

# **THE 2000 FIRST ROBOTICS COMPETITION**

## **TEAM UPDATE #1**

Date: January 11, 2000

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### **PLEASE DISTRIBUTE THIS TO OTHER TEAM MEMBERS!**

FIRST will provide rules updates and other important information to teams exclusively via the FIRST web site at <http://www.usfirst.org/2000comp/TeamUpdates/>.

Please check the team updates portion of the web site on a regular basis to insure that your team does not miss critical information about the 2000 FIRST Robotics Competition. FIRST recommends assigning at least one team member the duty of keeping up to date on all team updates. This person or group should be responsible for distributing information contained in team updates to the appropriate team members.

### **IF YOU HAVE QUESTIONS**

If you have questions regarding the rules, competition events, shipping, etc. please refer to sections 1.2-1.4 in the Administrative section of the manual. Do not send questions to [webmaster@usfirst.org](mailto:webmaster@usfirst.org) or others not listed in these sections.

### **MISSING PARTS**

The Kit Parts Checklist in the Kit of Parts Album contains errors. Please refer to Appendix B: Kit of Parts in the Robot section of the manual when taking part inventory.

The ring connectors were not included in the kit due to lack of availability at the time of kit packing. Due to the cost of shipping versus the relative value of the connectors, they will not be shipped to teams. Teams are allow to purchase their own ring connectors per the Additional Hardware List.

There were only 3 rocker switch covers included in the kit. Teams wishing to order an additional switch cover should contact an electronic parts distributor such as Carlton Bates at (972)623-1870 or GE supply at (888)895-4889. The Honeywell part number is AML54-F10 followed by the first letter of the color you desire (R,G,B, or Y). We apologize for the inconvenience.

If you are missing any parts, refer to section 1.2 in the Administrative section and contact Tammy Trimble.

### **IMPORTANT SHIPPING INFORMATION**

There has been a change in the initial shipping date in the Regional sections from Monday February 21, 2000 to Tuesday February 22, 2000. The 4 PM Standard time is still applicable.

## CORRECTIONS AND UPDATES TO THE MANUAL

Figure 1.1 in The Game section contained a mistake regarding the number of balls in the Alliance Stations. Below is an updated Figure 1.1:

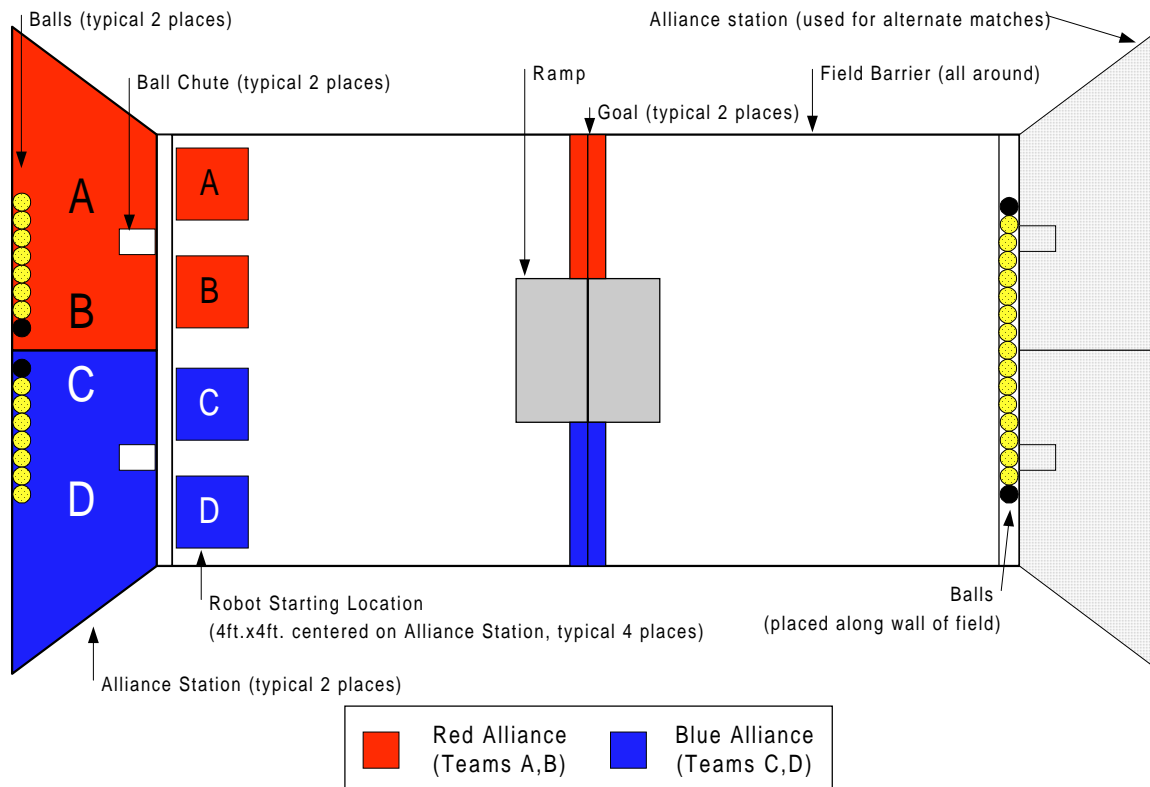


Figure 1.1: Playing Field Layout

The following rules have been rewritten as follows:

- DQ11. For safety reasons, **a robot may not launch balls toward its into an opponents' alliance station.** If a violation of this rule occurs due to an intentional act, the alliance causing the safety hazard will be disqualified. If this occurs by accident, the robot causing the safety hazard will be disabled. The referees will decide whether the violation was intentional or accidental
- DA7. For safety reasons, **a robot may not launch balls toward its into an opponents' alliance station.** If a violation of this rule occurs by accident, the robot causing the safety hazard may be disabled. The referees will decide whether the violation was intentional or accidental. *See DQ11.*
- M14. During an event, no substitute robots are permitted; however, replacement parts are allowed. Robots may be required to be re-inspected after the event starts if replacement parts are installed. *See M20.*
- M20. All fabrication should cease once your robot has been shipped to an event. Off-the-shelf materials may be purchased and brought to the event site. Fabrication may resume once you have checked-in at an event site on Thursday. *See M14.*

- K3. If a part appears on the Additional Hardware List, it does not need to be purchased from Small Parts, Inc. (SPI) and does not count against the \$425 limit on parts from SPI.

## BALL INFLATION

The balls will be inflated until the seam reaches 13 inches in diameter. We will use the most spherical balls, however we cannot guarantee the geometry of the ball.

## SMALL PARTS

SPI parts kit will be shipped *after* you register with SPI. See Appendix D in the Robot section of the manual for the SPI registration form.

## FIELD CONSTRUCTION

The updated Field Blueprint and BOM is available on the FIRST website at <http://www.usfirst.org/2000comp/Docs/>.

The red and blue paint used on the goal structure is *Kyanize Lustaquik Acrylic Gloss Enamel*. The black paint used on the rest of the field is *Kyanize Flat Latex House Paint*. The hanging bar is covered in a 6.5-mil thick vinyl tape (McMaster-Carr part number 6052T42).

The Field Bill of Materials (BOM) included with the Manual contained some errors. Below is an updated version:

## 2000 Field Components

Line #	Assembly	Part #	Description	# Req.	Material	Length
1	Goal	P8	outer goal upright	2	1-1/4" ∅ Schedule 40 Aluminum pipe	69"
2	Goal	P9	inner goal upright	2	1-1/4" ∅ Schedule 40 Steel pipe	61"
3	Goal	P10	horizontal goal bar	12	1-1/4" ∅ Schedule 40 Aluminum pipe	96"
4	Goal	P11	center connecting bar	1	1-1/4" ∅ Schedule 40 Steel pipe	91"
5	Goal	P12	diagonal brace	4	1-1/4" ∅ Schedule 40 Aluminum pipe	62"
6	Goal	P13	diagonal connector bar	16	1-1/4" ∅ Schedule 40 Aluminum pipe	9-1/2"
7	Goal	P14	horizontal connector bar	8	1-1/4" ∅ Schedule 40 Aluminum pipe	14"
8	Goal	KK10-7	90° butt joint fitting	16	Kee Klamp Tee	
9	Goal	KK15-7	90° elbow fitting	12	Kee Klamp Elbow	
10	Goal	KK19-7	variable angle fitting	4	Kee Klamp Adjustable Side Outlet Tee	
11	Goal	KK26-7	90° joint fitting	12	Kee Klamp Two Socket Cross	
12	Goal	KK35-7	90° three way fitting	2	Kee Klamp Side Outlet Tee	
13	Goal	KK58-7	base flange for P12	4	Kee Klamp Male Base Plate	
14	Goal	KK62-7	base flange for P9	2	Kee Klamp Railing Flange	
15	Goal	KK77-7	plastic plug	8	Kee Klamp Plastic Plug	
16	Ramp	R1	ramp support	7	2x12 KD Pine Lumber	8'
17	Ramp	R2	plywood top	2	sheet 1/2" a/c plywood	4'x8'
18	Ramp	C1	ramp carpet	1	Brassfield 20/ black coal	8'x8'
19	Alliance station	P1	barrier upright supports	4	1-1/4" ∅ Schedule 40 Aluminum	16"

					pipe	
20	Alliance station	P2	barrier upright	6	1-1/4" ∅ Schedule 40 Aluminum pipe	75"
21	Alliance station	P3	divider wall upright	6	1-1/4" ∅ Schedule 40 Aluminum pipe	30"
22	Alliance station	P4	divider wall upright	2	1-1/4" ∅ Schedule 40 Aluminum pipe	76 3/4"
23	Alliance station	P5	horizontal barrier	8	1-1/4" ∅ Schedule 40 Aluminum pipe	46"
24	Alliance station	P15	horizontal barrier	8	1-1/4" ∅ Schedule 40 Aluminum pipe	95"
25	Alliance station	B1	field border	6	4x4 Hem-Fir Lumber	96"
26	Alliance station	SS1	safety shield	8	clear acrylic	4'x6'
27	Alliance station	SS2	divider shield	4	clear acrylic	45"x72"
28	Alliance station	DP1	diamond plate barrier	6	3/16" Aluminum sheet	4'x8'
29	Alliance station	BO5	for attaching SS1 to DP1	150	1/4-20x1 1/2" hex head bolt	1 1/2"
30	Alliance station	BO7	for attaching DP1 to B1	48	1/4-11 lag screw	1 1/4"
31	Alliance station	WA1	for attaching SS1 to DP1	150	1/4" ID flat washer	
32	Alliance station	WA2	for attaching DP1 to B1	48	1/2" spacer	
33	Alliance station	NT2	for attaching DP1 to KK70-7	150	1/4-20 nut	
34	Alliance station	BC1	Ball Chute	4	17"x17" opening	24"
35	Alliance station	KK10-7	90° butt joint fitting	4	Kee Klamp Tee	
36	Alliance station	KK14-7	for connecting P7 Pipes	4	Kee Klamp Straight Coupling	
37	Alliance station	KK15-7	90° elbow fitting	10	Kee Klamp Elbow	
38	Alliance station	KK19-7	variable angle fitting	4	Kee Klamp Adjustable Side Outlet Tee	
39	Alliance station	KK26-7	90° joint fitting	6	Kee Klamp Two Socket Cross	
40	Alliance station	KK35-7	90° three way fitting	2	Kee Klamp Side Outlet Tee	
41	Alliance station	KKM50-7	for attaching SS2	16	Kee Klamp Male Single Socket	
42	Alliance station	KKM58	base flange for SS2	8	Kee Klamp Male Base Plate	
43	Alliance station	KK61-7	base flange for P1	6	Kee Klamp Base Flange	
44	Alliance station	KK70-7	for securing DP1	36	Kee Klamp Rail Support	
45	Alliance station	KK77-7	plastic plug	6	Kee Klamp Plastic Plug	
46	Alliance station	T1	Team ID sign	8		
47	field border	B1	field border	18	4x4 Hem-Fir Lumber	96"
48	field border	PL1	corner border joining plates	4	3"x3" angle steel	12"
49	field border	PL2	straight border joining plates	14	3"x3" angle steel	16"
50	field border	BO6	for attaching PL1 & PL2 to B1	72	1/4-20x3 1/2" hex head bolt	3 1/2"
51	field border	WA1	for attaching PL & PL2 to B1	72	1/4" ID flat washer	
52	field border	NT1	for attaching PL & PL2 to B1	72	1/4-20 tee nut insert	
53	field barrier	P1	barrier upright supports	8	1-1/4" ∅ Schedule 40 Aluminum pipe	16"
54	field barrier	P6	side barrier	8	1-1/4" ∅ Schedule 40 Aluminum pipe	94"
55	field barrier	P7	center side barrier	4	1-1/4" ∅ Schedule 40 Aluminum pipe	93"
56	field barrier	KK61-7	base flange for P1	20	Kee Klamp Fitting	
57	field barrier	KK26-7	90° joint fitting	8	Kee Klamp Two Socket Cross	
58	field barrier	KK77-7	plastic plug	8	Kee Klamp Fitting	
59	field base	C2	playing field carpet	1	Brassfield 20/ Pewter	36'x64'

LAST REVISED 1/09/00

REFER TO DWG NO. 00-FLD-0001-D

## RULES QUESTIONS & ANSWERS

- Q1. Regarding shipment of SMC pneumatics parts to the teams, do we have to call SMC to initiate their sending the parts or is it automatic via FIRST registration list?
- A1. SMC pneumatics parts will be shipped to you automatically from the registration list.
- Q2. If our robot is touching a ball which is in the opposing alliance's goal, do they get the point(s) for that ball?
- A2. Yes. Please see the second paragraph on page 3 of The Game section of the Manual and Rule SC1 in Appendix A.
- Q3. I know that we may not climb on any part of the goal except the striped bar, may we use the goal for support or to keep us from moving? For example, if we are hanging from the bar, may we extend little C shaped things around the poles to keep us from moving if another robot hits us? If so, can the C things actually attach to the poles or just be loose to restrict movement?
- A3. No, see Rule GM23 in Appendix A of The Game section of the manual. Robots should not be designed to utilize the goal for support.
- Q4. Are there internet drops at the player stations? Do the rules allow a laptop to be used in the player station at competition?
- A4. There will not be internet drops, telephone lines, or AC power provided at the player stations. It is okay to have a laptop computer at the player station for use with the dashboard port.
- Q5. May we use a speaker as a non-functional decoration?
- A5. A speaker on the robot is okay as long as it does not interfere with the match.
- Q6. Is there a specific height to which we must raise the alliance's robot?
- A6. There is no specific height to which your robot must reach. As long as the referees can see that your robot is off the carpet it will count.
- Q7. What is the diameter of the pipes used in the goals on the playing field?
- A7. The pipe used in the goals is the same as the playing field barrier, 1 ¼" ID schedule 40 Aluminum. This is a plumbing dimension, hence the ID, but if you are using another pipe the OD is roughly 1 11/16". It is listed in the BOM on the second sheet of the field blueprints.
- Q8. Does the crate size of 4x4x6 includes casters or may the casters on the bottom of the crate stick outside these dimensions slightly?
- A8. The crate dimensions would include any casters. You should be aware that the shipping company will be moving these crates with a fork lift so casters may get damaged.

- Q9. Under sheets and boards of the Additional Hardware List it is stated 'aluminum plates any length, up to ¼" thick', does that also mean any width?  
A9. Yes. Width is not limited.
- Q10. Under structural of the Additional Hardware List , 'extruded aluminum', could you be more specific in the definition of extruded?  
A10. The intent is to allow teams to purchase pre-fabricated aluminum extrusions to ease the construction of the robot. The 2"x3" dimension refers to the maximum dimensions of the extrusion cross-section. Extrusion geometry within the cross-section limits is not specified.
- Q11. In rule M9, does the Tri-lens Revolving Light have to be in the plane parallel to the playing field or can it be in a different plane? What if our robot's orientation changes throughout the match?  
A11. The color from the light (not necessarily the beacon itself) should be visible from 4 locations 90 degrees apart on the horizontal plane when the robot is in it's "normal" orientation. If the robot tips over, that is okay.
- Q12. In Rule V2 of the Game Violation section, what is or where is "the line"?  
A12. "The line" refers to the back border of the alliance station, which will be marked with colored tape over a small raised surface.

## **JOYSTICK CONTROLLER ORDER FORM**

Additional Joysticks for FIRST Robotics Competition teams can be purchased directly from the manufacturer CH Products at a special discount.

To order:

Contact Shasta in the CH Products sales department

Phone: 760-598-2518 x108

Fax:760-598-2524

email:shasta@chproducts.com

Type of joystick: Flightstick 200-502BL

Color of Flightstick: Black

Cost: \$20.00 + tax and shipping.