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# Sony Quadruped Robot Football League Rule Book

(Draft on 7/5/1999)

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## Rules are classified into several categories

1. Setup of the environment
2. Robot Players
3. Game process
4. Forbidden action of robots and penalties
5. Judgement

### 1. Setup of the environment

#### 1-1. Field Size

Dimension of Football field is described in Figure 1-1(Field Size).

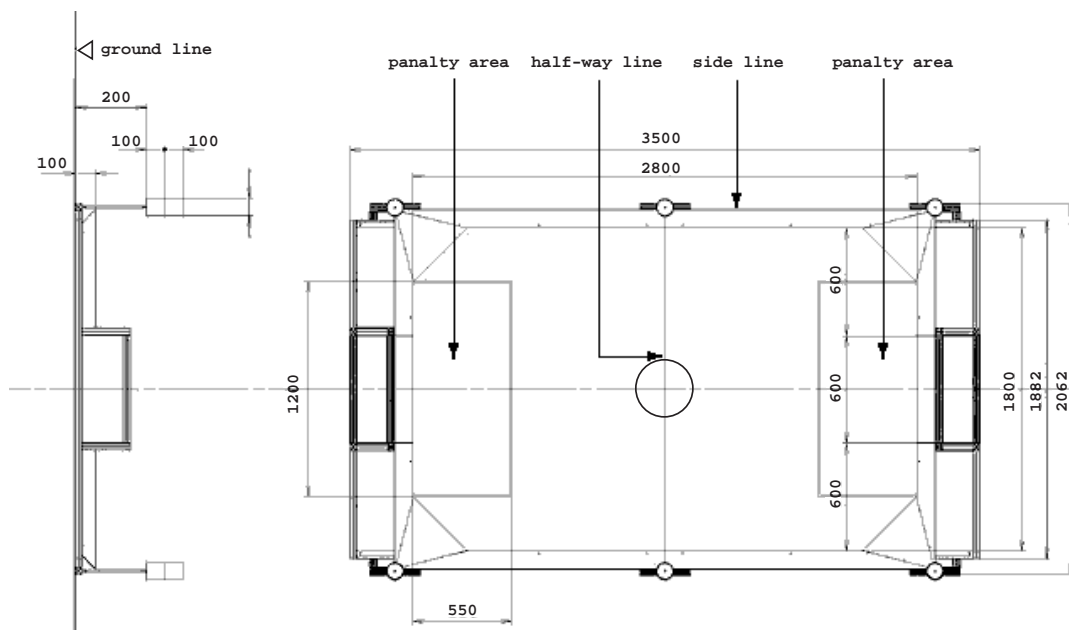


Figure 1-1(Field Size)

#### 1-2. Field Color

Color of Football field is shown in Figure 1-2(Field Color).  
Additionally, please refer to "Colors used in the Football Field" on the web.

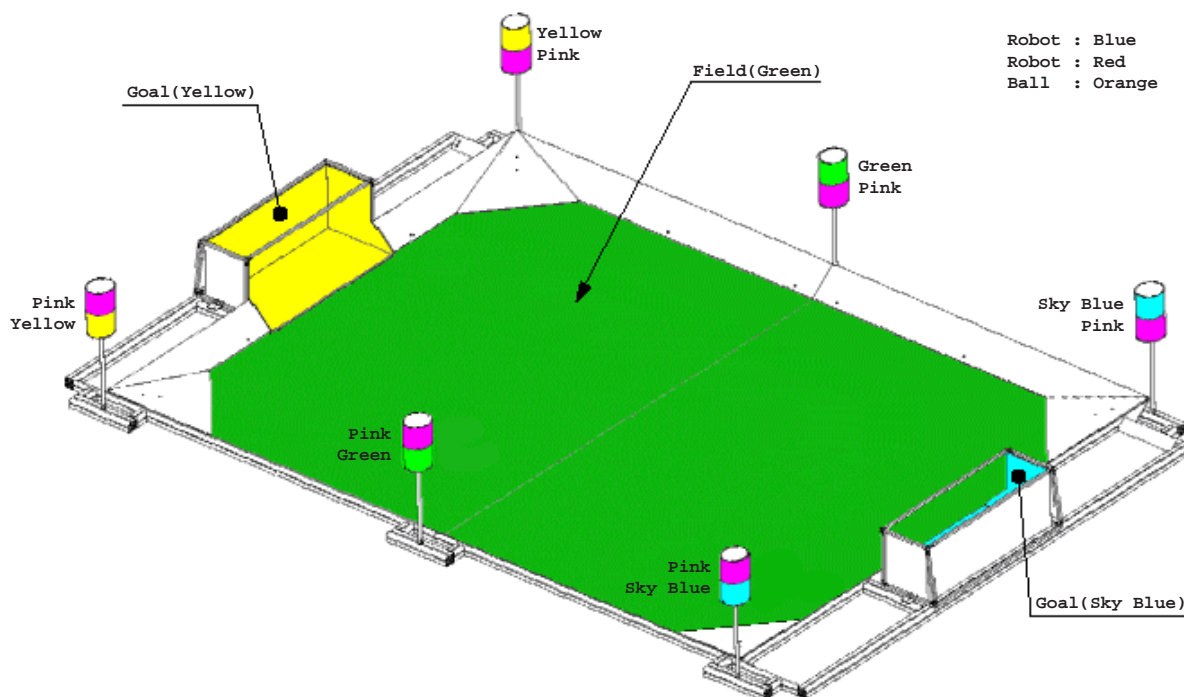


Figure 1-2(Field Color)

### 1-3. The results of spectrum

The results of spectrum of the color samples measured is on the web.  
Please refer to "Spectrum of the color samples".  
Note : The lighting condition in the actual competition site will be different.

### 1-4. The Lighting Condition

This will be notified separately.

### 1-5. White line

All white line (the center line, center circle, and goal line) on the soccer field is drawn using vinyl tape with the width of 25mm.

## 2. Robot Players

Please refer to a brief introduction of Sony Quadruped Robot described in a separate file.

### 2-1. Teams

One team should consist of 3 robots including a goal keeper.

### 2-2. Goal Keeper

Goal keeper is the only player who is allowed to stay within penalty area of its own team.

### 2-3. Size and Shape

It is described in a separate file as well.

## 2-4. Body color

Hardware of the robot should remain intact as when it was provided you.  
For distinction purpose, the team markers will be provided, so it has to be attached to the robot. (Refer to Team Markers on the web.)

## 2-5. Ball handling mechanism

Refer to "4-1. Ball Holding".

## 2-6. Communications

There are no restrictions on communication between the robots using a microphone or a speaker.  
The use of remote computer is prohibited.

## 2-7. Global Vision System

Global vision system is prohibited.

## 2-8. Sensing System

Any other sensors than originally installed to the current robots are not allowed.

# 3. Game process

## 3-1. Length of the game

One game consist of three parts, the first half, break and the second half. Each half is 10 minutes. The break is also 10 minutes.  
In case the game is draw, this year no extension game will be played. But, instead, there will be a penalty kick match employing sudden death.  
The referee can adjust (extend/shorten) this period depending on the situation.  
A court change and uniform change will occur in the break.

## 3-2. Winner

The team marked more goals than the other is a winner of the match. If two teams marked same score, the game will be a draw. The draw will follow the same system defined above 3-1. Total (and final) standings will be decided on points as follows; (the points will be given based on the result of each game.)  
WIN = 3 pts. LOSS = 0 pts  
WIN = 2 pts. LOSS = 1pts (for the penalty kick)

## 3-3. Start-up

A game (or a robot) will be started in a manual setting.

## 3-4. Kick-off/Restart/Stop

For kick-off, restart, and stop of the game, the referee will call verbally, or by a whistle, and the operator of the game can relocate the robot by his/her own hand, and do Start-up.

### 3-5. Robot positions at kick-off/Restart

#### 3-5-1. Kick-off

All robots shall be located in their side of the field. Only one robot, which kicks the ball, shall be in the center circle.  
The restart after the goal shall adopt the same formation as the kick-off.

#### 3-5-2. Free Kick

None.

#### 3-5-3. Penalty Kick

Penalty Kick will be carried out in either way of 2 choices below.

##### 1. Penalty kick without a goal keeper

It is allowed to switch to the program which is specially designed for Penalty Kick. Both the kicker and the ball are placed at a specific place on the field, and the kicker is given a chance to make a goal within a specific period of time.

##### 2. Penalty kick with a goal keeper

This type of penalty kick is defined as one-on-one confrontation between the goal keeper of the defending team and a kicker chosen by the opposition team. The remaining robots must remain outside the penalty area.

The kicker will kick the ball from the middle between the goal line and halfway line. You can put the goal keeper wherever you like, but it is not allowed to move and has to remain to be a standing position.

In other words, the power of the keeper should be OFF during the penalty kick.

#### 3-5-4. Throw-in

None.

### 3-6. Forbidden actions

Forbidden actions are defined in the section ""4. Forbidden action of robots and penalties"".

### 3-7. Game stuck

In the event of no substantial change in the game state(as shown in "Figure 1-3(Stuck)") for 10 seconds (eg. ball stuck in the corner), the referee shall replace the ball at the nearest "ball placement point" on the field.

The referee shall pick up and replace them apart in a proper direction if two or more robots are stuck with each other without a ball or against the side field.



Note: perhaps these should be marked with small white dots on the field.

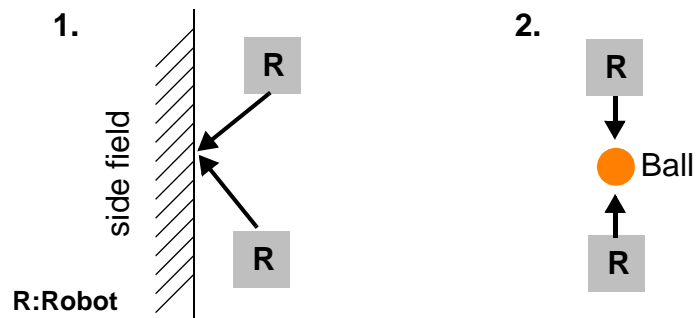


Figure 1-3(Stuck)

#### 4. Forbidden action of robots and penalties

Following actions are forbidden.

##### 4-1. Ball Holding

Holding a ball means taking a full control of the ball by removing its entire degrees of freedom; typically, fixing a ball to the body or surrounding a ball using the body to prevent accesses by others.

It is important that another robot can easily take possession of the ball when a robot controls the ball.

Refer also "2-5. Ball handling mechanism".

This action will result in having the robot which held a ball outside of the field for 10 seconds and it should be back to the field from half-way line 10 seconds later.

##### 4-2. Damage to the field/robots/ball

A robot that damages the field and/or other robots will be removed from the field for the remainder of the game.

Similarly a robot that poses a threat to spectator safety.

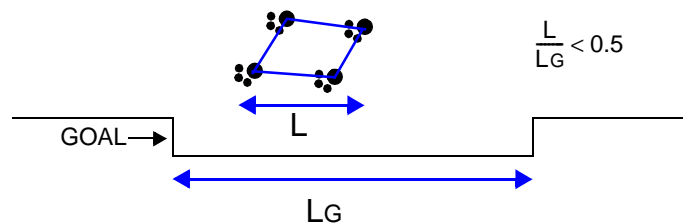
In such a case, penalty kick will be employed.

##### 4-3. Prohibited Defence

For defense purpose, only one robot can stay in the penalty area as a keeper.

Make sure that projection of the polygon which consists of the contact points of the robot to ground to the goal line is less than 50% of the length of the goal line.

The robot which commits this action will be ordered to be outside of the field for 0 second, namely he will be replaced and returned from the halfway line 0 second later.



#### 4-4. Charging - In the vicinity of the ball (eg. within 50cm)

A robot may make contact with an opposing robot only in the process of trying to get the ball.(as shown in "Figure 1-4(Charging)")

But deliberate and repeated violations such as attacking the opposing robot too hard or unnecessary collision will result in clear possession of the ball being awarded to the opposing team.

The victim robot can be helped get back to the way it was before and the attacker robot will be ordered to be outside of the field for 30 seconds. The latter one should be back to the field from half-way line 30 seconds later.

A referee will judge every case.

In case of charging which results in damaging other robot, P.K will be employed.

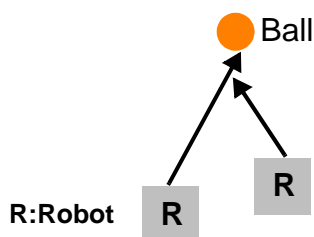


Figure 1-4(Charging)

#### 4-5. Obstruction (away from the ball)

The definition of obstruction is that one robot who is not heading for the ball gets in the way of another robot who is in the process of heading for it.(as shown in "Figure 1-5(Obstruction)")

The robot who commits this action will be ordered to be outside of the field for 0 seconds, namely he will be replaced and returned from half-way line 0 second later.

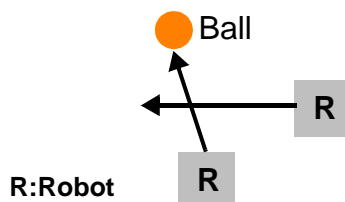


Figure 1-5(Obstruction)

#### 4-6. Jamming

During the match any robot shall never jam communication and sensor system of opponents.

The usage of equipments which may cause interference of communication or sensors should be negotiated between two teams before the match.

### 5. Judgement

#### 5-1. Selection of the referee

Referees are decided by Sony Legged Robot Committee.

#### 5-2. Referees during the match

Referees are chosen from other teams than the two who compete at that time.

We established where you can contact for any questions regarding the Rule.  
Here is the e-mail address for that : [openr-robocup@pdp.crl.sony.co.jp](mailto:openr-robocup@pdp.crl.sony.co.jp)

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