Robot Inspection
FTC 25-26 DECODE

Inspection Checklist Annotated Guide (and a bit more)

Thanks to NTX for some content

Revision History

Revision History	
Revision	Description
25-26.1	Initial 2025-26 Season Release

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What we'll cover

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- Quick overview of the FTC Control System
- Annotated Robot Inspection
  - General, Mechanical, Electrical
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  - Controls, Operations, Sizing
    - Things inspected possibly with power
- Mock Robot Inspections

Images shamelessly stolen from random places on the Internet

Etiquette and Gracious Professionalism

A GLOBAL ROBOTICS COMMUNITY PREPARING YOUNG PEOPLE FOR THE FUTURE

Gracious Professionalism and Etiquette

Gracious Professionalism

- It's a way of doing things that encourages high-quality work, emphasizes the value of others, and respects individuals and the community. With Gracious Professionalism, fierce competition and mutual gain are not separate notions.

Gracious Professionalism and Etiquette

Competitions are Scary Places - Etiquette

Inspectors are often the first volunteers that teams encounter. Show enthusiasm and work with the teams; asking questions and appreciating their efforts are great ways to help ease the teams nerves:

- Greet Them.
- Ask Questions!!
  - “Tell me a little bit about your robot”
- Be ready to point out successes.
  - “Great Job on the battery placement, I’m sure that’ll save you tons of time swapping out the battery!”
- Be kind when delivering bad news. Provide them with suggestions or solutions on how to pass – don’t hesitate to call in others for additional ideas.
  - “I think this should be easy for you to remedy, but unfortunately we’ve got to …”
- **The Inspector must be their biggest advocate!**

Gracious Professionalism and Etiquette – Key Volunteers

Not Sure If Something is legal/illegal?

- Key volunteers at events are there to guide other volunteers. If you are not sure about the legality of a robot please consult the Lead Robot Inspector (LRI) or *FIRST* Technical Advisor (FTA) as appropriate.
- If there has not been an identified Lead Robot Inspector, the Head Referee and *FIRST* Technical Advisor (FTA) can help either assign an LRI or help with decisions.
- Be sure to consult the Inspector Quick Reference and the Competition Manual before issuing the final ruling!
- Do your best. Make good team-centric decisions. Follow up on Slack if needed!

Quick Overview of the FTC Control System

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Core Control System Components

Core Control System Components

Hardware and Software come together to form the Core FTC Control System. The “Core” system is comprised of the Hardware and Software that provide the core control signals for communication and actuation on the robot.

Software

- Robot Controller App – Controls the Robot Controller hardware + I/O
- Driver Station App – Software to send commands to the Robot.

Hardware

- Driver Station (Dumb Terminal)
  - Driver Hub or Legal SmartPhone.
- Robot Controller
  - Control Hub or Legal SmartPhone.
- I/O Expansion
  - REV Expansion Hub.
  - REV Servo Hub (Power Injector PLUS!).

SmartPhones

REV Driver Hub

REV Control Hub

REV Expansion Hub

REV Servo Hub

Driver Station Configurations

Driver Hub or Android Phone Configurations

- [FTC-Docs Driver Station Wiring Diagrams]

Driver Hub Config (Primary)

Android Phone Config

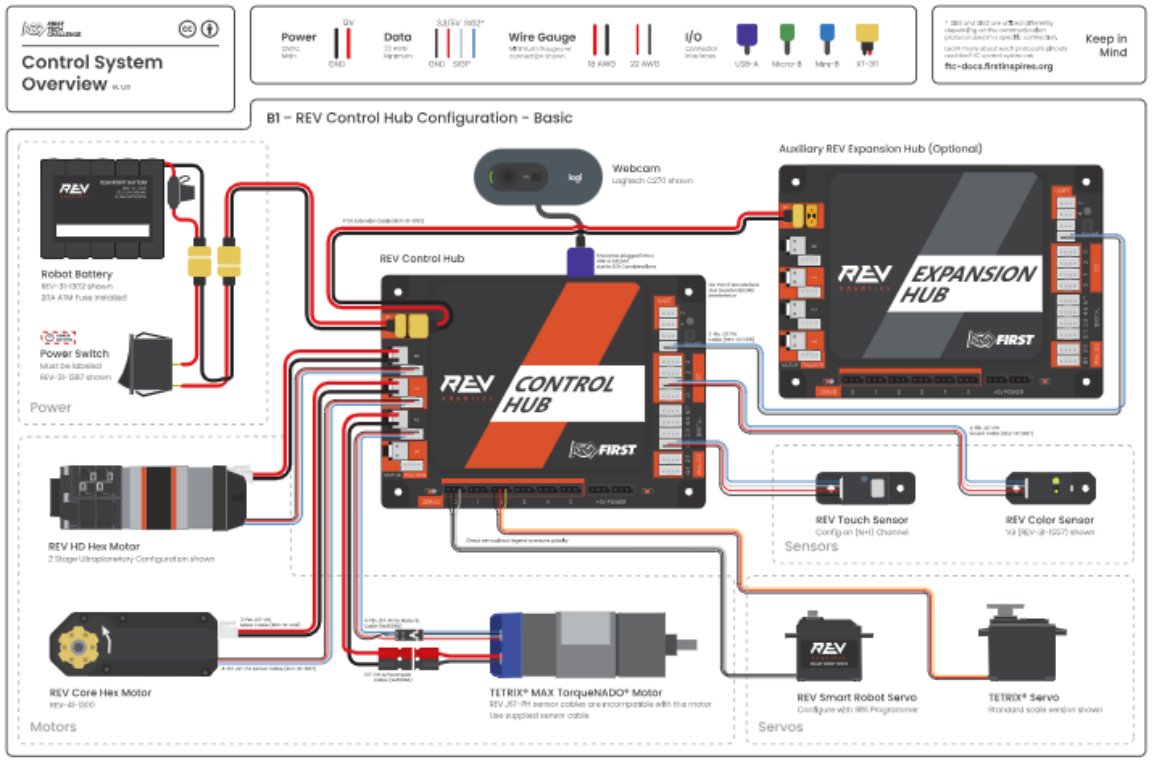
Robot Controller Configurations

Control Hub or Android Phone Configurations

- [FTC-Docs Robot Controller Wiring Diagrams]

Simple Control Hub Config

Expanded Control Hub Config



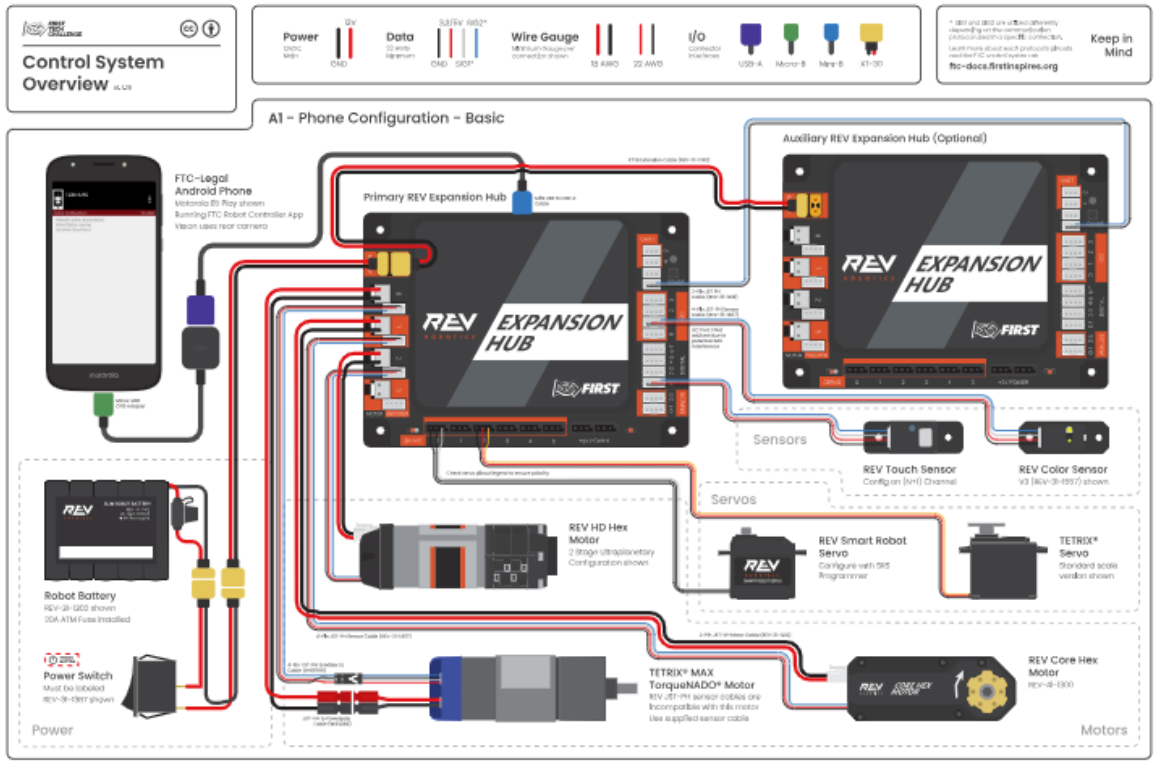
Robot Controller Configurations

Control Hub or Android Phone Configurations

- [FTC-Docs Robot Controller Wiring Diagrams]

Simple Android Phone Config

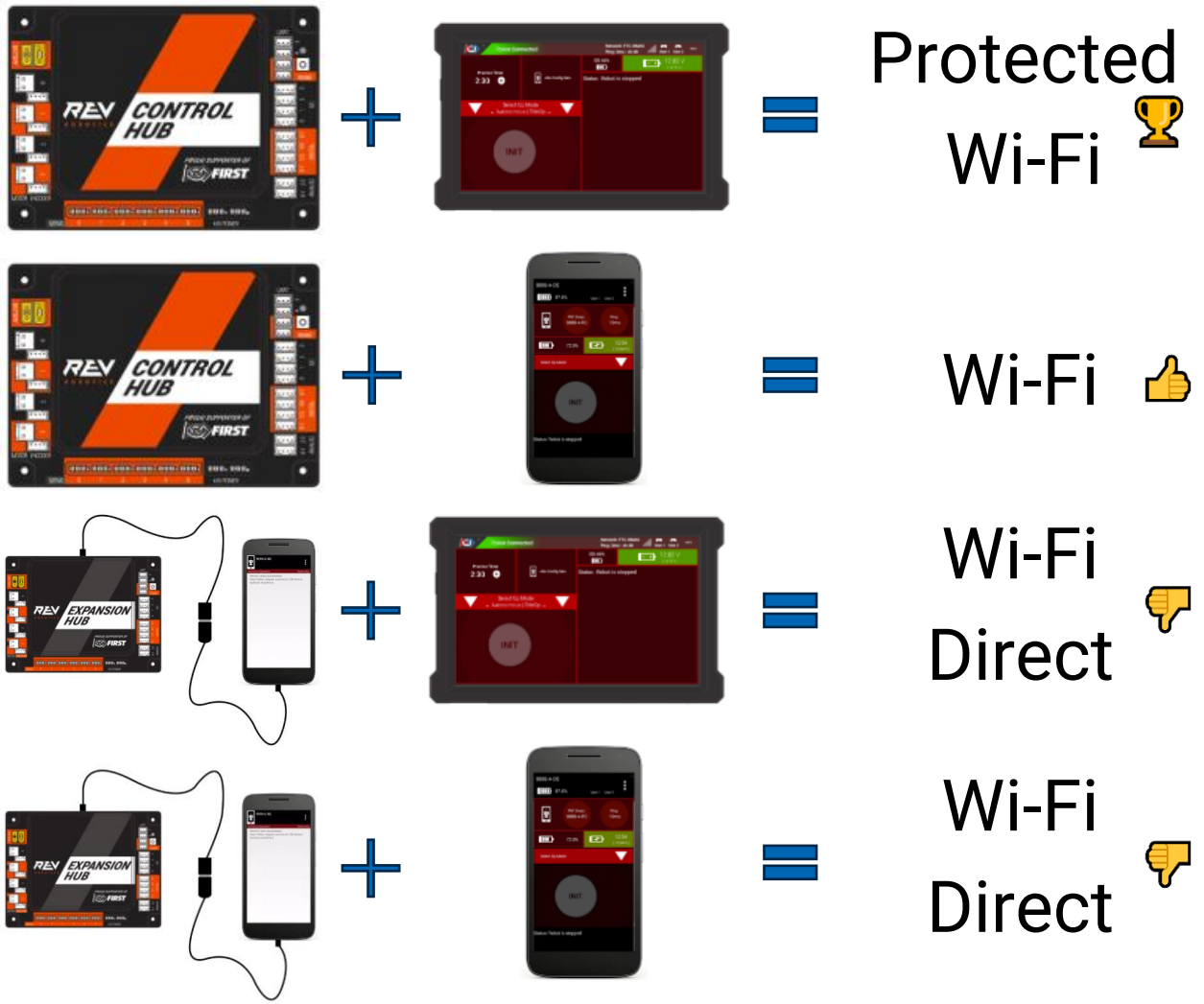
Expanded Android Phone Config



Control System Communications

Communications Methods

- Different Hardware Combinations work differently.
  - SmartPhones communicate via Wi-Fi Direct.
    - Old Standard, not supported or maintained.
  - Control Hub acts as an Access Point
    - When paired with a Driver Hub, 802.11w encryption is unlocked between the two devices. This blocks most Wi-Fi “attack” vectors since the entire communications stack is encrypted (even control).
    - When paired with a Phone, only standard encryption is used, and control packets are not encrypted.
- *FIRST* heavily recommends the Control Hub + Driver Hub combination.



Robot Inspection
(General, Mechanical, Electrical)

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Inspection (High Level Information)

Things Inspectors should Bring to Inspection

- Copy of Inspection Quick Reference (digital/print)
- Copy of Inspection Checklist (digital/print)
- Tape Measure (optional, preferred)
- Safety Glasses
- Smile
- *“Excellence is not a skill. It is an attitude.” –Ralph Marston*

Things to look out for before an inspection

- Is the robot powered on? Robots powered on might move if an OpMode is running.
- Check to see if there are any “charged” springs and determine if safety interlocks are needed during the inspection process.

Inspection (High Level Information)

Things Teams should Bring to Inspection

- At least one Student Team Member.
  - Maximum 3-4 people, realistically, don't crowd
- Robot – with ALL mechanisms, configurations,…
- Robot Signs.
- Robot Battery (charged).
- Driver Station (charged) with Controllers.
- *"If you'd take it to the competition field for competition, bring it to inspection."*

Inspection Checklist – Why so short?

- An astute inspector is always looking for all elements of the Competition Manual, but we cannot have a manual-sized checklist.
- Checklist is most common areas for fast review.

Inspection (General Section)

General Inspection

☑	General	Rule #
	ROBOT is presented at inspection with all MECHANISMS (including all COMPONENTS of each MECHANISM), configurations, and decorations used on the ROBOT.	I304
	ROBOT has two ROBOT SIGNS that are located on opposite or adjacent sides of the ROBOT and visible to FIELD STAFF from at least 12 feet away and meet minimal size requirements.	R401
	ROBOT SIGNS can indicate both ALLIANCE colors and meets markings requirements, unpowered.	R402
	Team number is displayed on ROBOT SIGNS and meets number size requirements, unpowered.	R403

- ***ROBOT is presented at inspection with all MECHANISMS (including all COMPONENTS of each MECHANISM), configurations, and decorations used on the ROBOT.***
  - Robot must be present at inspection.
  - Robot may have multiple “configurations” (different arms, different intakes, lifters, etc.).
    - Inspector inspects each possible “configuration”, or combination of components.
    - This may require going through the entire General/Mechanical/Electrical checklist for each configuration.
    - Do your best to not let this be a time suck if inspection is busy.
      - It’s okay to tell team to inspect their first couple configurations, and come back later for more.

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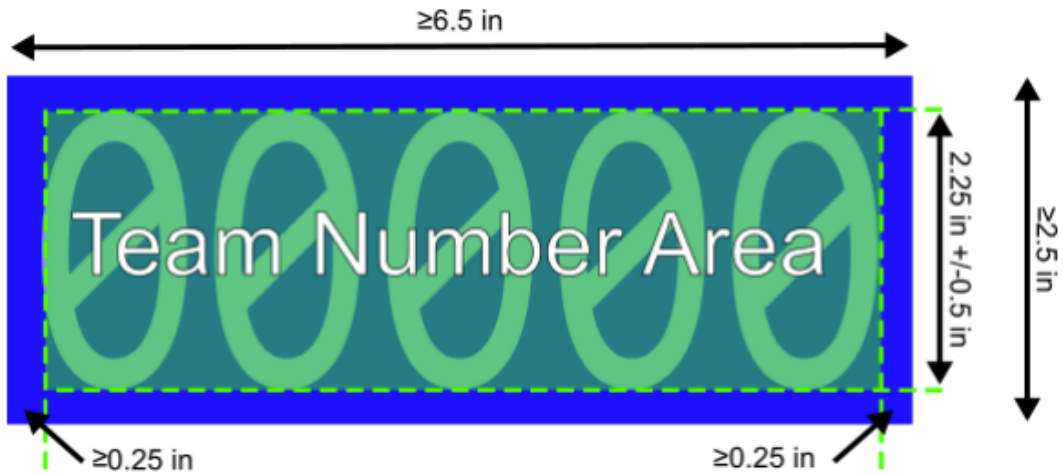
- ***ROBOT has two ROBOT SIGNS that are located on opposite or adjacent sides of the ROBOT and visible to FIELD STAFF from at least 12 feet away and meet minimal size requirements.***
  - Two Separate Compliant Robot Signs (or areas).
    - Ensure Robot Signs meet minimal size requirements.
  - Robot Signs on Opposite or Adjacent Sides of Robot.
    - Robot Signs must be >=90 degrees apart.
    - Robot signs in same plane have not typically passed.
      - Ex: Robot signs both face up and 180 degrees rotated 👎
  - Robot Signs visible to FIELD STAFF in normal config.
    - Partially occluded in STARTING CONFIG okay.
    - Partially occluded in end-of-match orientation also okay.



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- ***ROBOT SIGNS can indicate both ALLIANCE colors and meets markings requirements, unpowered.***
  - Ensure team can show BLUE and RED colored backgrounds.
  - Opposite color should not show.
    - Reversible signs must have opposite color blocked (e.g. sign back).
    - Reversible signs can have LIMITED opposite color showing.
      - But not if it could be mistaken for the alliance color
  - Signs cannot be powered to display/change number/color.
    - It's okay if team adds "extra" powered bling.

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- ***Team number is displayed on ROBOT SIGNS and meets number size requirements, unpowered.***
  - Ensure team numbers are legible. Bad Fonts?
  - Ensure team numbers are sized appropriately
    - Between 1.75 in. and 2.75 in. in size
    - Between 4.45 cm. and 6.70 cm. in size
  - Opposite color should not show.
    - Reversible signs must have opposite color blocked (e.g. sign back)
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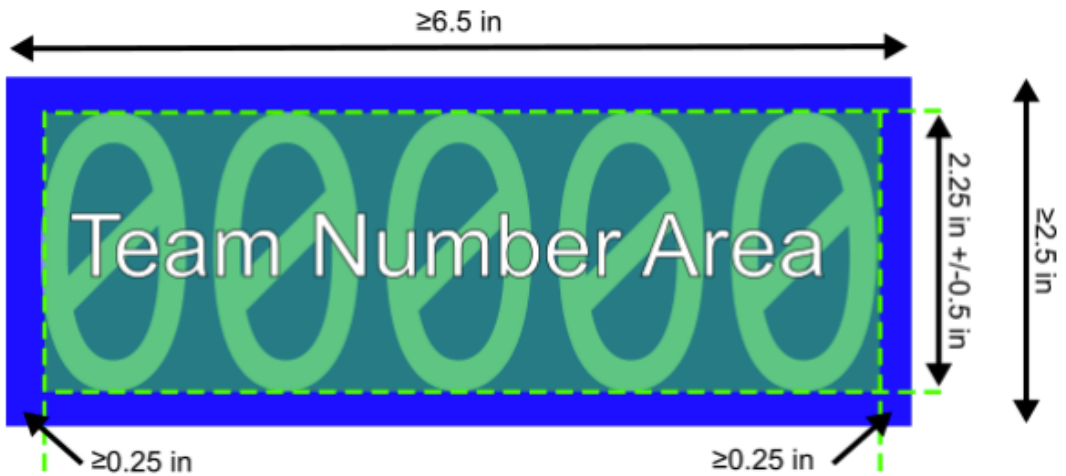
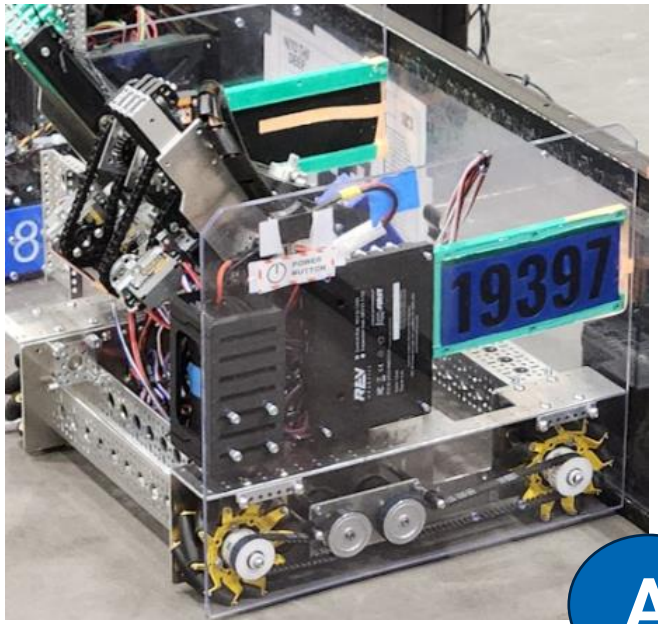


Practice

What's Wrong with these Robots?

- Identify what's wrong with these Team Robot Signs?



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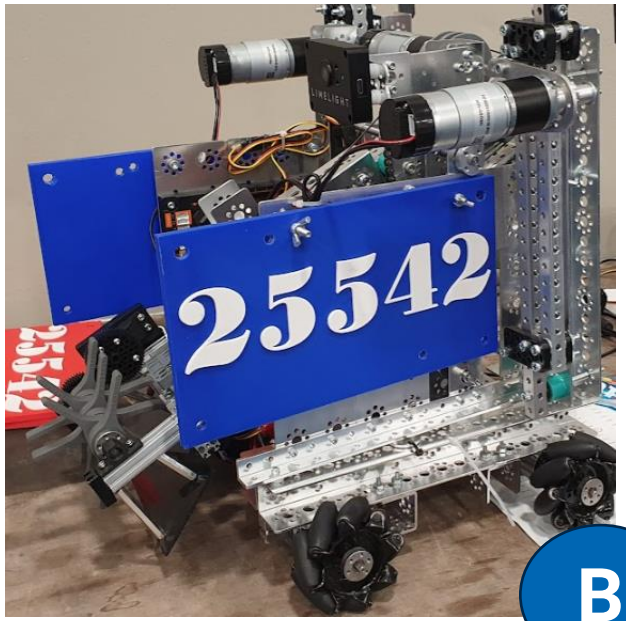

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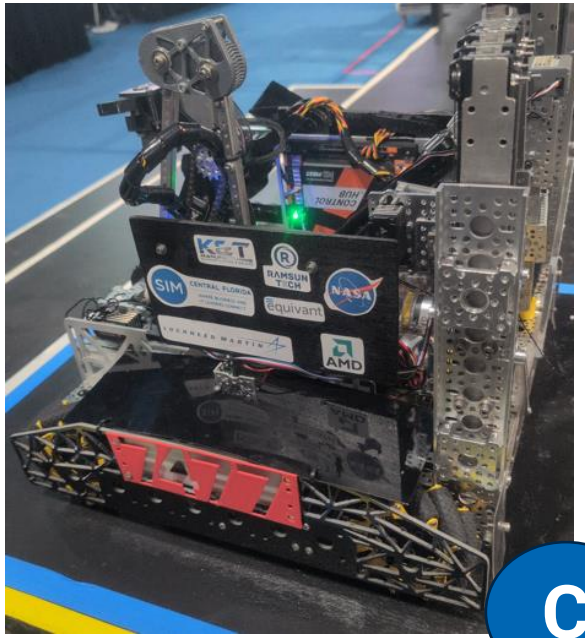

C

Inspection (Mechanical Section)

Mechanical Inspection

☑	Mechanical	Rule #
	ROBOT does not contain any COMPONENTS that could harm people, damage the ARENA, or damage other ROBOTS. This includes sharp edges, protrusions, or hazards to the ARENA elements.	R201, R202
	ROBOT does not contain devices that generate sound at a level sufficient to be a distraction.	R203.B
	ROBOT does not contain materials that are hazardous (i.e., flammable materials/gasses, mercury switches, exposed untreated hazardous materials).	R203.D, E, G, H
	ROBOT does not contain materials that would cause a delay of game if released (e.g., coffee beans).	R205
	ROBOT does not contain any closed air or hydraulic devices (i.e., gas springs, compressors, vacuum generating devices). Air-filled pneumatic wheels are exempt from this rule.	R203.F, R207
	ROBOT does not contain prohibited COTS MECHANISMS (multi DoF, game task solving, etc.).	R303

- ***ROBOT does not contain any COMPONENTS that could harm people, damage the ARENA, or damage other ROBOTS. This includes sharp edges, protrusions, or hazards to the ARENA elements.***
  - Robot does not have anything that will damage tile floors – no traction devices known to cause damage to the surface of the tiles. See Inspection Quick Reference (last page) for a more in-depth explanation.
  - No excessively sharp edges that will harm other robots, field, or “people.”
    - Do not rub your hands all over the robot. Stop trying to cut yourself.
    - Look for sharp areas that will damage the field (structures) or “spear” other robots.
    - Look for excessively sharp edges (poorly cut extrusion with exposed burs or jagged edges)
    - Look out for hazards around power switch, battery, etc., areas volunteer digits go.

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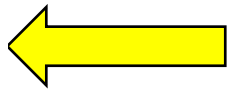

- ***ROBOT does not contain devices that generate sound at a level sufficient to be a distraction.***
  - Ask team if they have any air horns, speakers, buzzers, or distractive noise makers.
    - Yes, I think Core Hex motors are unnecessarily loud too, but they're okay.
    - Flywheels that make a lot of sound (even concerning sounds) aren't illegal.
    - Primarily just looking for intentionally annoying noises (again, Core Hex motors are still fine).

NOTE

- This rule is probably more reactive than proactive, since team won't say "yes, we added this really distractive sound generator to our robot." It's more that when you hear said distractive sound, and Head Referee sends it back to inspection, it can be dealt with.

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- ***ROBOT does not contain materials that are hazardous (i.e., flammable materials/gasses, mercury switches, exposed untreated hazardous materials).***
- Ask team, “Do you have any hazardous materials?”
  - Be sure to mention “any components containing mercury, like slip rings with mercury?”
  - Optional: Ask if they have any untreated nuclear waste. (haha?)
  - Optional: Ask if they have any flammable materials they intend to ignite.

- *This is the “no flame throwers” rule, and the “no components with toxic materials like mercury” rule.*

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- ***ROBOT does not contain materials that would cause a delay of game if released (e.g., coffee beans).***
- Ask team, “Do you have anything that might cause a delay of game if it got loose?”
  - Be sure to mention “any components like coffee beans, ball bearings, or sand?”
  - Optional: Ask, “You don’t happen to have any Kitty Litter on your robot, do you?”

- *This is the “no ballast that might make a mess and take a while to clean up if it gets loose.” rule.*

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- ***ROBOT does not contain any closed air or hydraulic devices (i.e., gas springs, compressors, vacuum generating devices). Air-filled pneumatic wheels are exempt from this rule.***
- Ask team, “Do you have hydraulic or pneumatic systems on your robot, or any fans?”
  - You can also mention “vacuums or closed air systems (other than wheels)?”
  - This is usually the place where they mention small fans added to LimeLight cameras, which are not legal.
  - They cannot use fans to create downforce or blow game pieces around.

- *This is the “no pneumatics or hydraulics” rule.*

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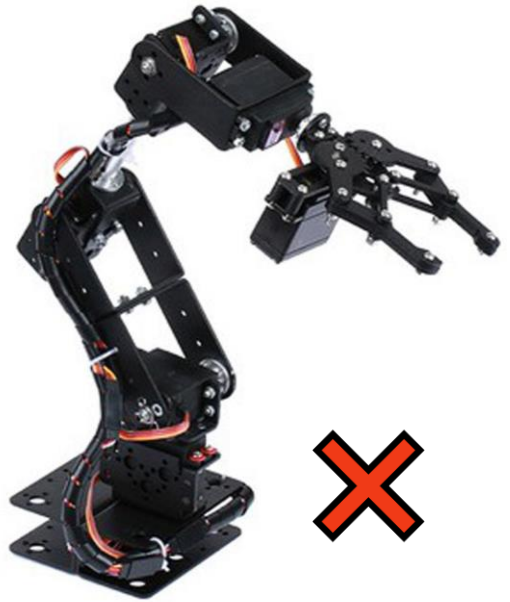
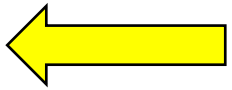
- ***ROBOT does not contain prohibited COTS MECHANISMS (multi DoF, game task solving, etc.).***
- Ask team, “Do you have any COTS devices with multi-degree of freedom?”
  - Be sure to mention “any COTS claws that use more than one servo or motor?”
    - This doesn’t make all multi-servo or motor claws illegal, it’s intended to make team think about components on their robot that could be multi-degree-of-freedom.
- Ask team, “Do you have any COTS devices that solve game challenges?”
  - Any COTS devices that were designed to solve elements of this year’s game?
- *This rule intends to prevent teams from straight-up buying solutions to game challenges.*



Inspection (Electrical Section)

Electrical Inspection

☑	Electrical	Rule #
	ROBOT does not contain more than 8 allowed motors and 10 allowed servos.	R503
	Actuators are not modified except as explicitly allowed.	R504
	Actuators are powered and controlled only from approved devices.	R505
	No relays, electromagnets, electrical solenoid actuators, or related systems.	R506
	Exactly 1 main battery pack of an approved type is on the ROBOT and it is properly connected to the main power switch, securely mounted.	R601, R606
	Exactly 1 approved main power switch must control all power provided by the ROBOT battery.	R609
	COTS USB batteries on the ROBOT remain isolated from the ROBOT power systems.	R602
	Fuses must not be replaced with fuses of higher rating than allowed, no self-resetting fuses allowed.	R610



- ***ROBOT does not contain more than 8 allowed motors and 10 allowed servos.***
- Ask team, “Help me identify your motors and servos”
  - Verify Motor and Servo Counts
- Determine if Motors are legal motors
  - See Inspection Quick Reference for identifying legal motors.
- Determine if Servos are legal Servos
  - See Inspection Quick Reference for identifying legal servos.
  - Team can show documentation for servos to determine legality or use table in reference.

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- ***Actuators are not modified except as explicitly allowed.***
- Ask team, “Did you modify any of your motors or servos for your robot?”
- Ask team, “Did you rewind motors, remove encoders from motors, replace the encoder cap on your motors to make it shorter, or change connectors on the wires?”
  - The last two examples are legal, the first two are not.
- Ask teams, “Did you change servo internals to convert from angular to continuous?”
  - This is legal if the manufacturer recommends the process to convert.

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- ***Actuators are powered and controlled only from approved devices.***
- Ask team, “Are your servos and motors being controlled by anything other than the Control Hub, Expansion Hub, or Servo Hub?”
  - Teams using REV Spark Mini might say “yes” and that’s fine (ultimately servo control).
- Ask team, “Are your motors or servos being controlled by a RasPi or Arduino?”
  - This would be completely illegal.
- Ask teams, “Are you using a goBILDA Servo Tuner?”
  - This would also be illegal.

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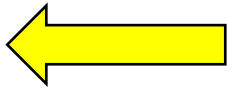

- ***No relays, electromagnets, electrical solenoid actuators, or related systems.***
- Ask team, “Do you have any relays, electromagnets, electrical solenoids, or similar?”
  - Usually the answer is no, this is typically a gimme question.
- Sometimes a team will ask, “Are relays okay on custom PCBs? What about FETs”
  - The answer to this is, “The relays/FETs cannot drive actuators or anything that can be used like an actuator.” This hasn’t been challenged yet on the Q&A.

Inspection (Electrical Section)

Electrical Inspection

☑	Electrical	Rule #
	ROBOT does not contain more than 8 allowed motors and 10 allowed servos.	R503
	Actuators are not modified except as explicitly allowed.	R504
	Actuators are powered and controlled only from approved devices.	R505
	No relays, electromagnets, electrical solenoid actuators, or related systems.	R506
	Exactly 1 main battery pack of an approved type is on the ROBOT and it is properly connected to the main power switch, securely mounted.	R601, R606
	Exactly 1 approved main power switch must control all power provided by the ROBOT battery.	R609
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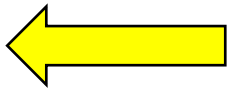

- ***Exactly 1 main battery pack of an approved type is on the ROBOT and it is properly connected to the main power switch, securely mounted.***
- Ask team, “Is your battery connected only to a main power switch?”
  - Answer better be YES. Always a good idea to visually inspect.
- Look at how the battery is mounted. Ensure there are no sharp objects near the battery that the battery might scrape against or be pushed down onto.
  - Ensure the battery is securely mounted to the robot, or at least that the battery will not come loose during a match (doesn’t need to be physically secured if container + gravity will sufficiently hold battery on robot).

Inspection (Electrical Section)

Electrical Inspection

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- ***Exactly 1 approved main power switch must control all power provided by the ROBOT battery.***
- Power Switch must be one of the legal power switches, team should be able to tell you which type the power switch is.
  - REV Power Switch, WATTOS Power Switch – Black rectangular switches, look similar.
  - AndyMark Power Switch – Round power switch.
  - Studica, Tetrix Power Switch – Look similar, ON/OFF body of switch.
  - goBILDA Floodgate – has green LED on housing showing “on” status.
- Power switch placement should be “reasonable.”
  - Not where it can be easily turned off by other robots or game pieces.
  - Must be “reasonably” accessible to fingers during a match.

Inspection (Electrical Section)

Electrical Inspection

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- ***COTS USB batteries on the ROBOT remain isolated from the ROBOT power systems.***
- Ask team, “Do you have a COTS USB Battery on your Robot?”
- Ask team, “Do you control the thing that plugs into the USB Battery with your robot?”
  - If the answer is “Yes”, like a REV Blinkin, using the battery is illegal.
    - You cannot use I/O on the robot to control a device powered by a USB Battery Pack
- COTS USB Batteries cannot share ground planes with robot control system.
  - Except in the case of using a battery for a Powered USB Hub, you should be able to remove the battery – and anything connected to the battery – from the robot without changing or unplugging any other cables or electronics of the robot.

Inspection (Electrical Section)

Electrical Inspection

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- ***Fuses must not be replaced with fuses of higher rating than allowed, no self-resetting fuses allowed.***
- Ask team, “Do you have any fuses on your robot?”
  - They will probably answer “No”, then you remind them the battery has a fuse.
- Ask team, “Did you replace the fuse on your battery with a different size fuse?”
  - The answer should be “No”.
- You can ask to see their battery fuse and ensure there’s no resettable fuse (breaker). You are not expected to check all their batteries.

Inspection (Electrical Section)

Electrical Inspection

	If electronics are grounded to the ROBOT frame, the only approved methods are the REV, SWYFT or AndyMark resistive grounding strap and must be connected to a fully COTS XT30 COMPONENT.	R611
	CUSTOM CIRCUITS cannot provide >5V regulated power (except for LEDs) and cannot alter critical power paths. Voltage and current monitoring are okay, as long as the effect is inconsequential.	R613, R618
	Circuits are wired with the appropriately sized insulated copper wire (non-SIGNAL LEVEL wires).	R615
	All non-SIGNAL LEVEL wiring is consistently color-coded with different colors used for the positive (red, yellow, white, brown, or black with white stripe) and negative/common (black, blue) wires. ***Exception:*** Integrated wiring and extensions that use the same colors as the integrated wiring are OK	R616
	The ROBOT must be controlled via 1 ROBOT CONTROLLER (REV Control Hub via USB or RS485, or allowed Android device via USB). The ROBOT CONTROLLER must be visible for inspection.	R701, R704 R705, R711
	Only allowed USB devices may be connected to USB (no LEDs, etc.).	R714
	Self-contained video recording devices, if used, must turn off or disable wireless communication.	R716

REV / AndyMark

- ***If electronics are grounded to the ROBOT frame, the only approved methods are the REV, SWYFT or AndyMark resistive grounding strap and must be connected to a fully COTS XT30 COMPONENT.***
- Ask team, “Did you use a grounding strap to ground your electronics to your robot frame?”
  - If they answer “No”, or “What’s that?” in all honesty they probably don’t have one.
- Ask team, “Did you make your own, or use a COTS strap?”
  - The answer should never be “made our own.” That would be illegal.

Inspection (Electrical Section)

Electrical Inspection

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	Self-contained video recording devices, if used, must turn off or disable wireless communication.	R716

- ***CUSTOM CIRCUITS cannot provide >5V regulated power (except for LEDs) and cannot alter critical power paths. Voltage and current monitoring are okay, as long as the effect is inconsequential.***
- Ask team, “Do you have any custom circuits on your robot?”
  - If they answer “No”, ask if they have any sensors, and remind them sensors are CUSTOM CIRCUITS.
- Ask team, “Do you have any extra devices that power other devices, like LEDs?”
  - The answer may be yes, and that’s legal, you’re just trying to get their thought juices flowing.
- In all honesty this is a “As you’re designing your robot, just don’t do it” so it doesn’t get to the point of catching it at a competition.

Inspection (Electrical Section)

Electrical Inspection

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AWG	Cross-Section
18 AWG	0.82mm^2
22 AWG	0.33mm^2
23 AWG	0.26mm^2

Quick Conversion Table

- ***Circuits are wired with the appropriately sized insulated copper wire (non-SIGNAL LEVEL wires).***
- Ask team, “Do you use any wire extensions on your robot?”
  - If they answer “Yes”, you can ask what wire gauge is being used. You will likely need to inspect the wires. Biggest offenders are teams trying to use ethernet wire for servos (ethernet = 23AWG, servo = 22AWG) and motor wire extensions (most motors = 18AWG, ethernet = 23AWG).
- Ask team, “Do you use standard REV power extension cables?”
  - If the answer is “Yes”, ask them to show you, and you can usually inspect it easily.
- Wire gauge requirements in Competition Manual

Inspection (Electrical Section)

Electrical Inspection

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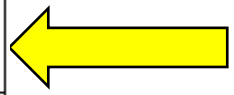

- ***All non-SIGNAL LEVEL wiring is consistently color-coded with different colors used for the positive (red, yellow, white, brown, or black with white stripe) and negative/common (black, blue) wires.***
- Inspect wires, especially power wires, looking for any anomalies.
  - Are all the wires purple? Or all the wires black? Or are all the wires odd colors?
  - Are power wires not red and black? They most likely will be but verify.
- Servo extensions must be standard colors, unless extension is the same color as integrated ones.
- Wires in multi-core bundles can be difficult, look for insulation or added coloring at connector.
- *This rule is to help inspectors and CSAs make sense of wiring to spot problems in wiring, for uniformity.*

Inspection (Electrical Section)

Electrical Inspection

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- ***The ROBOT must be controlled via 1 ROBOT CONTROLLER (REV Control Hub via USB or RS485, or allowed Android device via USB). The ROBOT CONTROLLER must be visible for inspection.***
- Ask teams, “Do you have only a single Control Hub or Android device/phone on your robot?”
- Ask teams, “Show me your Control Hub and/or Expansion Hubs”
  - If using a Control Hub, only allowed to use a single Expansion Hub.
  - If using a SmartPhone to control the robot, allowed to use up to 2 Expansion Hubs.
- *This rule is mostly for robot design so that you don’t have to catch it at competition.*

Inspection (Electrical Section)

Electrical Inspection

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	Self-contained video recording devices, if used, must turn off or disable wireless communication.	R716

- ***Only allowed USB devices may be connected to USB (no LEDs, etc.).***
- Ask teams, “Do you have anything plugged into USB?”
- Ask teams, “Do you have a webcam, or USB powered LEDs?”
  - Webcams and USB Hubs/Switches are the only thing allowed to be plugged into USB ports.
  - If the team says “Yes” to USB powered LEDs, remind them that’s not legal.
- *If the team is plugged into the USB 2.0 port, please warn them about ESD and the USB 2.0 port possibly killing Wi-Fi on the robot. Teams really should only use the USB 3.0 port if possible.*

Inspection (Electrical Section)

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	Self-contained video recording devices, if used, must turn off or disable wireless communication.	R716

- ***Self-contained video recording devices, if used, must turn off or disable wireless communication.***
- Ask teams, “Do you have a Go-Pro or video recorder on your robot?”
  - This is not illegal, but this is a reminder that any devices must have wireless disabled.
- *This is usually the place where you find out they have a webcam and didn’t tell you about it.*

Robot Inspection
(Control, Robot Operation, Sizing)

A GLOBAL ROBOTICS COMMUNITY PREPARING YOUNG PEOPLE FOR THE FUTURE

Inspection (Control Section)

Control Inspection

☑	Control	Rule #
	The OPERATOR CONSOLE consists of only of one Android device (*Circle*): Motorola Moto G4 Play, Motorola Moto G5, Motorola G5 Plus, Motorola Moto E4, Motorola Moto E5, Motorola Moto E5 Play, or REV Driver Hub. If the team is not from North America and has an alternate smartphone, inquire whether or not the team complies with the R704 orange box.	R901, R704
	The touch display screen of the DRIVER STATION device is functional, accessible, and visible to FIELD STAFF.	R902
	The OPERATOR CONSOLE consists of no more than two of the allowed gamepads.	R903

- ***The OPERATOR CONSOLE consists of only of one Android device (Circle): Motorola Moto G4 Play, Motorola Moto G5, Motorola G5 Plus, Motorola Moto E4, Motorola Moto E5, Motorola Moto E5 Play, or REV Driver Hub. If the team is not from North America and has an alternate smartphone, inquire whether or not the team complies with the R704 orange box.***
- Ask teams, “What Driver Station device do you use? REV Driver Hub or Phone?”
- Ask teams, “What SmartPhone are you using?”
  - Must be a legal phone, unless outside North America.
  - Teams outside North America are allowed to use a different SmartPhone due to availability/sourcing.
- *Record what device they are using in the drop-down.*
- *This step does not require the robot or driver station to be powered.*

Inspection (Control Section)

Control Inspection

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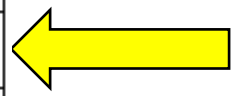
	The touch display screen of the DRIVER STATION device is functional, accessible, and visible to FIELD STAFF.	R902
	The OPERATOR CONSOLE consists of no more than two of the allowed gamepads.	R903



- ***The touch display screen of the DRIVER STATION device is functional, accessible, and visible to FIELD STAFF.***
- Ask teams, “Can you use the touch display on your device?”
  - Display must be easily viewable by field staff.
  - Touch display must be functional (requires touch display to be powered).
- *Cannot use connected mouse or other pointing device.*

Inspection (Control Section)

Control Inspection

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	The touch display screen of the DRIVER STATION device is functional, accessible, and visible to FIELD STAFF.	R902
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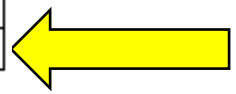


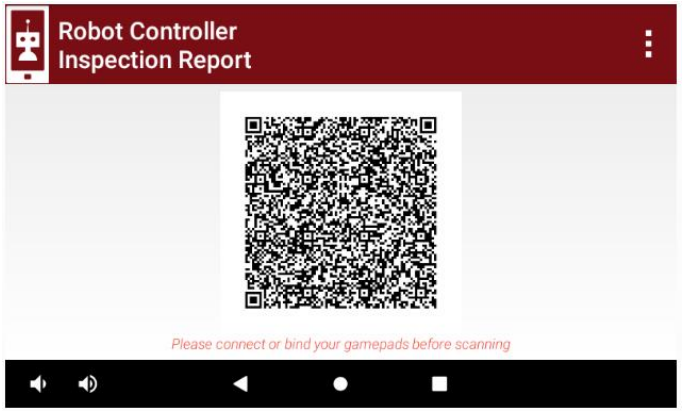
- ***The OPERATOR CONSOLE consists of no more than two of the allowed gamepads.***
- Ask teams, “What gamepads are you using there, and how many do you have connected?”
  - This does not require the Driver Station or Robot to be powered
  - Be careful to ensure gamepad is in allowed list.
  - Team says, “This is a gamepad that works in a PS5, so it’s a PS5 gamepad right? It works!.”
    - You have to say, “That’s not a SONY PS5 Gamepad. Sorry, you can only use the exact listed gamepad.”
    - FTC doesn’t use official drivers, we cannot use them (custom usermode drivers). We can only test with official devices, so this removes a footgun if a change breaks support for a non-listed gamepad.
- *Cannot have more than two gamepads connected. Can have spares present but not connected.*

Inspection (Control Section)

Control Inspection

☑	Operation	Rule #
	The two self-inspect screens on the OPERATOR CONSOLE do not display any issues except for any app version warnings. (no red exclamation marks)	R707, R708 R710, R718

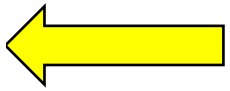
- View the self-inspect screens on the OPERATOR CONSOLE (requires DS and ROBOT to be powered).
  - Driver Station Self-Inspect
  - Robot Controller Self-Inspect
  - See ftc-docs Self-Inspect documentation
- Review Competition Manual Rule R713 for instructions on updating software.
- Review Competition Manual Rule R707 Orange Box for updating DS / RC Names.
- *Orange "Triangle" warnings are fine, if it works for the team then it works.*
- *Red "Exclamation" errors must be corrected (except obsolete errors).*
- **IMPORTANT:** Scan QR Code on Robot Controller Self-Inspect with inspection Tablet
  - "Scan QR Code" button on Inspection tablet page
  - Helps collect data for control system usage statistics, verifies everything is OK.



Inspection (Sizing Section)

Sizing Inspection

☑	Sizing	Rule #
	The ROBOT, in its STARTING CONFIGURATION, fits within an 18 in. (45.70 cm) cube.	R101
	The ROBOT, at maximum mechanical extension, fits within an 18 in. (45.70 cm) horizontal square.	R105.A
	The ROBOT, at maximum mechanical extension, fits within a height of 38 in. (96.50 cm).	R105.C
	OPERATOR CONSOLE does not exceed 3ft wide, 1ft deep and 2 ft tall (91.4cm by 30.5cm by 61.0 cm) excluding any items that are held or worn by the DRIVE TEAM during a MATCH.	R904



- ***The ROBOT, in its STARTING CONFIGURATION, fits within an 18 in. (45.70 cm) cube.***
- Ask teams, “Do you need to be powered and running an OpMode to fit in STARTING CONFIGURATION?”
  - This is allowed, just make sure you’re being safe.
- Verify using measuring box or measuring jig that the robot fits within cube.
  - Robot cannot use the sides of the measuring box for support.
  - Robot can compress elements on bottom of bot due to gravity (e.g., odometry pods)

Inspection (Sizing Section)

Sizing Inspection

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	The ROBOT, at maximum mechanical extension, fits within an 18 in. (45.70 cm) horizontal square.	R105.A
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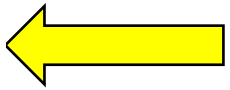
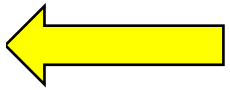


- ***The ROBOT, at maximum mechanical extension, fits within an 18 in. (45.70 cm) horizontal square.***
- This step is best if the robot is NOT powered.
- Ask teams, “Does your robot extend horizontally?”
  - If so, all extensions at the same time must be extended manually. Verify that with all extensions extended simultaneously that the robot and all its extensions still fit.
  - Software limitations are not allowed to be considered. Must be mechanically limited.
- Ask teams, “Do you have anything (like servos or turrets) that rotate things?”
  - Check to ensure any rotations of things don’t rotate outside the 18 inches. May need to have mechanical stops added, software limitations on servos are not allowed to be considered.
  - This includes horizontal AND vertical rotations AND everything in-between.
    - “This thing can go sideways, slantways, … and any other way you can think of!” – Willy Wonka

Inspection (Sizing Section)

Sizing Inspection

☑	Sizing	Rule #
	The ROBOT, in its STARTING CONFIGURATION, fits within an 18 in. (45.70 cm) cube.	R101
	The ROBOT, at maximum mechanical extension, fits within an 18 in. (45.70 cm) horizontal square.	R105.A
	The ROBOT, at maximum mechanical extension, fits within a height of 38 in. (96.50 cm).	R105.C
	OPERATOR CONSOLE does not exceed 3ft wide, 1ft deep and 2 ft tall (91.4cm by 30.5cm by 61.0 cm) excluding any items that are held or worn by the DRIVE TEAM during a MATCH.	R904



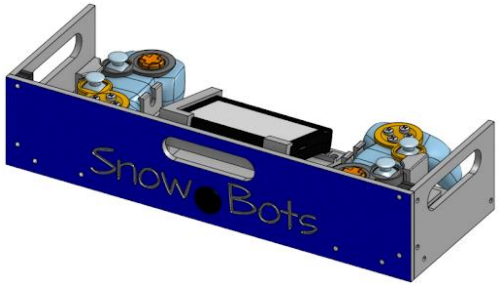
- ***The ROBOT, at maximum mechanical extension, fits within a height of 38 in. (96.50 cm).***
- Ask teams, “Does your robot extend vertically for the last 20 seconds?”
  - If so, all extensions at the same time must be extended manually. Verify that with all extensions extended simultaneously that the robot and all its extensions still fit.
  - Software limitations are not allowed to be considered. Must be mechanically limited.
  - However, depending on implementation, you may have to use software to verify (oops!).
    - This step may require the robot to be POWERED and connected to the Driver Station.

Inspection (Sizing Section)

Sizing Inspection

☑	Sizing	Rule #
	The ROBOT, in its STARTING CONFIGURATION, fits within an 18 in. (45.70 cm) cube.	R101
	The ROBOT, at maximum mechanical extension, fits within an 18 in. (45.70 cm) horizontal square.	R105.A
	The ROBOT, at maximum mechanical extension, fits within a height of 38 in. (96.50 cm).	R105.C
	OPERATOR CONSOLE does not exceed 3ft wide, 1ft deep and 2 ft tall (91.4cm by 30.5cm by 61.0 cm) excluding any items that are held or worn by the DRIVE TEAM during a MATCH.	R904

- ***OPERATOR CONSOLE does not exceed 3ft wide, 1ft deep and 2 ft tall (91.4cm by 30.5cm by 61.0 cm) excluding any items that are held or worn by the DRIVE TEAM during a MATCH.***
- Ask teams, “Can you show me your OPERATOR CONSOLE (everything you bring to the ALLIANCE AREA to drive your robot)?”
  - Measure the overall size of the “OPERATOR CONSOLE”.
  - Lengths of wires do not count (meaning if the OPERATOR CONSOLE is just a device and gamepads, do not measure the length of the gamepad cables as part of the length of the OPERATOR CONSOLE).



THANK YOU VOLUNTEERS!

Thank you very much!

- Inspection is difficult and often thankless.
- It is paramount to ensure safety and fairness.
- If there are any questions, PLEASE join us on the FTC Technology Slack and ask!
  - Join FTC Technology Slack Link