TEAM NUMBER:_____ **INSPECTOR(S):_____**
INITIALS (after passing):_____ **DATE (after passing):_____/____/_____**
REINSPECTION (initial) **_____** **FINAL INSPECTION** (initial) **_____**

Size and Weight:

___ **ROBOT Weight -** Must be ≤ 115 lbs. (~52kg) excluding BUMPERs and battery. <R103> _____ pounds
___ **Total Inspected Weight -** ROBOT + swappable mechanisms ≤150 lbs. (~68kg) <I103> _____ pounds
___ **BUMPER Weight** – ROBOT + BUMPERS Must be ≤ 135 pounds (~61kg). <R407>
Red BUMPER _____ pounds Blue BUMPER _____ pounds Total _____ pounds
___ **ROBOT PERIMETER** – Perimeter must be non-articulated. Minor protrusions ≤1/4" (6mm) OK. <R101>
___ **STARTING CONFIGURATION** – Parts may not extend past the vertical projection of the ROBOT PERIMETER. <R102>
___ **Starting Volume –** ROBOT PERIMETER ≤ 120in. (~304 cm), height ≤ 3 ft. 6 in. (~106 cm) <R104>
___ **Extension –** ROBOT may not extend beyond the ROBOT PERIMETER by more than 1 ft. 6 in. (~457 mm) <R105>

BUMPERS

Rules in this section have the ¼ in. tolerance applied. ROBOTS must meet the dimensions specified in this checklist for compliance.

___ **Coverage –** BUMPERS protect the entire FRAME PERIMETER, any gaps between segments < 1 ½ in. (~38mm) <R401>
___ **Padding**- A minimum of 2 in. (~51 mm) depth of pool noodle, backer rod, foam floor tiles, 1.5 to 3 lb./ft.^{3} (~24 to 48 kg/m^3) closed cell polyethylene foam, or 2 to 6 lb./ft.^{3} (~32 to 96 kg/m^3) closed cell EVA foam <R402-A>.
___ **Backing –** At least 4 ¼ in. (~108 mm) tall backing which supports all BUMPER padding. <R402-B>.
___ **Cover -** Must use a durable cloth cover to cover all padding. <R402-C>
___ **Attachment** - Must be securely mounted when attached and be easily removable for inspection. <R402-D & R410>
___ **Max size** – May not extend > 4 ¼ in. (~108 mm) from the ROBOT PERIMETER. <R403>
___ **Hard BUMPER parts** - May not extend >1 ½ in. (~38mm) beyond ROBOT PERIMETER. <R404>
___ **Height -** BUMPERS must entirely fill the space between 2 ¾ in. (~70 mm) and 5 ½ in. (~140 mm) above the floor. <R405>
___ **Corners** - Must be filled with at least 2 in. (~51 mm), measured diagonally, of uncompressed padding. <R406>
___ **No wedges** – Must not act as a wedge when interacting with other BUMPERS. <R407>
___ **Color** - Must be able to display red or blue to reflect alliance color. <R411>
___ **Team number** - displayed with Arabic numerals, min. font 3 ½ in. (~89mm) tall x ¼ in. (~7mm) stroke, in white, and be easily read from approximately 60' (1828 cm) when walking around the perimeter of the ROBOT. No logos may be used for numerals. *FIRST* logos comparable to 2025 Virtual KOP may also be applied <R411 & R412>

Mechanical

___ **No Sharp Edges or Protrusions that are a hazard for participants, ROBOTS, ARENA, or FIELD.** <R202>
___ **No Prohibited Materials** – E.g. sound, lasers (other than class 1), flammable gases, or untreated hazardous materials <R203>
___ **No Unsafe Energy Storage Devices** - Carefully consider safety of all stored energy or pneumatic systems <R203>
___ **No Risk of Damage to Other ROBOTS** - E.g. damaging, entangling, upending or adhering <G413 & R203>
___ **No Risk of Damage to FIELD** – E.g. metal cleats on traction devices or sharp points on frame. <R201 & R202>
___ **No Risk of damage to Game Pieces** – areas interacting with game pieces free of sharp or damaging surfaces <R206>
___ **Decorations** - Cannot interfere with other ROBOTS' sensors, must be in spirit of "Gracious Professionalism". <R203-C>
___ **End Game –** SCORING ELEMENTS can be removed from ROBOT and ROBOT from FIELD without power. <R204>

Electrical

___ **Components –** None may be modified, except for motor mounting and output shaft, motor wires may be trimmed, repairs or other modifications specified by R503. <R503, R710>
___ **Battery** - A single 12 volt, 17-18.2 Ah ROBOT battery, securely fastened inside ROBOT. <R601, R605, R606>
___ **Other Batteries** – Integral to COTS computing device or camera or COTS USB < 100Wh (27,000mAh at 3.7V) and 5 Amp max output per port used for COTS computing device and accessories only. Small batteries for CMOS/RTC are OK. <R602>
___ **PDP/PDH Visibility** –The single PDP/PDH, and PDP/PDH breakers must be easily visible for inspection. <R613>
___ **Main Breaker Accessibility** – The single 120A main breaker must be readily accessible with labeling preferred. <R612>
___ **Allowable PD Breakers** - Only AT2-A, VB3-A, MX5-A, MX5-L Series Snap-Action breakers or REV Robotics ATO (40A or lower) may be inserted in the PDP/PDH ATO or Maxi slots. <R619>
___ **ROBOT Radio** – A single Vivid Hosting wireless bridge (P/N: VH-109), (except China and Chinese Taipei) mounted such that Radio LEDs are easily visible. <R702, R707, R708>
___ **ROBOT Radio power -** powered via a VRM +12 volt, 2 amp output, REV RPM, or directly from the PDP/PDH (except for OM5P). The VRM/RPM or wiring must connect to the dedicated +12 volt output on the PDP/PDH. <R616>
___ **roboRIO Power** – roboRIO must be connected to directly to power terminals on PDP/PDH. <R615>
___ **roboRIO Ethernet** – Must connect to VH-109 RIO port through PoE injector or modified Ethernet cable, or to AUX port with DIP switch off (default). <R703>

___ **Wire Size Minimum and Breaker Size** - obey the wiring size conventions.
- ___ All wire from battery to main breaker to PDP/PDH must be min 6 AWG (7 SWG or 16mm2) wire <R609 & Fig.8-9>
- ___ 40 amp breakers must have min 12 AWG (13 SWG or 4 mm^2) wire connected <R622>
- ___ 30 amp breakers must have min 14 AWG (16 SWG or 2.5 mm^2) wire connected <R622>
- ___ 20 amp breakers must have min 18 AWG (18 SWG or 1 mm^2) wire connected <R622>
- ___ <20 amp breakers or fuses follow appropriate wire sizing from Table 8-4

___ **Wire Colors** – All power wire must be color coded - red, yellow, white, brown, or black w/stripe for +24, +12, +5 VDC supply (positive) wires and black or blue for common (negative) for supply return wires except original wire by manufacturer <R624>

___ **Copper Wire Only –** All wire used on ROBOT must be copper wire. (Signal wire excluded) <R622>

___ **1 Wire per WAGO** - Only 1 wire may be inserted in each WAGO terminal. Splices and/or terminal blocks, may be used to distribute power to multiple branch circuits but all wires in the splice are subject to the wire size rules <R618>

___ **Motors** – Only motors listed per Table 8-1. There may be no more than four (4) propulsion motors <R501 & R502>

___ **Actuators** – Electrical solenoid actuators or electromagnets, less than 50 watts @12V continuous duty <R501 & Table 8-1>

___ **Motor/Actuator Power** –Each legal motor controller may have one motor connected to the load terminals with exceptions in Table 8-2. Specified motors may be individually connected to Spike or Automation Direct Relay (however multiple pneumatic valves may be driven by a single Spike). <R504, R505 & Table 8-2>

___ **Motor/Actuator Control** – Motors/actuators must be controlled by legal motor controllers and driven directly by PWM signals from roboRIO or through legal MXP board or by CAN bus. <R504, R712-R714, R717, R718>

___ **Custom Circuits, Sensors and Additional Electronics** - Cannot directly control speed controllers, relays, actuators or servos. Custom Circuits may not produce voltage exceeding 24V.<R614 & R625>

___ **Pneumatic Control Module (PCM) -** PCM/PH modules must be connected to roboRIO via CAN bus. <R715>

___ **Isolated Frame** – Frame must be electrically isolated. >120 Ohm between either PDP/PDH battery post and chassis <R611>

Pneumatic System using one on-board compressor (n/a for ROBOTS that do not use pneumatics)

___ **No Modifications** - Actuator mounting pins may be removed, small labels allowed. No painting or large labels. <R803>

___ **Compressor** - Only one (on ROBOT only) FRC Legal compressor (max 1.1 CFM flow rate) may be used. <R806>

___ **Compressor Power** - Must use a PCM/PH or Relay module <R812 & Table 8-2>

___ **Compressor Control** – A Pressure Switch must be wired directly to the PCM/PH or roboRIO to control compressor. <R812>

___ **Vent Plug Valve** – Must include an easily-accessible manual vent plug valve to release <u>all</u> system pressure. <R813>

___ **Tubing** – Equiv. to KOP with a maximum OD of ¼" (~6 mm) (documentation may be required). <R804-D>

___ **Gauges -** Must be present on both the stored pressure side and working pressure side of the regulator outlet(s) and be readily visible. <R805-E, R810>

___ **Pressure Rating** - All pneumatic components at <u>working pressure</u>, must be rated for at least 70 psi (~483 kPa, 4.8 Bar). All components at <u>stored pressure</u> must be rated for at least 125 psi (~862 kPa, 8.6 Bar). <R802>

___ **Valve Control** - Pneumatic solenoid valves must have a max 1/8" NPT, BSPP, or BSPT port diameter, be controlled by either a PCM or PH or Relay Module and valve outputs may not be combined. <Table 8-2, R804-C, & R814>

Power On Check (Driver Station must be tethered to the ROBOT)

___ **Unauthorized Wireless Communication** – No wireless communication to/from ROBOT or OPERATOR CONSOLE without prior *FIRST* written permission. No radios allowed on the OPERATOR CONSOLE or in the pit <R707, R905>

___ **Confirm Pneumatics Operation** – With no pressure in system, compressor should start when ROBOT is enabled.
- ___ **Compressor stops –** Stops automatically at ~120 psi (~827 kPa, 8.2 Bar) or less under roboRIO control. <R807>
- ___ **Check Main Pressure –** Must be ≤ 120 psi (~827 kPa, 8.2 Bar) <R807> and Working Pressure must be ≤ 60 psi (~413 kPa, 4.1 Bar) <R808>
- ___ **Compressor Relief Valve** – Set to 125 psi, attached to (or through hard fittings) the compressor outlet port. <R811>
- ___ **Relieving Pressure Regulator** – Set to ≤ 60 psi (~413 kPa, 4.1 Bar), providing all working pressure. <R808>

___ **ROBOT Signal Light** - ROBOT Signal Light (two max.) must be easily visible while standing 3 ft. (~100 cm) away from at least one side of the ROBOT and be plugged into the RSL port on roboRIO. Confirm the RSL flashes in sync with roboRIO. <R709>.

___ **Team Number –** Verify on DS and Team has programmed the wireless bridge at kiosk for this event. <R702>

___ **Software Versions** – The roboRIO image (FRC 2025_v2.0 or later) and DS (25.0 or later) must be loaded <R701 & R901>

___ **Power Off –** Disable ROBOT, then open Main Breaker to remove power from the ROBOT, confirm all LEDs are off, actuate pneumatic vent plug valve and confirm that all pressure is vented to atmosphere and all gauges read 0 psi pressure. <R813>

___ **Driver Console is less than 60" x 14" x 6'6" above floor (approx.).** <R904>

Team Compliance Statement

We, the Team Mentor and Team Captain, attest by our signing below, that our team's ROBOT was built after the 2025 Kickoff, and we are not aware of any rules it violates. We confirm that it and its MAJOR MECHANISMS are products of our team's work. We understand that the LRI at this event may be consulted, at any time, for questions arising from ROBOT inspection.

Team Captain:_____ Team Mentor:_____