Q216 Field-side scoring summary

Q:
There is a lot happening on the field. Referees are doing a great job with the scoring. There have been a few times where ducks, elements, or autonomous goals were underscored. The detailed online scoring is often delayed a match or two making it difficult to request something like a single duck/element score correction via the question box. Is it allowed to request a quick, field-side summary of the scored autonomous goals element/duck count and penalties before referees submit scores?

A:
There is no provision for performing a field-side review of scoring.

Any questions related to scoring of the match or penalties assessed will need to be addressed in the question box after the scores for the match are posted.

(Asked by 12533 answer published at --)

Q219 Does Dropping the Ball violate Warehouse Operations?

Q:
The robot picks up one freight in the warehouse but the robot bounces on the barrier driving out of the warehouse causing the the freight to fall off and the freight falls outside the warehouse does this violate "Warehouse Operations"? In this case the front of the robot just crossed the barrier but the back is still within the warehouse. Is the answer different if the robot is entirely within the warehouse when it literally drops the ball and the cargo rolls out of the warehouse?

A:
The application of the Warehouse Operations rule GS5a is the same for both of these scenarios. The rule GS5a consequence depends on upon what happens next:

Scenario 1 - Robot exits the Warehouse: The Robot completes Warehouse Operations for the dropped Freight by exiting the Warehouse without Possessing or Controlling a piece of Freight. No rule GS5a Penalty is applied in this scenario because the Robot completed Warehouse Operations.

Scenario 2 - Robot Remains In the Warehouse and continues to play the game: If the Robot Parks, Possesses or Controls a piece of Freight in the Warehouse, drives around In the Warehouse, etc. it will receive a rule GS5a Minor Penalty for not completing Warehouse Operations for the dropped Freight.

(Asked by 20370 answer published at --)
Q218 Freight scored in Alliance Storage Unit in autonomous and at the end of 2.5 minutes

Q:
If freight is completely in the Alliance Storage Unit at the end of Autonomous, it scores 2 points. Does that freight earn an additional 1 point at the end of the 2.5 minutes if it remains completely in the Alliance Storage Unit?

A:
Yes, the piece of Freight in this scenario earns two (2) points for the Autonomous Period and one (1) point for the Driver-Controlled Period.

(Asked by 16011 answer published at --)

Q213 Does cargo rolling out of the warehouse always receive a penalty?

Q:
What we are seeing at our scrimmages is a robot will run into a clump of freight and the slight movement will cause a ball to roll out of the warehouse. Should this be a penalty? At no time does the robot come into direct contact with the ball, the ball rolling out is caused by the slight movement of all the touching freight when the robot intakes a freight.

A:
There are too many possible variations to comment absolutely on this dynamic scenario. The ultimate decision will be determined by the referee at your event, with the final call made by the Head referee.

A referee will probably not Penalize an occasional, random piece of Cargo that rolls out of the Warehouse solely due to contact with Freight. A Robot that frequently causes Cargo to accidentally Roll out of the Warehouse without following Warehouse Operations is likely to be Penalized.

(Asked by 19376 answer published at --)

Q203 Follow-up to Q155 - Robot Movement Against Wall

Q:
When the answer states "Lasting (i.e., persistent) translational movement of the Playing Field that creates a consequential gap between the Playing Field Wall and the Tile is not allowed," what defines a consequential gap? Is this the normal +/- 1 inch?

A:
We believe Q155 answers your question. There is no specified minimum allowable gap size. The referee watching the match will determine when gameplay is potentially affected. A referee will likely rule that a small gap has an insignificant impact on gameplay.

A few examples of persistent Playing Field Wall movement that affect gameplay are:
1) An increased gap between the Playing Field Wall and the Barrier that has a meaningful effect a Robot's ability to pass through the gap. a) A larger gap could make it easier for a Robot to pass through the gap. b) A gap between the Tile Floor and Playing Field Wall could trap a Robot wheel.

2) A gap between the Tile floor and Playing Field Wall that may trap a Scoring Element.

3) For AndyMark Playing Field Walls, the under Tile strap that holds the walls together needs to be tightened after the Match ends.

Note: The rule G8 +/- 1.0 inch Playing Field Tolerance does not apply to this situation.

Pro Tip: The Drivers Meeting is a good opportunity to ask the Head Referee how this situation will be addressed at the competition.

(Asked by 18523 answer published at --)

Q196 Further Clarification on Launching

Q:
Suppose a robot comes to a complete stop, as does its loaded freight item. A hatch is then opened, allowing the loaded freight to slide down a short (2 inch) incline plane, exiting the delivery mechanism. The forces on the freight are therefore gravity, and the normal force from a stationary incline plane. The motion of the freight as it exits has both vertical and horizontal components. Is this considered launching?

A:
We cannot comment absolutely on hypothetical scenarios. The ultimate decision would be determined by the referee at your event, with the final call made by the Head referee.

The Launching determination depends on the motion of the Freight. For example, a Box or Duck will likely remain near the Robot after sliding off of the Robot's ramp. A piece of Cargo is likely to roll a meaningful distance from the Robot after exiting the Robot's ramp.

Here are a few examples:

1) Not Launching: A piece of Freight (Box, Cargo, or Duck) slides down the Robot's ramp and falls directly into an adjacent Shipping Hub.

2) Not Launching: A Box or Duck slides down the Robot's ramp and comes to rest on the Playing Field Floor near the Robot.

3) Launching: A piece of Cargo slides or rolls down the Robot's ramp and comes to rest on the Playing Field Floor several feet from the Robot.

(Asked by 8397 answer published at --)

Q177 Inadvertent & Inconsequential contact-follow up to Q104: please clarify further

Q:
Can you please quantify at what point movement of the alliance shipping hub is considered to affect gameplay? There are disparities in the way that this penalty is being assessed currently. Even accounting for the allowable 1-inch tolerance in autonomous might cause the hub to shift as much as two inches. Some contact is to be expected...
and in many cases is difficult to avoid. Driver practice alone won't be of help if there is no objective rule about what constitutes a penalty in this case.

A:  
The Game Design Committee deliberately does not quantify "at what point movement of the Alliance Shipping Hub is considered to affect gameplay." The effect of Alliance Shipping Hub movement on gameplay depends on the direction it is moved. For example, movement towards a Warehouse provides a strategic advantage while movement away from the Warehouse could be viewed by a referee as having an Inconsequential impact on gameplay. A referee could view "X" distance movement towards the Warehouse as affecting gameplay and the same "X" movement away from the Warehouse as being okay.

Note: The Game Design Committee does not understand how to interpret the statement in the Team's question: "Even accounting for the allowable 1-inch tolerance in autonomous might cause the hub to shift as much as two inches." There is no 1-inch tolerance for the relocation of the Alliance Shipping Hub during the Autonomous Period. Rule G8 states that "Competition Playing Field and Game Elements will start each Match with tolerances that may vary as much as +/- 1.0 inch." Perhaps this is what the question references? As stated in the orange box for this rule, "The intent of the generous +/- 1.0 inch tolerance is to accommodate unintentional size and location variations that may occur. The tolerance is not an excuse for intentional or imprecise accuracy in construction or setup." Further, the +/- 1-inch tolerance is not a guide for determining when movement of the Alliance Shipping Hub affects gameplay.

Pro Tip: The Drivers Meeting is a good opportunity to discuss how rule GS3 will be applied at the tournament.

Pro Tip: Varying the direction a Robot approaches and interacts with the Alliance Shipping Hub will likely reduce how far an Alliance Shipping Hub moves from its Pre-Match starting location. A Robot that repeatedly interacts with the Alliance Shipping Hub from the same direction is likely to cause sufficient Shipping Hub movement to affect gameplay.

(Asked by 5890 answer published at --)

Q171 Legal defense about capping TSE

Q:  
We've noticed some teams are starting to use flat TSE elements which they could do the capping using magnetic arms, or even a tape measure. We'd like to clarify if the following scenarios are legal defense or not: Question 1: Since the TSE may be flat, the opposing robot may drive over the TSE and sit on top of it to prevent them from getting the TSE. Question 2: For teams using a tape measure, the opposing robot may just sit between the robot and the TSE to prevent them from getting the TSE.

A:  
Per [Q37 (/qa/37)], a Team Shipping Element that is not Possessed by a Robot must satisfy the size requirements specified in the Game Manual Part 1 rule TE02. Therefore, a "flat" Team Shipping Element used as described in this question is not allowed.

Answer 1: A Robot Parking over a Team Shipping Element is Control of a Scoring Element as described in the definition of Control part "d" in the Game Manual Part 2 section 4.4. The defensive Robot in this scenario will receive a Major Penalty for violating rule GS4c.

Answer 2: In general, the defensive Robot is not breaking a rule for Parking between an opposing Alliance Robot and their Team Shipping Element. Keep in mind that the defending Robot is not allowed to Block all paths of travel to access the Team Shipping Element. See rule G28 for details.
Q178 Are teleop penalties regarding GS3a in relation to hub position at the beginning of teleop

Q:
Example: Robot pushes the alliance shipping hub during the autonomous phase, then bumps hub during teleop and causes inconsequential and inadvertent movement. Would the position of the hub at the end of autonomous be considered the "starting position" with regard to the teleop phase, with additional penalties assessed with regard to movement from that position, or will teleop penalties be assessed based on movement from original starting position of the hub, even though it first moved in auton?

A:
The rule GS3a penalty is assessed as soon as the movement of the Alliance Shipping Hub affects gameplay. This penalty, like most other penalties, can be assessed during the Autonomous and the Driver-Controlled Periods. The reference "starting point" for determining Alliance Shipping Hub motion that affects game play is the pre-Match location of the Alliance Shipping Hub. Review the Game Manual Part 2 Figure 4.3.2 and the Field Reset Guide to learn about the starting locations of the Alliance Shipping Hubs.

Pro Tip: The Drivers Meeting is a good opportunity to discuss how rule GS3 will be applied at the tournament.

Q155 Robot movement against wall

Q:
Is it legal to drive a robot (with rollers on the side intended to prevent wall scratches) against the wall to ensure that it clears the 13.68 inch (+/- 1in) gap between the barrier and the wall? Is touching the wall legal?

A:
Yes, this Robot design strategy is allowed if gameplay does not change due to the movement of the Playing Field Wall.

Note: Slight temporary angular leaning of the Playing Field wall is probably okay. Lasting (i.e., persistent) translational movement of the Playing Field that creates a consequential gap between the Playing Field Wall and the Tile is not allowed.

Pro Tip: Throughout the season, Teams participating in Traditional Events may encounter Playing Field Walls from different manufacturers. The Playing Field Walls from AndyMark and IFI may react differently in the scenario described in the question. For example, the AndyMark Playing Field Walls are somewhat bound together with an under-Tile strap extending between opposite sides of the Playing Field. The IFI Playing Field system does not use straps. The AndyMark Playing Field Walls have a smooth polycarbonate surface where the IFI Playing Fields have a metal "bump" at the juncture of two wall segments.

Q151 Follow-Up to Q133 about Legal Defense

Q:
Suppose a robot has a linear slide to deliver the freight to the alliance shipping hub, while the opposing team robot also has a lifting mechanism (e.g. vertical slides, v4b, etc.) to raise the arm high, is it legal for the opposing team to use the lifting mechanism to block the attempt of freight delivery?

A:
In general, yes. The defensive Robot needs to be careful not to violate rules G26, G28, or GS3e. Keep in mind that we cannot comment absolutely on hypothetical scenarios. The ultimate decision would be determined by the referee at your event, with the final call made by the Head referee.

(Asked by 14179 answer published at --)

Traditional - Pre-match

Q311 Moving the out-of-field ducks before match

Q:
Prior to the start of a match, can the ducks outside the field next to the carousel be moved to another location?

A:
Ducks must start the Match in the Alliance's respective Loading Dock which is the unmarked Area outside the Playing Field located between the Playing Field Wall and the Alliance Station. The dimension of the Loading Dock is approximately 24 inches (61 cm) x 12 inches (30.5 cm). They can be rearranged as long as they remain in that Area. You can also place your Team Shipping Element in the Loading Dock.

(Asked by 8610 answer published at --)

Q246 Is the Team Scoring Element Barcode Placement Specific to the Alliance Station Position?

Q:
Does the TSE have to be placed on the match schedule defined alliance station position? The definition of Alliance Station in GM1 states "Station One is the Alliance Station closest to the audience", and GM2-4.5.1 states that teams may place their TSE on the "corresponding center Barcode". Does "corresponding" refer to the the barcode group as defined by the match schedule (ex: Red1 nearest the audience), or does it mean either barcode for the assigned red or blue side.

A:
If teams would like to use their TSE instead of the duck, they put their TSE on the center barcode in front of their robot prior to the start match as they set up their robot regardless of station position on the match schedule. The duck is then placed with the others next to the Carousel. Please make sure it is oriented the way your robot would like to "see" it. During the Randomization process before the match begins, the referees will place it on the correct barcode spot based on the results of the randomization.

As for where the team stands in the Alliance Station or robot on the field, GM2-4.5.1-2.a.i states: "Drive Teams, with agreement of their Alliance Partner, select their Robot's starting location" either in Station One or Two. If the alliance doesn't agree on where to stand, then teams should stand in the assigned position based on the match schedule.

(Asked by 3409 answer published at --)
Q181 Orientation of TSE

Q: If a team chooses to place the TSE on a bar code, must it be placed on the bar code in any particular orientation, or can the team choose its orientation? Example: a TSE is a cylinder with 3” radius and 4” tall, meeting the dimension requirements. Can the cylinder be placed either on its side or standing up depending on the team’s preference? In other words, the dimensions could be interpreted as 3”x4”x3” instead of 3”x3”x4”, potentially not meeting the dimension requirements.

A: The Drive Team may place the Team Shipping Element in any orientation on the center Barcode.

(Asked by 16597 answer published at --)

Q166 Moving Servos Continuously During Initialization

Q: Are teams allowed to continuously move servos while their Autonomous program is initialized up until the Autonomous period starts? We know that teams are allowed to move servos once after a program is initialized, but we are not sure if teams are allowed to move them back and forth constantly until the Autonomous period starts.

A: The Robot's actions violate rule G18 for starting gameplay early. The Robot must be motionless at the end of the Drive Team's pre-Match setup sequence described in the Game Manual Part 2 section 4.5.1 item 2. Inconsequential, small servo jitter is allowed. Commanded servo motor motion after the referee signals that pre-Match set-up is complete is not allowed.

(Asked by 3805 answer published at --)

Traditional - Autonomous Period

Q304 Clarification around the Preload Level Bonus

Q: Game Manual two states that "A Robot will earn points for placing its own Pre-Loaded Box on the Alliance Shipping Hub level (#1, #2, #3) that corresponds to the randomly selected Barcode location". The use of "the" is vague, because there are two alliance shipping hubs. Does this mean that a red robot that placed the preload on the correct blue alliance shipping hub level earns a preload bonus for their alliance?

A: The Autonomous Bonus only applies to a Robot correctly placing the Pre-Load Box on the indicated level of its own Alliance Shipping Hub.

(Asked by 16750 answer published at --)

Q268 Follow up to Q267

https://ftc-qa.firstinspires.org/admin/report
Q:
Q162 Doesn't addresses our situation. It refers to a panel that is either used to keep the duck from getting stuck on the robot, or deflects the duck to a desired position when dropping from the carousel. In our case, the first thing the duck touches after leaving the carousel is the floor. After the duck hits the floor, the flaps control where it comes to rest. We believe that this scenario does not violate rule <GS9> (a). Question: Are we correct?

A:
Answer: Yes.

Note: In this scenario, the Robot Controls the Duck after it is Delivered. A rule GS8 Penalty will be assessed if the Robot is concurrently Possessing or Controlling another piece of Freight. For example, the Possession/Control limit of one piece of Freight is exceeded if the Robot still Possesses the Pre-Load Box while it Controls (via the deployed flaps) the Delivered Duck.

(Asked by 5309 answer published at --)

Q265 Alliance hub being pushed

Q:
A red alliance robot during the autonomous period crosses the playing field and pushes the blue alliance hub to where it blocks the blue alliance from their duck carousel. What penalties if any should the robot on red alliance be given?

A:
There are multiple rule violations in this scenario:

1. A single rule GS10 Major Penalty for Interfering with the opposing Alliance's Scoring attempts during the Autonomous Period. Relocating the Alliance Shipping Hub and obstructing access to the Carousel effectively takes these Scoring tasks out of play during the Autonomous Period.

2. A rule GS3e Major Penalty because the interaction with the opposing Alliance Shipping Hub creates a gameplay affecting change.

3. G29 Major Penalty if the referee believes that the Team deliberately used the Alliance Shipping Hub to amplify the difficulty of gameplay for the opposing Alliance.

Note: The Blue Alliance Robots are allowed to relocate their Alliance Shipping Hub to its pre-Match starting location without Penalty.

(Asked by 130 answer published at --)

Q212 Is the TSE considered part of the robot for parking?

Q:
During autonomous, we are replacing the duck with the TSE on the barcode. During the 30 seconds, we pick up the TSE, then parking in the storage area. The robot is completely in the storage area, but the TSE itself sometimes hangs over the line. In looking at the definition, we cannot determine if the TSE is included as part of the robot. Please clarify. Thanks!

A:
This situation is covered by rule G4: "Scoring Elements that are Controlled or Possessed by a Robot are part of the Robot except when determining the location of the Robot or otherwise specified by a Game-Specific rule."

In this scenario, the Robot earns six points for Parking Completely In their Alliance's Storage Unit.

(Asked by 14840 answer published at --)

Q167 Storage Unit - Completely Parked in Autonomous

Q:
If our Robot Arm extends beyond the 23.0" of the Alliance Storage Unit, can we rotate our Robot Arm so that it extends over the Field Wall when stopped to comply with the "Completely" in Alliance Storage Unit, if the tape line is the "Extention" vertically of the "Completely" in zone?

A:
The Storage Unit Area is defined by gaffer tape on three sides and the Playing Field Wall on the fourth side. Extending a Robot arm over the Playing Field Wall extends a portion of the Robot Outside the Alliance Storage Unit boundary.

Intentional Robot extension Outside the Playing Field Perimeter is not permitted and is subject to rule S2 consequences.

Note: See the definition of "Area" in the Game Manual Part 2 section 4.4.

(Asked by 8487 answer published at --)

Traditional - Driver-Controlled Period

Q282 Clarification around Controlling and G29 on the TSE

Q:
Question: GM2 States that "Objects that are Controlled by a Robot are considered to be a part of the Robot". If a robot controlling its TSE uses the TSE to defend more effectively, would this be a violation of G29? Example 1: (direct use) A robot sticks the TSE out in front of opponents to legally defend a larger area at once. Example 2: (indirect use) A robot has an incredibly heavy TSE and picks it up to be less movable when parked in their opponent-side warehouse

A:
Answer: The answer depends on the scenario. Using a Robot extension to Possess and position the Team Shipping Element away from the Robot is in itself an allowed Robot action. Components sticking out from the Robot are part of the Robot and all rules apply. Teams are expected to be aware of the offensive and defensive gameplay risks of Robot extensions and also to design them to be resilient to allowed levels of Robot to Robot contact. Rules G3 (Forcing an Opponent to Break a Rule), G28 (Pinning, Trapping, or Blocking Robots), and G29 (Illegal Usage of Game Elements) may come into play depending on the circumstance. Posts Q271 (qa/271), Q272 (qa/272), and Q280 (qa/280) are related to Q282. The ultimate decision would be determined by the referee at your event, with the final call made by the Head referee.
Example 1: The Robot's actions in this scenario are legal until they are not. Rules G28 (Pinning, Trapping, or Blocking Robots) and G29 (Illegal Usage of Game Elements) may come into play depending on the circumstance. When in doubt about your Team's gameplay strategy, ask the Head Referee for guidance during the Drivers Meeting.

Example 2: Parking while Possessing an "incredibly heavy Team Shipping Element" does not violate any rules. Rule G28 will apply if the Parked Robot Blocks access to all of the remaining Freight in the entire Playing Field that is not in a Scoring location.

(Asked by 16750 answer published at --)

Q266 Blocking passage into or out of a warehouse.

Q:
1. Is it legal for an alliance to park one of their robots in the gap next to the wall of the warehouse furthest from their staring position at the beginning of a match and/or, to follow a robot after they have passed around (over the barrier) with the intention to prevent them from leaving the shared storage area? 2. What if the only exit path would cause a collision with the shared shipping hub? 3. Is it legal to push an opposing robot through the gap if they are blocking your preferred path?

A:
Answer 1: We believe $\text{Q85 (qa/85)}$, $\text{Q186 (qa/186)}$, and $\text{Q191 (qa/191)}$ answer your question. If they do not, please rephrase your question and resubmit.

Answer 2: Rule G29 prevents Robots from deliberately using Game Elements to amplify the difficulty of a game activity. If this does not address your question, please provide additional detail to help us understand the scenario and why there is an exit path that "would cause a collision with the Shared Shipping Hub." For example: a) Is a defensive Robot obstructing direct paths of travel between the Warehouse and the Shared Shipping Hub area? b) Is the Shared Shipping Hub repositioned so that it is touching or closer than usual to the Barrier? c) Is the only length of the Warehouse boundary that is not defended by a Robot a limited section of Barrier directly adjacent to the Shared Shipping Hub?

Answer 3: Yes, provided that the Robot's actions do not violate rule G26.

(Asked by 14496 answer published at --)

Q259 Follow up for Q256, is fast speed pushing considered as ramming, and illegal?

Q:
A and B are from different alliance, driving from their side's warehouse to the shared hub, already outside warehouse. In recent scrimmage, when A pushed B using A's back, we got warning we are more like ramming, not pushing. A pushed B with its regular driving speed without slowdown. That fast speed makes referees uncomfortable. Referee said he could get us major in official match. Is there any speed limit when A pushes B to prevent B from scoring? Is it required to slow down before push?

A:
We cannot comment absolutely on hypothetical scenarios. The ultimate decision would be determined by the referee at your event, with the final call made by the Head referee.
Pro Tip: The line between legal defense and overly aggressive defensive gameplay is subjective. The Drivers Meeting is a good opportunity for Teams to ask the Head Referee about how the referee crew will call aggressive defensive gameplay.

(Asked by 12611 answer published at --)

Q258 Interaction with robot in contact with the carousel before endgame

Q: If a robot gets into position and legally contacts the carousel wheel before endgame, does GS7e apply? For example, can an opposing robot make contact and interfere with a robot that is making legal contact with the carousel (not beginning the duck delivery sequence) before end game begins?

A: Rule GS7e states that Robots may not: "Interact or Interfere with the opposing Alliance’s Robot when it is in contact with the Carousel. Violations of this rule will result in a Major Penalty per occurrence." The rule does not include an exception for Interference occurring before the start of the End Game Period.

The scenario clearly states that the Robot "contacts and Interferes" with an opposing Alliance Robot that is in contact with the Carousel. Therefore, the Robot will receive a Major Penalty per occurrence for violating rule GS7e.

(Asked by 8695 answer published at --)

Q256 Regarding legal defense for shared hub

Q: Both A and B are trying to score shared hub from their own warehouse 1. If robot A just pushes robot b straight away when B tries to score, is that legal? 2. If Robot A drives in regular driving speed when pushing B (do not slow down to gently push B), is that legal? Any faster speed will be illegal? 3. A always uses back to push B, but B has some component broken because exposed, will A get major? A has no intention to break B 4. A's slide hit B's slide when both tries to score, is it legal?

A: Note 1: The answer below assumes that Robots A and B are on different Alliances.

Note 2: The text: "from their own warehouse" is unclear because the Warehouses are Alliance Neutral. There is no Area on the Playing Field designated as an Alliance's "own Warehouse".

Note 3: The text: "trying to score [in the] shared hub from their own warehouse" is a violation of rule GS5b. A Robot must be Completely Outside of the Warehouse to Score Freight. The Answer below will assume that this is a misstatement and the Robots are Completely Outside the Warehouse when attempting to Score On the Shared Shipping Hub.

Answer: The Shared Shipping Hub constraints relating to these questions are described in rule GS3d&e. GS3d states that a Robot may not intentionally relocate or rotate the Shared Shipping Hub. GS3e states that Robots cannot Interfere or interact with the opposing Alliance section of the Shared Shipping Hub. Neither of these rules are violated in the scenarios.
The scenarios described in the question appear to be normal Robot defensive strategies that don't violate any rules. However, we cannot comment absolutely on hypothetical scenarios. The ultimate decision would be determined by the referee at your event, with the final call made by the Head referee. For example, scenario 3 includes Robot damage. Depending on the circumstances, a referee could apply rule G26 consequences for damaging a Robot.

(Asked by 12611 answer published at --)

Q251 Scoring at the Shared Shipping Hub from the Alliance Shipping Hub Area

Q:
A robot followed Warehouse Operations and it possesses freight in the Alliance Shipping Hub area (the robot is completely outside the Warehouse). 1) Does the robot have to be fully in the Shared Shipping Area to deliver a freight piece to the Shared Shipping Hub? 2) Is the robot allowed to reach over the barrier from the main area to the shared shipping area to score the freight? 3) Is the robot allowed to drive partially on to the barrier and score the freight on the SSH?

A:
Answer 1: No.
The Robot's location in this scenario satisfies the rule GS5b requirement that it must be Completely Outside of the Warehouse to Score Freight.

Answer for questions 2 and 3: Yes, provided that the Robot remains Completely Outside of the Warehouse during the Scoring activity.

(Asked by 19460 answer published at --)

Q241 Small part of bot outside of Warehouse to pick up freight on border

Q:
If a bot is fully inside the Warehouse with a piece of freight on the border of the Warehouse and the bot must extend a small portion of a gripper slightly outside of the border to grasp the freight, but with the vast majority of the bot and drivetrain still inside, is there an inch or so of leeway given or does this situation not follow Warehouse Operations at all?

A:
The four sequential steps for Warehouse Operations are described in section 4.4 of the Game Manual Part 2. These steps are:

1) Start Completely Out of the Warehouse, then 2) Drive Completely In the Warehouse, then 3) Collect one (1) piece of Freight, then 4) Drive Completely Out of the Warehouse with the collected Freight.

The Robot in this scenario has completed Warehouse Operations steps 1 through 3. If the Robot drives Completely Out of the Warehouse with the collected Freight, the Robot will have correctly completed Warehouse Operations.

(Asked by 5356 answer published at --)
Q234 Downward Contact on Shared Shipping Hub

Q: If a robot hit down on the shared shipping hub with their delivery arm while delivering freight, causing the shipping hub to tip toward their alliance, would they get End Game points for Shared Shipping Hub tipped toward Alliance?

A: Applying rule GS3 to this scenario, the Shared Shipping Hub Balance is determined only by the weight and position of the Shipping Hub and the Scored Freight.

If the Robot remains in contact with the Shared Shipping Hub at the End of the Match, Rule GS3.b.iii states that the Shared Shipping Hub is Scored as Unbalanced in favor of the opposing Alliance.

If no Robot is interfering with (e.g., touching) the Shared Shipping Hub at the End of the Match and no other rules were violated, the End Game Shipping Hub Status will be Scored as described in section 4.5.4 2). The Robot pressing down on the Shared Shipping Hub while Scoring a piece of Freight did not eliminate the future Unbalanced Scoring potential of the Shared Shipping Hub.

(Asked by 8610 answer published at --)

Q209 Accidental launching of freight at the end of the game

Q: Scenario: A Robot rushes to the Warehouse just before the end of the game, and accidentally launches a few pieces of freight, some of which exit the Warehouse. Q1. Is a penalty assessed if freight exits warehouse before timer runs to 0 seconds - but does not give any game play advantage? Q2. Is a penalty assessed if freight exits warehouse after timer runs to 0 seconds - but does not give any game play advantage? Q3. If penalized, is it one minor penalty per freight that exited the Warehouse?

A: Gameplay rules apply to the entire Match unless a rule includes a limitation. For example, rule G28 Penalties are not given during the Autonomous Period.

Referees may excuse rule violation consequences by applying rule G10. The ultimate decision will be determined by the referee at your event, with the final call made by the Head referee. The Drivers Meeting is a good opportunity to ask the Head Referee how situations like the ones stated in this post will be addressed at the competition.

Answer for 1 & 2: A rule G10 Penalty waiver plus a warning are reasonable but not guaranteed actions for a referee to take in these scenarios. Robot actions preceding the rule violation, previous warnings, etc. may influence the referee to Penalize the Robot in these scenarios.

Answer 3: Rule GS5a Penalties are applied for each piece of Freight leaving the Warehouse that does not follow Warehouse Operations.

(Asked by 20308 answer published at --)

Q206 Inadvertent Contact with Opposing Alliance’s TSE
Q: We understand that intentional contact with Opposing Alliance's TSE ("TSE"), for example to change the orientation of the TSE, is considered Control thus subject to a GS4.c Major Penalty. Question 1: Is inadvertent contact that causes an inconsequential change in the orientation of the TSE considered Control? Question 2: Is inadvertent contact that causes a consequential change in the orientation of the TSE considered Control?

A: Both scenarios are examples of Controlling the Team Shipping Element. The referee may choose to invoke rule G10 and not apply a rule GS4c Penalty if the Robot's interaction with the opposing Alliance's Team Shipping Element is both Inadvertent and Inconsequential.

The following answers assume that the action occurs during the Driver-Controlled Period and the Team Shipping Element is located on its starting Barcode location with no change to its orientation before the interaction with the opposing Alliance Robot. A Team Shipping Element that has been moved from its starting location has too many possible outcomes to address in this Q&A post.

Answer 1: The first question states that Inadvertent contact caused an Inconsequential change in the Team Shipping Element. If the referee watching the Match agrees, no rule GS4c Penalty will be applied because of the rule G10 exemption.

Answer 2: The second question states that Inadvertent contact causes a consequential change to the Team Shipping Element's orientation. Since there is a "consequential" change to the Team Shipping Element, the referee will likely apply a GS4c Penalty.

(Asked by 9999 answer published at --)

Q198 Clarification around G28 penalties

Q: If two bots from opposing alliances intentionally (a) or unintentionally (b) work to block off an area of the field, which robot is assessed a G28 blocking penalty?

A: We cannot comment absolutely on hypothetical scenarios. The ultimate decision would be determined by the referee at your event, with the final call made by the Head referee.

The referee usually provides verbal and visual signals that clearly identify the Robot receiving a warning or Penalty.

(Asked by 16750 answer published at --)

Q197 The pre-load box is de-scored during the driver-controlled period.

Q: The pre-loaded box is scored during the autonomous period. If it is de-scored during the driver-controlled period, is the autonomous score nullified?

A: No
Q191 Are robots expected to be able to fit in the gap?

Q:
Does the following satisfy the definition of blocking? 1. A robot plays active defense on the barriers, but not the gap preventing a robot from crossing the barriers, but the defended bot is narrower than 13.7 inches and can enter and exit the warehouse through the gap. 2. A robot plays active defense on the barriers, but not the gap preventing a robot from crossing the barriers, but the defended bot is wider than 13.7 inches and can not fit in the gap.

A:
The answers that you seek are found by reading the definition of Block/Blocking in section 4.4 and rule G28 in Game Manual Part 2.

Answer 1: The defensive Robot does not violate rule G28 because it is not Blocking all paths of travel to the Warehouse. Allowing a 13.7 inch clear path of travel for a Robot that is less than 13.7 inches wide relative to its direction of travel is not Blocking.

Answer 2: The defensive Robot violates rule G28 because it is effectively Blocking all paths of travel to the Warehouse. Allowing a 13.7 inch clear path of travel for an 18 inch wide Robot is Blocking. Therefore, the defensive Robot will receive a Minor Penalty for every five seconds that it is in violation of the rule.

Q169 Downward Contact on Shared Shipping Hub

Q:
Question 1: Can a robot hit down on the shared shipping hub causing freight from the opposing alliance to bounce over to their side? We had that happen in a tournament, not only while freight was being delivered, but the robot arm continued to hit down on the hub several times even after freight was delivered. Question 2: Is it acceptable to drop freight from the robot from say 10-12” onto the shared hub (gravity only)?

A:
Answer 1: Gameplay strategies that descore Freight from the opposing Alliance's section of the Shared Shipping Hub receive a Major Penalty per Scoring Element as described in rule GS2d. It is possible that a referee will view the Robot's actions in this scenario as violating rule GS2d. We cannot comment absolutely on hypothetical scenarios. The ultimate decision would be determined by the referee at your event, with the final call made by the Head referee.

Answer 2: There is no rule that specifically limits the maximum height for dropping Freight (gravity only) onto a Shipping Hub.

Q156 Shared Shipping Container Unbalanced points clarification
Q:
If an opposing alliance places a piece of freight on the shared shipping container without fully leaving the warehouse, but that one piece of freight is the only freight on the shipping container, causing it to be unbalanced towards the opposing alliance side, does the opposing alliance get rewarded 20 points for the shipping container being unbalanced at the end of the match? Basically can improperly placed freight reward an alliance team with unbalanced points?

A:
In this scenario, the Robot receives a Minor Penalty for Scoring Freight while the Robot is In the Warehouse (GS5b) and it also receives a Minor Penalty for not following Warehouse Operations (GS5a).

Freight exiting the Warehouse without following Warehouse Operations remains eligible for Scoring.

If the Freight in question remains On the Alliance's side of the Shared Shipping Hub at the End of the Match the Alliance earns four (4) points. If the Alliance's section of the Shared Shipping Hub is contacting the Tile Floor at the End of the Match it is Unbalanced and the Alliance receives twenty (20) points.

(Asked by 11703 answer published at --)

Q153 Moving freight with warehouse using arm during the driver-controlled period.

Q:
Can we use a robot arm to push multiple freight items from the corner to the middle of the warehouse during the driver-controlled period? We are referring to moving within warehouse so that our arm can access freight from the middle of warehouse.

A:
No, the Robot is violating rule GS8a because it is Herding a quantity of Freight above the allowed limit to gain a strategic advantage.

Note: A Robot is allowed to nudge Freight out of the way to access a specific piece of Freight.

(Asked by 18241 answer published at --)

Traditional - End Game

Q307 TSE interactions with scored freight

Q:
1) If freight is partially supported by both the TSE and alliance shipping hub level 3, is the freight counted as scored? 2) Can a robot use a legally scored TSE to expand the carrying capacity of a level of the alliance shipping hub or will g29 take effect? 3) What penalties, if any, are assigned to a TSE placed on top of the alliance shipping hub center pole after endgame starts, and after being scored expands beyond the allowed limit?

A:
Answer 1: Freight Scoring requirements are described in Game Manual Part 2 sections 4.5.2, 4.5.3, and 4.5.4. Freight must be Completely On a Level to earn points. A referee will likely allow incidental Freight contact with a Team Shipping Element to count as Scored. Freight that is Supported by a Team Shipping Element has zero Score.
Answer 2: No, per rule G29.

Answer 3: The Team Shipping Element described in the question would not pass inspection and is therefore not allowed to be used in a Match. The referee would likely apply rule G29 and/or G30 consequences.

(Asked by 16750 answer published at --)

Q283 Shared shipping hub pushed onto barriers

Q: If the opposing alliance gives the shared hub a big push it is likely a major penalty. If that push results in the hub resting on the barriers so that the opposing side touches the tile floor what happens? Now our alliance cannot get points for tipping. This does not appear to violate GS3-a-iii so it appears the opposing alliance gets the tipping bonus. Granted, I don't expect the referees to give them the bonus but I could not find the rule that clarifies this case.

A: The Shared Shipping Hub in this scenario has a zero Balance/Unbalanced Score value because its state of Balance is influenced by contact with the Barrier. Rule GS3b states that “the Shipping Hub Balance [state] shall be determined only by the weight and position of the Shipping Hub, the Scored Freight, and the Scored Team shipping Elements.”

(Asked by 20370 answer published at --)

Q272 Do teams with long extension receive Carousel Protections while playing as intended

Q: 1. If a team is using a main scoring mechanism to score caps while spinning the carousel, and isn't "weaponizing" it, are the slides protected from robots pushing/ramming since this could cause the bot to rotate and leave the carousel interfering with carousel attempts. 2. If a team is using a tape measure to cap while spinning ducks and is not "weaponizing" it, does the tape measure and TSE receive any protections from defense before the cap enters the vertical plane of the alliance hub

A: Answer 1: We believe that Q271 (qa/271) #2 answers this question. The main body structure of the Robot is protected by rule GS7e while the Robot contacts the Carousel.

Answer 2: There are no rules for this scenario that provide general protection for the extreme Robot extension towards the Alliance Shipping Hub. Rule GS4c could come into play if the referee determines that the defending Robot Controls the opposing Alliance’s Team Shipping Element. For example, a Robot that contacts and dislodges a Team Shipping Element that is Possessed by an opposing Alliance Robot could be viewed by a referee as Controlling the opposing Alliance Team Shipping Element in violation of rule GS4c. Rule GS4b protects the Capping attempt only when the Robot has a Possessed Team Shipping Element In the outside edge of the Alliance Shipping Hub.

Note: A Robot that can concurrently perform the Delivery and Capping tasks has a clever design and the gameplay strategy is fun to watch. I observed this gameplay strategy at several tournaments and I never tired of watching the Robot Deliver Ducks and concurrently Score a Team Shipping Element. However, the extreme Robot
extension is not always protected from defensive gameplay and it risks violating several rules depending on the circumstances. For example, a Robot with an extended tape measure needs to be careful not to violate rule G26 for entanglement or rule G28 for Blocking.

(Asked by 13648 answer published at --)

Q271 Clarifications around Carousel Protections

Q:
"Turret cap" robots can cap their TSE (or extend across the field) while contacting their carousel. How are rules applied when a turret cap robot is contacting its alliance's carousel while capping and: Q1) it initiates contact with an opposing alliance robot in compliance with Q171? Q2) it gets contacted by opponent, but carousel specific operations are not interfered with? Q3) If the "turret cap" robot is clearly using the carousel protections to play defense, do the same rules apply (G3)?

A:
Clarifying Note: Turret Cap Robots typically expand their reach by extending a tape measure mounted on a turret mechanism. The end of the tape measure is usually capable of Possessing a Team Shipping Element. The turret cap Robot gameplay strategy is to concurrently Deliver Ducks and Score a Team Shipping Element during the End Game Period.

Answer 1: Rule G3 protects the opposing Alliance Robot from receiving a rule GS7e Penalty because the Scoring Robot initiated the contact with the opposing Alliance Robot. Rule GS4b will come into play if the Team Shipping Element is In the outside edge of the Alliance Shipping Hub.

Answer 2: The "turret cap" robot may not "weaponize" their extreme extension capability to take advantage of gameplay rules that are intended to protect a Robot while it is playing the game (e.g., Scoring). The "main" portion of the Robot is protected by rule GS7e. However, the turret Robot's extended tape measure is not protected by rule GS7e.

Answer 3: See the answers to questions 1 and 2.

(Asked by 16750 answer published at --)

Q262 Clarification around Double Capping

Q:
Game Manual 2 states that Capping is defined as "Placing a Team Shipping Element on top of the Alliance Shipping Hub pipe or on top of another legally Scored Team Shipping Element." If the second TSE is fully supported by the first but does not stick higher in height than the initial TSE does it earn the 15 point Cap Score?

A:
Yes.

(Asked by 16750 answer published at --)

Q233 Does 2nd TSE count score if 1st TSE is placed before 30 seconds?

Q:
If a robot places the alliance's 1st TSE at 32 seconds on the alliance hub pipe (this won't score as it is too early), and places the 2nd TSE on the 1st TSE at 20 seconds before the end of the match, does the 2nd TSE still count as scored?

A: You are correct, the first Team Shipping Element correctly placed on the Alliance Shipping Hub pipe has zero Score value because the Capping achievement was started before the start of the End Game Period.

The second placed Team Shipping Element earns the fifteen point Capping Score because it was correctly placed during the End Game Period.

(Question 215 answer published at --)

Q215 Carousel contact before End Game

Q: Section 4.5.4 of GM 1 is clear that starting end game tasks before End Game begins earn '0' points. Q120 is clear about placing ducks before End Game. Question 1: Is the robot is allowed to make contact with the edge of the carousel before endgame begins? Question 2: Is it OK for the carousel to rotate a small amount due to contact? Question 3: Would the answer(s) be different if the starting duck was still on the carousel?

A: Answer 1: Yes, the Delivery sequence described in the Game Manual Part 2 Section 4.4 does not specify when the Robot is allowed to touch the Carousel.

Answer 2: A small amount of Carousel movement caused by the initial Robot contact before the start of the End Game is not starting the Delivery task early and does not invalidate the future Delivery of the "starting Duck" if the Duck is on the Carousel.

If the "starting Duck" is on the Carousel, meaningful rotation of the Carousel is starting the Delivery End Game task early and the "starting Duck" will receive zero points for entering the Playing Field via the Carousel during the End Game. "Meaningful rotation" is a judgment call by the referee. The question and answer portion of the Drivers Meeting is a good time to learn how the referee crew will make this determination at the tournament.

If the "starting Duck" is not on the Carousel, the Robot should still avoid meaningful rotational movement of the Carousel. Since the Duck or Team Shipping Element placement on the Carousel is the first step of the Delivery sequence, Carousel rotation before the Scoring Element is placed on the Carousel does not affect the future potential for earning Delivery points. Keep in mind the rule GS9f requirement that "Ducks or Team Shipping Elements on the Carousel must be in contact with the Sweeper Plate before a Robot can rotate the Carousel." The Carousel must be stationary when the Duck or Team Shipping Element is placed on the Carousel.

Answer 3: This question is addressed in Answer 2.

(Question 175 answer published at --)

Q175 Follow-Up to Q170 about Legal Defense

Q: In the end game period, suppose our robot has the TSE in our delivery arm, and at the same time, the robot has another freight in the delivery arm as well (this does not violate 1 freight control limit). When the robot extends the arm and try to do the delivery, it's not clear if it's a capping attempt or a freight delivery attempt since the robot may do either one or both. In this case, is any attempt to block the arm is illegal?
A:
During the End Game, the Drive Team's intent to Score a Possessed piece of Freight or to use their Possessed
Team Shipping Element for the Capping achievement is irrelevant. Rule GS4b protections apply as soon as the
Possessed Team Shipping Element is located In the outside edge of the Shipping Hub. Therefore, attempts to
block the Scoring Robot's arm are illegal.

(Asked by 14179 answer published at --)

Traditional - Competition Rules

Q305 Dynamic TSE Team Numbers and Color

Q:
Per multiple other forum rulings, it is said that when modifications (such as a number change) happen to a TSE, it
needs to be reinspected. A) If a team shipping element, without any additions or removals to the physical element,
can change its team numbers, is reinspection needed? (EX calendar flip display) B) Same as above, but for the
color of the TSE, such as to be compatible with other team's vision programs. (EX heat sensitive paint)

A:
A) The TSE must be inspected by the Team using the TSE. So if a number is changed, the Team with that number
must apply for re-inspection. Remember, at many events the personnel doing morning inspection may have
transitioned to new roles and may not be readily available for re-inspecting Robots, TSEs, etc. B) The color of a
TSE is not subject to any Rules so a simple color change does not need to be re-inspected.

(Asked by 16750 answer published at --)

Q184 Clarification Around the Driver Station

Container <DS07>

Q:
a) The driver station carrier is described as "a container to store, organize, and transport the Driver Station
components." Would a pedestal to store, but also to set, our driver hub and controller on be legal? b) Can the
driver station container be positioned partially within the alliance station on setup (assuming the actual driver
station is still outside)? c) Can the positioning of the driver station container be changed over the course of a
match?

A:
a) No, a pedestal is not allowed per Rule DS07 b) Yes, the container may be In the Driver Station providing your
Alliance Partner agrees and it is not in the way of Field Personnel. c) Yes, providing no other rules are violated and
it is not in the way of Field Personnel.

(Asked by 16750 answer published at --)

Traditional - Field Setup
Q214 Does the +/- 1 in tolerance apply to the height of the carousel?

Q: Does the 1" tolerance apply to the height of the carousel?

A: In general, yes, the 1-inch tolerance does apply to the height of the carousel. However, I call your attention to the orange box in the Game Manual that states: "The intent of the +/- 1-inch tolerance is to accommodate unintentional size and location variations that may occur. The tolerance is not an excuse for intentional or imprecise accuracy in construction or setup." So, please try to make all field specifications as close to designed as possible.

(Asked by 5218 answer published at --)

Traditional - Engineering Portfolio

Q93 New award definitions (mentor/start/assist/advocate)

Q: Will the new definitions related to team support of other teams be added to game manual part 1 or otherwise be communicated to teams to prepare for judging? Coach saw these in judges training modules, but not yet included in GM1. Also - each level of support requires upload/printed documentation to be given to judges, but does that count against 15 pages of portfolio, or a separate item?

A: The definitions have been added to the Game Manual Part 1, both remote and traditional. The total number of pages for an engineering portfolio must not exceed 15 pages, plus a cover sheet for a total of 16 pages.

(Asked by 14568 answer published at --)

Traditional - Judges Interview

Q230 Clarification around Copyright Rules

Q: Do the copyright rules mentioned for award videos apply to sounds made by the robot and the driver station made during a match?

A: Yes. Please note the addition of rules DS08 and RS10 which do not allow team initiated sounds at any official competition.

(Asked by 16750 answer published at --)
Q238 Parody for Promote

Q: Under U.S. Copyright Law, a parody can be considered a “derivative” work protected from copyright infringement claims by the fair use doctrine. Are Parody videos that contain popular music with original lyrics allowed to be submitted for the Promote Award?

A: Teams must have rights to the music or must have permissions to use the music, and this includes parody's.

(Asked by 14188 answer published at --)

Q223 Bringing in parts to a presentation

Q: During the teams presentation to the judges, are they allowed to show parts that aren’t being used on that current robot?

A: Yes.

(Asked by 4650 answer published at --)

Q204 Movie / TV References in Promote Submission

Q: We know there are copyright rules for the music as found in game manual 1, section 9.4.5. However, we can’t find information about using short clips, pictures, visual effects, etc... from movies and/or TV shows. Are there similar restrictions for these?

A: Using short clips, pictures, visual effects from movies/TV shows, would not be permitted due to possible copyright infringement issues.

(Asked by 12833 answer published at --)

Traditional and Remote- Team Scoring Element

Q252 TSE Inspection Limits

Q: Q24 answered how many TSEs can be brought to an Event and was clear that only Inspected TSEs can be used in a match, but it wasn't explicit about any TSE limit for Inspection. For example, if 4 different teams brought custom TSEs to share and provided these TSEs to teams before their inspection, could a team bring all 4 shared TSEs and their own TSE to their robot's single inspection? Could that team then choose a different TSE for each match throughout the day without needing a re-inspection?
A: Teams may bring multiple TSE's to inspection providing they are for use by their own team.

(Asked by 12533 answer published at --)

Q236 Shared TSE

Q: Please clarify the second part of Q232. It asked if a team could have a TSE inspected that had a different team's number on it with the intent of sharing it with them before a match starts. Also, could a team theoretically bring a TSE for each team in the competition and have all (up to 40 or so of them) inspected?

A: Yes, a Team can bring TSEs for other Teams and hand them out prior to Robot Inspection. However, each Team must have their TSE inspected with their Robot. One team cannot have 40 TSEs inspected.

(Asked by 16597 answer published at --)

Q210 Use of a navigation image on Team Shipping Element (TSE)

Q: Game Manual Section 4.2.3. Gameplay technology allows teams to use the navigation images and built in vision processing software to navigate during autonomous period. My rookie team would like to paste one of the navigation images on to their TSE. The built in vision processing software is then able to detect the TSE location on the barcode. Is this strategy legal?

A: Using a Navigation Image on the TSE could be disruptive to other Robots that are also using the Navigation Images. Therefore using those Images on the TSE is not allowed.

(Asked by 19380 answer published at --)

Q192 Team Shipping Element Legality

Q: If our team shipping element has a small attachment piece that is used for picking up the TSE but the piece is not capped with the TSE, would it still be considered capped? The little piece would start with the TSE but stay with the robot when the TSE is capped. (It would be secured on the robot and would not fall onto the field or other game elements.)

A: All parts of the TSE must meet the size requirement when in use. Removing a part from the TSE and then driving away with it would cause the TSE to be significantly larger than the specified dimensions. Therefore, this design is illegal.

(Asked by 7462 answer published at --)