

6032 PIRATE ROBOTICS END OF BUILD SEASON INSPECTION CHECK

2019 FRC Inspection Checklist

INITIAL INSPECTION

___ **Weight-** Robot Weight (≤ 125 lbs. excluding bumpers and battery) <R05> 90 lbs

Bumper Weight (Bumpers must be ≤ 15 pounds) <R30> Red Set _____ Blue Set _____ lbs

___ **Starting Configuration-** Parts may not extend beyond the vertical projection of the Frame of 4ft <R02>

___ **Starting Volume-** Less than 120" Perimeter, 4ft tall <R03>

___ **Frame Perimeter-** frame must be Non-Articulated <R01>

___ **Playing Configuration-** Robot attachments may not extend beyond 30" <R04>

___ **Standard Bumpers-** must follow all specifications in Sec.10.5 Bumper Rules

- O Bumpers must provide protection of at least 6" on both sides of all outside corners (wood within 1/4" of corner) <R24>
- O Hard Bumper Parts defined by bumper backing, may not extend >1" beyond robot frame <R31B>
- O No bumper segment may be unsupported by the robot frame for a length >8" <R33>
- O Bumpers must be supported by at least 1/2" of robot frame for a length >8" at each end <R33>
- O Corners must be filled with pool noodle such that no hard parts are exposed <R32>
- O Must use 3/4" thick x 5" tall plywood or solid robust wood backing <R31A>
- O Must use a pair of vertically stacked 2.5" pool noodles <R31C>
- O Must use durable fabric covers for the noodles <R31D>
- O Must be able to display red or blue bumpers to match alliance color <R28>
- O Team number displayed with min. font 4" tall x 1/2" stroke, in white or outlined in white and be easily read when walking around the robot. No logos may be used for numerals <R29A>
- O Must be securely mounted when attached and be easily removable for inspection <R27>
- O When on flat floor, bumpers must reside entirely between the floor and 7 1/2" above floor <R25>
- O Bumpers may not be articulated <R26>

MECHANICAL

___ **No Sharp Edges or Protrusions that pose a hazard for participants, robots, arena, or field** <R08>

___ **No Prohibited Materials-** sound, lasers, noxious or toxic gases etc. <R09>

__ **No Unsafe Energy Storage Devices** <R09>

__ **No Risk of Damage to Other Robots** <R08> <R09>

__ **No Risk of Damage to Field** <R07>

__ **End Game**-Game Objects can be removed from robot and robot from field without power <R10>

ELECTRICAL

__ **Components-None** may be modified, except for motor mounting and output shaft, motor wires may be trimmed, window motor locking pins may be removed, and certain devices may be removed and certain devices may be repaired with parts identical to the originals. PD fuses may be replaced with identical fuses only. Servos may be modified per manufacturer's instructions. <R35>

__ **Battery**-A single 12v 17-18 AH robot battery or equivalent, securely fastened in robot<R43><R44>

__ **Other Batteries**-Integral to COTS computing device or camera or COTS USB and used for COTS computing device and accessories only <R40>

__ **Visibility**-The single PDP and PDP breakers must be easily visible for inspection <R51>

__ **Main Breaker Accessibility**-The single 120A main breaker must be readily accessible with labeling preferred<R50>

__ **Allowable PD Breakers**-Only those permitted (VB3-A, MX5-A or MX5-L series, snap action breakers may be inserted in the PD <R57>

__ **Robot Radio**-A single Open-mesh OM5P-AN or OM5P-AC radio must be powered by VRM <R54>

__ **RoboRio Power**-Only the RoboRio must be connected to dedicated power terminals on PDP <R53>

__ **CAN BUS**-The Roborio and PDP must be connected via CAN wiring even if no other CAN devices are used <R79>

__ **Wire size**-Obey the wiring size conventions<R60>

__ All wire from battery to PDP must have min. 6 AWG wire

__ 40 amp breakers must have min 12 AWG wire

__ 30 amp breakers must have min 14 AWG wire

__ 20 amp breakers must have min 18 AWG wire

__ **Wire Colors**-All power wire must be color coded- red, white, brown, yellow or black w/stripe for +24, +12, +5 VDC supply wires and black/blue for supply return wires <R62>

__ **Copper Wire Only**-All wire used on robot must be copper <R60>

__ **1 Wire per WAGO**- only 1 wire may be inserted in each WAGO, 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 <R56>

__ **Motors**-Unlimited automotive motors or other legal motors per table 10-1 <R34>

__ **Motor/Actuator Power**-Each motor controller may have up to motors connected to the load terminals depending on motor type. CIMs and specified other motors must be fed by speed controllers only. Two PWM controllers can be connected by a PWM Y cable. <R36><R37><Table 10-2>

__ **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 <R75-R77>

__ **Custom Circuits, Sensors and Additional Electronics**-Cannot directly control speed controllers, relays, actuators, or servos. May not produce >24V <R52><R63>

__ **Isolated Frame**-Frame must be electrically isolated from battery <R49>

Power On Check (Drivers 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 <R70><R99>

__ **Robot Signal Light(s)**-The Robot Signal Light (two max.) from the KOP must be visible from 3' in front of the robot, and be plugged into the RSL port on RoboRio. Confirm that the RSL flashes in sync with RoboRio <R72>

__ **Verify Team Number on DS**-Team has programmed the OpenMesh Wireless Bridge at kiosk for this event <R68>

__ **Software Versions**- The RoboRio image (FRC_2019_v12 or later) and DS (19.0 or later) must be up to date <R64> <R95>

__ **Power Off**-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

__ **Driver Console is less than 60" x 14" x 6'6" above floor (approx.).** May have Velcro to secure to Driver's Station shelf. <R98>