

# 2008 FIRST Robotics Competition - Inspection Check List

can the robot exceed 80" (<R16>)?

Team No. \_\_\_\_\_

YES (place dot on inspection label) / NO

Inspector \_\_\_\_\_

Signature

time/date

printed name and initials

\*signature above indicates that the robot has passed inspection

GENERAL – (testing at the Inspection Station)				
ITEM	PASS	DESCRIPTION	RULE(S)	COMMENTS
10		<b>Size:</b> Must fit in sizing box (28" x 38" x 60" height), standard bumpers may be removed, robot must be in largest starting config, no bicycle flag, decorations must be present	R11-13, R108, R111, R114	
20		<b>Weight:</b> Must weigh no more than 120 lbs (excluding battery and bumpers) Weight: _____ lbs	R11	
30		<b>Standard Bumpers:</b> must be used and must conform to the standard design, must be 15.0 lbs or less with no heavy spots and must cover at least 2/3 of the robot's perimeter Weight: _____ lbs	R08, R13	
40		<b>Bicycle Flag:</b> Must have an appropriate holder with correct installed height - 75" +/- 1". The flag needs to remain approximately vertical.	R17	
50		<b>Lap Indicator:</b> must have unobstructed access around the top of the flag holder and an available PWM cable (male pins) within 4" for powering the device	R18	
60		<b>Bill of Material:</b> Attach BOM (either hard or softcopy). Less than \$3500 total cost with no individual component over \$400. No assembly of modules (total > \$400) that is only functional in a single configuration.	R21-26, R35	
70		<b>Teams from outside North America:</b> Attach confirming letter if the team has successfully petitioned FIRST for a component exemption.	R42	
75		<b>Safe Ball Handling:</b> have the team demonstrate safe handling – no damage to the ball, no unprotected mechanisms, no risk of projectiles	R04, R05, R07	

GENERAL				
ITEM	PASS	DESCRIPTION	RULE(S)	COMMENTS
80		<b>Safety and Wedges:</b> No sharp protrusions or edges that could harm players, field or game pieces, no entanglement risks, no exposed pinch points, no wedge-shaped robot bases that may potentially affect other robots	R04-R05, R07, R19	
90		<b>Energy Sources:</b> No illegal energy sources, battery must be secured	R01	
100		<b>Logos:</b> School and sponsor logo and/or name must be clearly visible	R14	
110		<b>Team Number:</b> Must be clearly displayed on all 4 sides with minimum 4" height and 3/4" stroke for the letters	R15	
120		<b>LED Flasher:</b> Must be used and be clearly visible from the front	R66	
130		<b>Interference Mechanisms:</b> Robot cannot include devices or decorations that may interfere with the vision systems of other robots	R03, R20	
140		<b>Decorations:</b> Cannot affect match, cannot broadcast using wireless comm w/o clearance from FIRST Engineering, cannot employ 900MHz cameras	R20, R57, R84	
150		<b>Team Visibility:</b> Shields, curtains or other devices on the robot cannot obstruct or limit the visibility of other teams' robots	R02	

MECHANICAL SYSTEMS				
ITEM	PASS	DESCRIPTION	RULE(S)	COMMENTS
160		<b>Acceptable Mechanical Parts:</b> refer to details in reference material	R10, R35	
170		<b>Specifically Prohibited Mechanical Parts:</b> refer to details in reference material, confirm that the robot does not include any of the listed parts, carefully examine the robot for mechanisms that can harm people, other robots or the playing field (including game pieces)	R02, R06, R36, R38-39	
180		<b>Motor Modifications:</b> refer to details in reference material, motors can only be modified by machining new mounting holes, modifying output shaft (including removal of gearbox and extraneous items) and altering leadwires	R61	

ELECTRICAL SYSTEMS				
ITEM	PASS	DESCRIPTION	RULE(S)	COMMENTS
190		<b>Acceptable Electrical Parts:</b> refer to details in reference material	R35, R43-44, R58-59, R63-64	
200		<b>Specifically Prohibited Electrical Parts:</b> refer to details in reference material, confirm that the robot does not include any of the listed items	R02-R03, R38, R45, R53, R56, R60, R63-64, R83	
210		Insulated 12V battery terminals with copper lugs from FCI Burndy bag or appropriate crimp-on lug connectors. Confirm that the battery is securely fastened within the robot.	R50	
220		Battery connected to 120A main breaker via Anderson Quick-Disconnect connector. Main breaker and battery ground must be connected to the Rockwell power distribution block for driving breaker panels (refer to the FIRST power distribution diagram).	R46, R50	
230		<b>Accessibility:</b> 120A main circuit breaker, distribution breakers and RC are all accessible for inspection. In addition, the RC lights must be visible while standing 3' from front of the robot while in its STARTING CONFIGURATION.	R50, R72	
240		No modifications to Robot Control System (including OI, RC, Victor, Spike, Modems, Batteries, Chargers, AC adapters or 9-pin cables) except DIP switches on OI, user code for RC, Victors can be calibrated and the fuse on the Spike Relay Module for the air compressor (if used) can be replaced with 20A Snap-Action circuit breaker	R67	
250		No 12V power, Victor or Spike Outputs or PWM Outputs can be connected to the analog or digital I/O headers on the RC	R76	
260		7.2V NiCad "backup" battery is connected to the Controller and, if desired, to either the custom on-robot charging circuit designed by IFI or similar	R49, R73	
270		<b>Wire Size and Color Rules:</b> refer to details in reference material	R46-47, R50, R54, R70-71	
280		Every Victor must be protected with a dedicated 20A, 30A or 40A circuit breaker	R52, R55	
290		20A circuit breakers must be used to provide power to all Spike Relay Modules, the Air Compressor (if used), Custom Circuits, Additional Electronics and the Robot Controller. Multiple loads may be attached to each Spike Relay Module but only one motor per module is allowed. No other loads may be attached to the Circuit Breakers that provide power to the Robot Controller and Air Compressor.	R52, R55	
300		CIM and Fisher Price motors can only be connected to Victor 884 Speed Controllers (cannot be connected to Spike Relay Modules).	R62	
305		Motors can only be driven by one Victor or Spike with only one motor per.	R56	
310		Motors (other than Hitec servos and fans) must be wired to Spike Relay Modules or Victor 884 Speed Controllers. Servos must be wired to the RC. Solenoid valves and compressor (if used) must be wired to Spikes. Motors, valves and compressor <b>cannot</b> be wired directly to breakers or other devices for supplying power.	R46, R55, R62	
320		The coast/brake headers on Victor 884 Speed Controllers can only be attached to either selection jumpers or digital outputs from the RC	R75	
330		<b>Sensor Outputs:</b> Refer to details in reference material. Sensor outputs can only be wired to Robot Controller ports or Custom Circuits.	R03, R53, R64, R81-84	
340		<b>Custom Circuits:</b> May only connect to RC ports, sensors or the following outputs – circuit breakers, Victors and Spikes. Small capacitors can be placed across motor leads and resistors can be placed in line with PWM signals for servos. Cannot interfere with other robots, directly affect any output devices (e.g. generate PWM inputs for the Victor 884), be used for wireless communication or connect to the Radio or Tether Ports on the RC.	R03, R53, R64, R81-84	
350		No exposed electrical conductors and no electrical contact with robot metal chassis. No chassis parts used to carry electrical currents. Using an ohmmeter, confirm that the resistance between the chassis and each battery terminal is "large" (greater than 100k Ohms).	R51	
360		If decorations require electrical power, only the robot's MK ES17-12 battery can be used. The decoration must be protected via either 20A or 30A circuit breaker and cannot interfere with other control system components.	R57	

PNEUMATIC SYSTEMS (if used)				
ITEM	PASS	DESCRIPTION	RULE(S)	COMMENTS
370		<b>Acceptable Pneumatic Parts:</b> refer to details in reference material	R01, R10, R35, R86-89, R93, R95	
380		<b>Specifically Prohibited Pneumatic Parts:</b> refer to details in reference material, confirm that the robot does not include any of the listed parts	R02, R90	
390		Must use the calibrated 125PSIG relief valve (without adjustments) on the compressor output and, if using an off-robot compressor, an additional valve must be located on the robot	R91, R95	
400		The manually operated pressure vent valve from the KOP must be present and easily accessible.	R91, R97	
410		Must include pressure gauges on the Clippard accumulator(s) and all regulator outputs. Must use the Norgren adjustable regulator at compressor output ("post-accumulator(s)").	R91	
420		The Nason Co. pressure switch must be attached to the compressor output or Clippard tank(s) and be wired to the digital I/O port on the RC. The pressure switch CANNOT be used to directly power the compressor.	R91, R96	
430		No disallowed pneumatic component mods. Allowed mods include – cutting tubing, wiring for valves and pressure switch to accommodate interfacing to rest of system, the rear pin of air cylinders can be removed.	R92	
440		No extraneous tubing.	R01, R93	
450		If the robot design uses an "off-robot" air compressor, only the compressor and attached tubing can be located off the robot. The drive electronics, software, sensors and miscellaneous pneumatics elements must all be present on the robot as when using an "on-robot" air compressor.	R55, R94	

DRIVER CONSOLE AND POWER-UP				
ITEM	PASS	DESCRIPTION	RULE(S)	COMMENTS
460		OI/Driver Station console must fit on shelf that is 60" wide and 12" deep	R101	
470		Confirm that any device attached to the OI's Dashboard Port is battery-powered (since there is no AC voltage available at the station)	R102	
480		OI indicator lights and ports must be visible and accessible. OI must be a 2008 model.	R99, R102	
490		Anything attached to the OI's joystick ports (other than a USB-Chicklet from IFI) must derive power from the port. If a USB-Chicklet is used, it must be powered from a 7.2V battery pack similar to the back-up battery for the RC and the indicator lights must be visible.	R105-106	
500		Connect the OI to the tether port of the RC and power-up the robot. Confirm that the team number is properly displayed on the Operator Interface. Confirm that firmware version number 15 is being used.	R100	
510		<b>Pneumatics Operational Test:</b> If the robot design includes pneumatics, confirm that the pressure in the air storage tanks does not exceed 125PSIG, the "working" pressure does not exceed 60PSIG.	R91, R95-98	
520		While the robot is running, confirm the visibility and operation of the LED Flasher. Manually operate the 120A Main Breaker to disable the robot. Confirm that the RC has lost power (the RC lights should go out after several seconds). If the robot uses pneumatics, operate the manual vent valve and check that system air pressure is reduced to 0PSIG.	R46, R50, R66	

### Team Compliance Statement

We, the Team Mentor and Team Captain, attest by our signing below, that our team's robot was built after the 2008 Kickoff on January 5, 2008 and in accordance with all of the 2008 FRC rules, including all Fabrication Schedule rules (reference Section 8.3.3). We have conducted our own inspection and determined that our robot satisfies all of the 2008 FRC rules for robot design.

Team Captain: \_\_\_\_\_

Team Mentor: \_\_\_\_\_