

乒乓球发球机
Table Tennis Robot

双头多功能乒乓球发球机
Double head multifunctional table tennis robot

S-18
S-27
使用手册
Instruction Manual

使用前请阅读此手册
Please read this manual before operation

本公司有权未经事先声明对本手册中的产品描述进行改进。如本手册中的图片、技术参数等数据与实际产品有异，一切以实际产品为准，本公司不承担由此数据误差引起的法律责任。

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安全使用注意事项
Safe utilization and the regulations

- 1.使用前请详细阅读使用手册，并按使用手册指引操作发球机。
 - 2.儿童需在成人指导下使用。
 - 3.室外使用时，须避免在风沙和雨雪环境下进行。
 - 4.移动发球机与拆装集球网，请小心轻放。
 - 5.发球机工作时，请勿开启活动门、触及摩擦轮和储球器内拨条。
 - 6.发球机工作时，请勿与出球口近距离正面接触，防止乒乓球射出伤及人体。
 - 7.发球机工作时，如闻到异味或冒烟等非正常现象，请立即停机及拔开电源插头，请具有维修资格人员检修。
 - 8.发球机在使用过程中某些部位可能会产生温度，请小心触摸以免烫伤。
 - 9.使用结束，请关机并拔开电源插头。
 - 10.如非本公司授权维修人员，请勿拆开除输球管道外的外壳，防止触电。
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1. Please read the instruction manual carefully before using the robot, and follow the instruction to operate the robot.
 2. Instructive advice should be given when machine used by children.
 3. Avoid the windy and rainy day for the outdoor use.
 4. Be careful when connecting and disconnecting the ball collecting net.
 5. When the robot is operating, please don't open the movable door and touch the top and bottom wheel, poke bar either.
 6. When the robot is operating, please keep away from the shooting head of the robot to avoid the ball harm the body.
 7. When the robot is operating, if you found something abnormal, such as some smoke come from the machine, please stop the robot and unplug it immediately. Repair or service must be performed by a qualified repair person.
 8. Some places of robot will heat up during the operation. Please pay attention to avoid burning yourself.
 9. Turn the power switch off and unplug the robot after use.
 10. If you are not the maintainer authorized by our company, please do not remove the cover of ball pipeline, otherwise you may get a shock if you touch it.

使用前的注意事项
CARE BEFORE USE

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INTRODUCTION TO
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TABLE TENNIS ROBOT

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发球机及集球网的各部位名称

Components name of the table tennis robot and ball collecting net



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故障的排除方法

Trouble Shooting

故障 Failure	故障原因 Cause	排除方法 Solution
主机不工作 Machine doesn't work	<ul style="list-style-type: none"> 选择的出球次数已出完，处于暂停状态 The selected number of balls has run out and robot is in "stand by" condition. 电源线插头与插座接触不良 The plug and socket are not properly contacted 控制盒轻触开关未按 The key on the control box is not pressed 控制盒因强烈震荡而失灵 The control box doesn't work due to fierce shake 超时自动保护功能启动 Self-protecting timeout function has been turned on 	<ul style="list-style-type: none"> 按开始键 Press the "start" key 检查电源插座 Check the electric socket 按下开关到显示屏内数字亮 Press the switch until the number display 更换控制盒 Replace the control box 按开始键 press "Start" button
主机工作但不出球 Machine works, but does not release the table tennis balls	<ul style="list-style-type: none"> 储球器内拨条松动 The poke bar in ball container is lax 有杂物堵塞输球管道 The ball duct is jammed by foreign objects 储球器内的乒乓球数量太少 The amount of balls in the container are not enough 	<ul style="list-style-type: none"> 锁紧拨条 Fasten the poke bar 清除杂物(见第11页中的机械部份) Clear away the foreign objects(see page 11) 保持在50~100个球 The amount should be kept at 50-100 balls.
速度、频率失调 Speed and frequency cannot be adjusted	<ul style="list-style-type: none"> 控制盒内零件暂时失灵 The parts in control box do not work temporarily 连接电机的电线松动 The cable connecting to motor is loosen 控制盒轻触按键失灵 The pressing key on the control box do not work properly. 	<ul style="list-style-type: none"> 断开电源5秒后启动 Start up again after shut-off for 5 seconds 按原样连接 Connect it with the original method 更换控制盒表面的薄膜开关 Replace the thin-film switch on the surface of control box
落点不稳定 Landing spot is unstable	<ul style="list-style-type: none"> 上、下轮(摩擦轮)因长时间使用积污垢或磨损 There would be dirt and wear on the top-wheel and bottom-wheel after a long time of operation 	<ul style="list-style-type: none"> 清洁或更换 Clean or replace the friction wheel
出球次数不准确 Ball counter does not function properly	<ul style="list-style-type: none"> 放入了变形或不合格的乒乓球 There are some broken or unqualified balls inside the robot. 发球机刚开始工作时输送管内球数不稳定 The robot just started and the balls are still feeding. 	<ul style="list-style-type: none"> 将变形球捞出，换用合格球 Take out the broken balls and use the standard ones. 稍等片刻 Wait a couple seconds

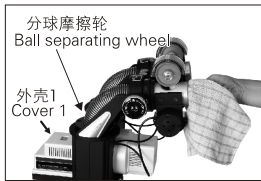
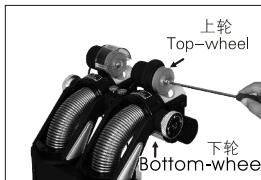
发球机的保养 How to maintain the table tennis robot

正常情况下使用，上、下轮（摩擦轮）和分球摩擦轮能用5000小时以上，使用时间过长则需要更换新的。更换时，首先停机、关电源，松开保护罩，用螺丝批取下摩擦轮的螺丝，顺时针锁紧，逆时针松开。更换分球摩擦轮：先拆开外壳1、再拆开分球摩擦轮处的外壳、透明板，逆时针松开摩擦轮螺丝，拉出更换后按以上相反顺序安装。

Under normal conditions, the top and bottom wheel (friction wheel) can work for 5000 hours or longer. However, the friction wheel should be replaced after over time use. To replace the wheels, remove the cover 1, remove the cover of ball separating wheel, loosen the protective cover and take out the screw at the friction wheel with a screwdriver, which is to be tightened clockwise and to be loosened counter-clockwise.

发球机应保持清洁，上、下轮（摩擦轮）使用时间长会有污垢，需用湿布抹掉，以保证出球的质量，另外各部位的旋钮在使用过程中，调整力度要适当，不能粗暴强力操作，防止损坏内部零件。使用及运输时需防止对发球机的强力撞击或震荡，练习结束后，请关机并拔掉电源插头。

The table tennis robot should be kept clean. There would be some dirt on the surface of top and bottom wheel (friction wheel). But such dirt can be wiped off with a wet rag, so as to ensure a quality shoot of the ball. Suitable strength should be used when turning the regulation knobs at the other places during an operation. Never do it with a rough or shock force, so as to prevent damage to the internal parts. During an operation and/or transportation, protect the table tennis robot against any strong impact or oscillation. Unplug and cut off the power supply when you have finished your exercise.



集球网的安装方法 How to assemble the ball collecting net



1、先将集球网的锁扣打开。
First, open the lock buckles of the ball collecting net.



3、将集球网向两边推开。
Spread out the ball collecting net with both sides.



2、将集球网略分开，网的方孔套进发球机的机头。然后集球网插销插入发球机的支架上。

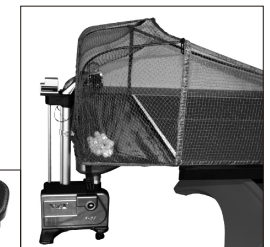
Partially unfold the ball collecting net, adapt the square outlet of the net with the robot head. Insert the pin into the support frame of the robot.



支架架
Support frame

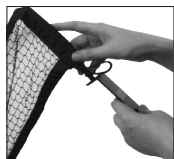
4、将发球机移至球台边缘，移动时应把脚轮锁紧器打开。

Put the table tennis robot close to the edge of table. Open the wheel lock when moving the robot.



锁紧器
Wheel Lock

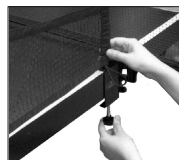
发球机的摆放位置 How to position the table tennis robot



5、将集球网两侧的尾端套进网架上。
Put both end sleeves of the ball collecting net on the net supports.



8、全部安装完毕展示图。
The presenting picture of a completed installation.



6、网架分别夹在球台近球网的两侧。
Clamp the net support onto both sides of table.



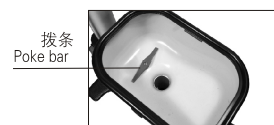
7、橡皮筋扣在网架的侧边。
Pull the rubber band over the bottom of net support.

9、训练结束，将集球网按原来程序收叠，将锁扣扣好，移放在任意位置。

After training, fold back the ball collecting net in a reverse order of the original process, lock the buckles in a right way, and put it in any suitable place.



发球机的保养 How to maintain the table tennis robot



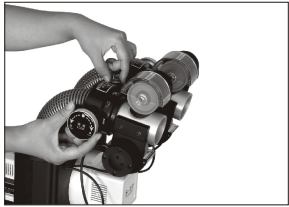
电器部份：本产品的电器部分主要由主线路板及控制盒组成，是发球机的指挥中心，所以尽可能避免受强烈震荡，控制盒一定要按要求插在球台边的支架上，以免摔坏。任何液体都不能洒在上面，防止漏电及损坏内部的电子元件，发球机的内部有电，如非专业维修人员，请勿私自打开电源及电路板外壳，否则会有触电危险。

机械部份：发球机的机械部份主要集中在输送球机构方面，特别注意的是除了合格的乒乓球以外，严重变形乒乓球及杂物不能放入储球器内，否则杂物会卡住发球机的输送轮，造成不出球或出球不顺畅甚至损坏发球机，主机活动门下侧安装有方便观察的视窗，如果发现变形球和杂物，先关掉电源，打开活动门，拆下透明保护板，将变形球及杂物取出即可正常工作。储球器内拨条使用长时间后，需检查是否有螺丝松动或拨条断裂等，以防止有下球不顺故障发生。

Electric component: Electric component in this product consists mainly of the base machine's circuit boards and the control box, which is the command center of the table tennis robot. Therefore, it should avoid any strong oscillation as much as possible. The control box must be inserted to the support at the side of the table to avoid any dropping and breaking. Never spread any liquid to its surface, in order to prevent electric leakage and/or damage to its internal electronic units.

Mechanical component: Mechanical component in the table tennis robot is concentrated mainly on the mechanisms for ball service and delivery. Special attention should be paid that any foreign substances should not put into the ball container except for the balls. Otherwise, they would block the delivery wheel in the robot, and would result in no ball delivery and even make damage to the robot. There is a view window Fixed at the under side of the movable door. So that you can power off the robot, open the movable door, remove the transparent guard plate, and take out any foreign objects if they have entered, thus returning the robot to its normal operation. When the poke bar inside the ball container has worked for a long time, it should be checked for loose screws and/or broken poke bar, so as to prevent any trouble from happening which would lead to rough delivery of the balls.

弧度调节 Loop modulation



调整出球弧度的高低时，首先用左手松开弧度锁紧旋钮，右手握住弧度调节旋钮任意调整，达到自己所需的弧度后，将弧度锁紧旋钮锁紧（弧度高则落点变长，弧度低则落点变短）。

When modulating the loop of the serve, loosen the loop lock knob with your left hand, while adjusting the loop modulation wheel with your right hand. When achieving your desired loop, lock the knob. (High curve makes landing spot long, low curve makes landing spot short).

储球器的容量 Capacity of the Ball Container



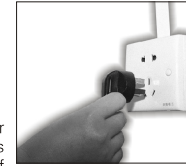
储球器装40mm球约100个。放球时不能超过储球器内侧标签所示黄线位，不能将严重变形的球和其它杂物也倒入储球器内，否则会损坏机内零件，影响发球机的正常工作。

The ball container may contain 100 balls in 40mm size. The level of the balls in the ball container should not be higher than the label (yellow line) positioned inside. Other things (except table tennis balls) should not be put into ball container, otherwise its parts may be damaged, affecting normal operation of robot.

使用电源 What power supply to use

发球机的适用电源在主机后面有标注，请选择使用，电源插头与插座要接触良好，使用完毕则要拔开电源插头。

The data of proper power source for robot is marked on the side of machine body, which may be selected and used optionally. The connection between plug and socket should be perfect. They must be pulled and separated completely after use.

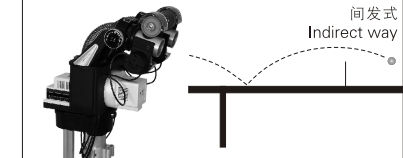
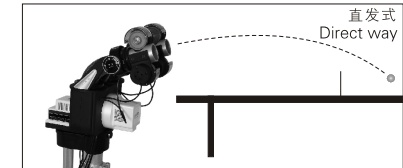


发球机的电源开关在主机后侧，使用发球机时把电源开关拨在“开”的位置，使用结束请关闭电源。



The power switch locates at the back side of the machine body, turn the switch "on" before the use of robot and turn the switch "off" after use.

发球形式 Ways to serve the ball



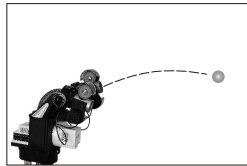
发球机的①、②机头发球形式都可选择直发式和间发式，直发式发出的球速度和旋转都比间发式稍强，调整时通过弧度调节旋钮进行（请参阅第11页弧度调节）。

The ways of serving the ball consists in direct and indirect way (suitable for shooting head ① and ②). The speed and spin of the former is stronger than those of the latter. They can be adjusted with the loop adjustment knob. (Please refer to page 11 "Loop modulation").

单机头发球 Single head serve

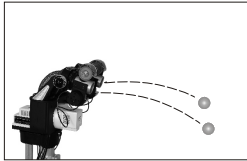
可设置单边机头发球，把某一机头的出球次数设置成无限量（“-”代表无限量）发球即可。并可设置速度、频率、旋转、落点、总出球次数等功能。

To use the single head serve, set the ball counter of one shooting head to be infinite. (“-” indicates infinite amount) You can also adjust the speed, frequency, spin, landing spot and total number of balls at this point.



双机头发球 Double head serve

①、②机头依次序发球（理论上①机头首先发球但因各种客观原因：如变形球影响等可能会有不同），并且可设置不同旋转、速度、落点、出球次数的多功能混合发球。如：①机头设置为上旋、速度为7档，出球次数为3个球，落点在2号位出3个球。②机头设置为下旋，速度为5档，出球次数为1个球。落点在10号位出1个球，按开始键；则按预先设定的①机头2号位出3个上旋球。②机头10号位出1个下旋球。以此类推，如①、②机头出球数量与横向落点1—11号位的球数设置不一致时。就会出现①、②机头轮流在各落点出球。依出球数不同而有不同的各种功能球（各种功能调节方法详见以下介绍）。



Shooting head ① and ② takes turn to serve (In general the shooting head ① begins to serve the first ball when the robot starts; however, broken balls may affect the order of serve). You can adjust their spin, speed, landing spot, and number of balls to form different serving sequences. For example, set the shooting head ① to top spin, adjust the speed to "7" stage, input 3 balls in the first ball counter, and press #2 position three times. And then set the shooting head ② to under spin, adjust the speed to "5" stage, input 1 ball in the second ball counter, press #10 position once. Press "Start" key, now the shooting head ① serves 3 top spin balls at the #2 position, and then shooting head ② serves 1 under spin ball at the #10 position. If the number of balls from shooting head ① and ② are different from the times that have been pressed on position #1- #11, the shooting head ① and ② will take turn to serve at each position. There are different kinds of ball produced depends on different number of balls. (Please refer to the different adjustment in this manual).

组合球选择

Selecting different serve sequence.

暂停状态下，按组合球键，指示灯亮，按▲或▼在01—30种组合球内循环选择。按开始键工作，发球机按设定的程序自动发球。此状态下，选择落点键、出球次数键、随机组合球键暂时锁定，可按暂停键后再按组合球键解除。（或暂停后按随机组合球键、选择落点键中的某一键解除组合球功能。此三种功能可用此方法互相解除）。

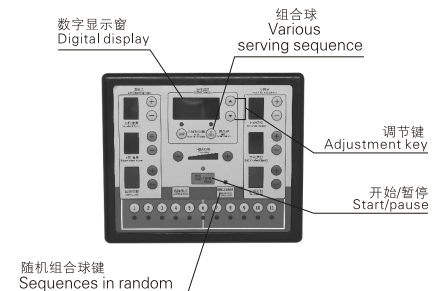
Under "standby" condition, press the "Various serving sequences" key, this light will be turned on. Press ▲ or ▼ to choose one from the 30 sets of serve sequences. Press "Start" key, and then begins to serve automatically according to the selected sequence. Under this condition, "Landing spot" key, "Total number of balls" key and "Sequences in Random" key are locked temporarily, you can press the "Pause" and press the "Various serving sequences" again to unlock this condition. (You can also press either "Sequences in Random" or "Landing spot" to cancel the "Various serving sequences" mode after pausing the robot. These three functions can use this method to cancel each other out).

随机组合球

Selecting sequences in random

暂停状态下，按随机组合球键，指示灯亮，按开始键工作，发球机将在01—30种组合球基础上自动随机抽取某一种组合球重新组合排列。由此衍生的组合球数量理论数据将会达到6万种不同组合以上（此为理论数据，并不代表实际数据）。

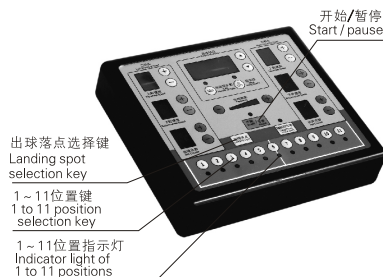
Under "standby" condition, press the "Sequences in random", this light will be turned on. Now the robot randomly selects one sequence in the 30 sets of serve sequences, and then rearranges the serving order to form a new sequence. Theoretically this may produce more than 60000 different kinds of serve sequence. (This is only the theoretical result, not the practical one).



出球落点选择 Selecting the landing spot

在发球机暂停状态下选择，发球机有定点、标准左右两点及任意多点组合等多种出球落点选择，在控制盒上有11个按键，同时也代表了球落在球台上的11个位置，控制盒上的蓝色部份则代表球台，选择时，先按出球落点选择键，此时1~11按键的指示灯是灭的，当选择某一位置时，此位置的指示灯就会亮，按开始键，发球机开始工作。发球机会记忆您按键的先后顺序，发球时会按您按键时的顺序发球，例如：选择定点球，要求9号位置落球，那就按上述步骤按一次9号键。选择两点球，11号位出3个球，1号位出两个球，那就按上述步骤连续按11号键3次，连续按1号键2次。组合球也是同一原理，在11个位置范围内，任意在哪个位置按多少次，它就在那个位置上出多少次球，反复循环同时自动记忆，下次开机时仍是这种设定，如需改变，则按照以上步骤重新设定。

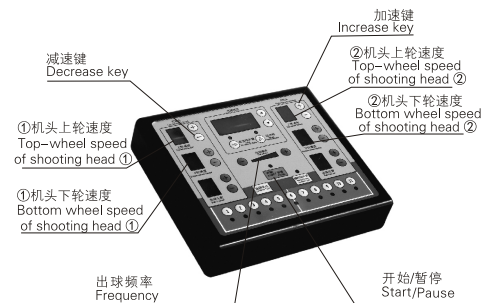
The landing spot should be selected in the "stand by" condition of robot. The robot can perform three main kinds of serving style: fixed course, standard alternative course and random course. There are 11 digit keys located at the bottom portion of control box. Those keys indicate the 11 positions of the table which the blue part indicates the whole table area on the play side. To select the landing spot of the ball, first press the "Select the landing spot" key, all indicator lights of 1-11 position will be turned off at this point. Now we can press either one of the position, then the light of the corresponding position being turned on. Start the robot to play after finishing the selection. For example, to play fixed course with the landing spot at the #9 position, we can press the digit "9" key to start. If we want to play alternative course and the ball will be landing at the # 11 position three times, and at the #3 position twice, we can follow the above procedures, then press the digit "11" key three times and digit "3" key twice. The numbers of ball which land on the same spot depend on how many times you press on the same position key. You can create as many as combination of the serving style. The control box also has a memory function that memorize the current setting which is capable to play with the same setting as next time you start.



速度调节 Speed modulation

可在暂停状态或工作状态时调节。①、②机头调节方法相同，当发球机接通电源时，控制盒上档位闪烁，如显示的档位合适，可直接按开始键工作。如需重新选择可按⊖键减档（减速），按⊕键加档（加速），调节好选定的速度档位，再按开始键工作。上、下轮可同时工作，亦可单独工作。发球机由低至高共10级档位。低档最慢，高档最快，速度快慢与乒乓球的旋转强弱基本成正比。如上、下轮档位接近时，所发出的球则基本没有旋转。控制盒具有暂停或停电记忆功能，下一次开机时仍然保留关机前的设定值。

Ball speed can be adjusted in the "Working" or "Stand by" condition of the robot. This adjustment is applicable to shooting head ① and ②. The stage-level light on the control box will flash when the power of the robot is on. If the stage doesn't need to be changed, press the start key directly to play. Otherwise, adjust the stage level by pressing the "Increase" or "Decrease" key. There are totally 10 stages from lowest to highest level. The top wheel and bottom wheel can work at the same time or work independently. The higher the stage being selected, the faster the ball speed will become. Basically the speed of the ball is proportional to the strength of the spin. If the stages of two wheels are close enough, the ball that has been produced is nearly no spinning. The control box also has a memory function that memorize the current setting which is capable to play with the same setting as next time you start.



频率调节 Frequency modulation

与速度调节方法相同，也是通过⊕键和⊖键调节，由低至高共分10级。低档时出球频率最慢（约25球/分钟），高档时最快（约85球/分钟）。

With the same modulation method as speed's, the frequency can also be adjusted by pressing the "Increase" or "Decrease" key with totally 10 stage level. The lowest stage of frequency is about 25 balls per minute and the highest stage is about 85 balls per minute.

旋转选择 How to select spin

①、②机头的旋转由调节上、下轮速度和左右调节机头方向来选择，每个机头可发9种旋转（S-18可发除不旋外的8种旋转）：包括上旋、下旋、不旋(由调节上、下轮速度来控制)、左侧旋、右侧旋、左侧上旋、左侧下旋、右侧上旋、右侧下旋。当选择某一个机头的侧旋时，请将另一个机头调节到可以避让的角度。S-27的两个机头不可以同时调节到侧旋的位置。

The spin from shooting head ① or ② is selected by adjusting the speed of top-wheel and bottom-wheel, and by rotating the motor head of robot. Each of them can perform 9 different spins (S-18 can perform 8 different spins except "no spin"): top spin, under spin, no spin (produced by varying the speed of top and bottom wheel), left side spin, right side spin, left-side top spin, left-side under spin, right-side top spin and right-side under spin. When selecting the spin from one shooting head, please rotate the other to a particular position that does not affect the movement from each other. Two shooting heads for S-27 model can not adjust to be side spin at the same time.



* 此图片的型号是S-18
The model in this picture is S-18

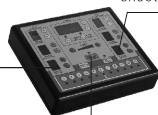
出球次数选择 Selecting number of balls

此为发球机①或②机头的单独出球次数。在发球机暂停状态下选择，①、②机头操作方法相同。按 ⊕、⊖ 键在1-9、无限量（“-”代表无限量）出球次数中选择。当某机头选择无限量“-”后，另一机头则不出球。可暂停后将该机头的无限量出球功能更改为1-9个，另一机头即可调整出球数量。发球机开始工作时，理论上①机头首先发球，但因各种客观原因如：有变形球影响等可能会有不同（开机时第一回合的几个出球也会受影响，不一定准确）。

This selection is for setting the number of balls from the individual shooting head ① or ②. Shooting head ① and ② have the same method of adjustment. Under "standby" condition, press ⊕ and ⊖ to input the number 1-9 or infinite ("- indicates infinite) in ball counter. When one shooting head has been set to be infinite amount, the other will not shoot the balls at this point. To set the number of balls for the second shooting head, pause the robot, and then adjust the number from "-" to 1-9 in the ball counter of first shooting head. In general the shooting head ① begins to serve the first ball when the robot starts; however, there are some exceptions. For example, broken balls may affect the order of serve. (The first few balls may be affected and cause inaccurate at this point).

①机头出球次数选择
Ball counter of shooting head ①

②机头出球次数选择
Ball counter of shooting head ②



开始/暂停
Star/pause

总出球次数选择 Selecting total number of balls

此为①、②机头的合计总出球次数。在发球机暂停状态下选择，按出球次数键，指示灯亮，按 ▲或▼ 在1~999范围内任意选择，长按则快速调节，按开始键，发球机开始定量出球，显示窗内数字自动减一计数，当减到0时发球机暂停工作，数字灯显示初始值，重新设定出球数可按以上方式操作。重复已设定的初始数值，直接按开始键工作。不再定量出球(也就是无限量出球)则按总出球次数键取消(指示灯灭)。

This is the total numbers from shooting head ① and ②. Under "standby" condition, press the "ball counter" key, and then change the number by pressing ▲ or ▼ key. The range of output number is 1 ~ 999. Holding the key for fast forward adjustment. Once the robot has started, the number begins counting down. When the number becomes 0, the robot stops and back into standby mode. To set the "infinite" amount (unlimited), press "Total number of balls" until this indicator light is off.

