

● 使用前請閱讀此手冊

● Please read this manual before operation



使用手冊
Instruction Manual

Serving Robot For Table Tennis

乒乓球發球機

TW-2700-08

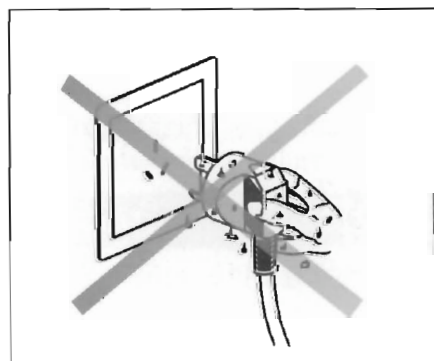
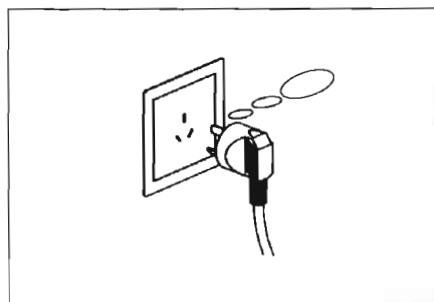


Statement

1. Before operating the machine please read the instruction manual carefully;
2. If any problems occur please refer to your supplier or after-service department;
3. Our company would not have any legal responsibility towards all breakdown or damage due to improper use of the machine;
4. Breakdown due to improper operation, self-actuated dismantlement or remodeling will be excluded from warranty.
5. Without permission, this instruction manual may not be reproduced or photocopied;
6. If necessary, this machine (including accessories) may be modified by our company without further notice.

Warning

- ★ Use only AC □220V □120V □110V power supply.
- ★ Ensure your hands are dry before contact with the power supply, or else short circuit may occur.
- ★ Keep the main power switch out of the reach of children and prevent children from touching the main power switch in order to avoid danger.
- ★ Switch off the main power supply in the thunderstorm weather.
- ★ Immediately switch off the main power supply if any problems occur. Only switch it on again after inspection and troubleshooting.



Tips

please read this manual before operating the new product, in order to assure you can use the machine safely, correctly and effectively!

Basic Features and Functions of TW-2700-08 Table Tennis Serving Robot

Three intelligent serving modes

- ★ 1. **Regular mode.** Continuous serving from one fixed ball falling position among 1-9 horizontal falling positions of long balls or among 1-9 horizontal falling positions of short balls;
- ★ 2. **Random mode.** (The computer will control the fixed ball falling position mode)
 - I. Horizontal random mode**
 - a. random serving from 1-9 horizontal positions; under this mode long ball and short ball may be chosen;
 - b. random serving from left five positions; under this mode long ball and short ball may be chosen;
 - c. random serving from right five positions; under this mode long ball and short ball may be chosen;
 - II. Horizontal random mode & mixed random mode of long ball and short ball**
 - a. random serving from 1-9 horizontal positions and mixed random mode of long ball and short ball;
 - b. random serving from left five positions and mixed random mode of long ball and short ball;
 - c. random serving from right five positions and mixed random mode of long ball and short ball;
- ★ 3. **Self program mode.** Program 18 positions according to the training need. One program can edit 32 falling positions.

Long and short ball function

- ★ Long and short ball function:
 - 1. Under the regular mode long ball or short ball can be chosen for serving of fixed position.
 - 2. Under the horizontal random mode long all or short ball or long and short ball auto serving can be chosen.
 - 3. Under the self program mode can freely choose any edit.

Three auxiliary functions

- ★ **Timing/counting function.** Digital display. Can be chosen by the user;
- Memory function.** Can auto memorize and save the using mode, program and serving position before switching off.
- Auto collecting function.** Can auto collect the balls into the collection dish of the machine and serve a cycle, which can save ball picking time and raise the training efficiency.

18 ball falling positions

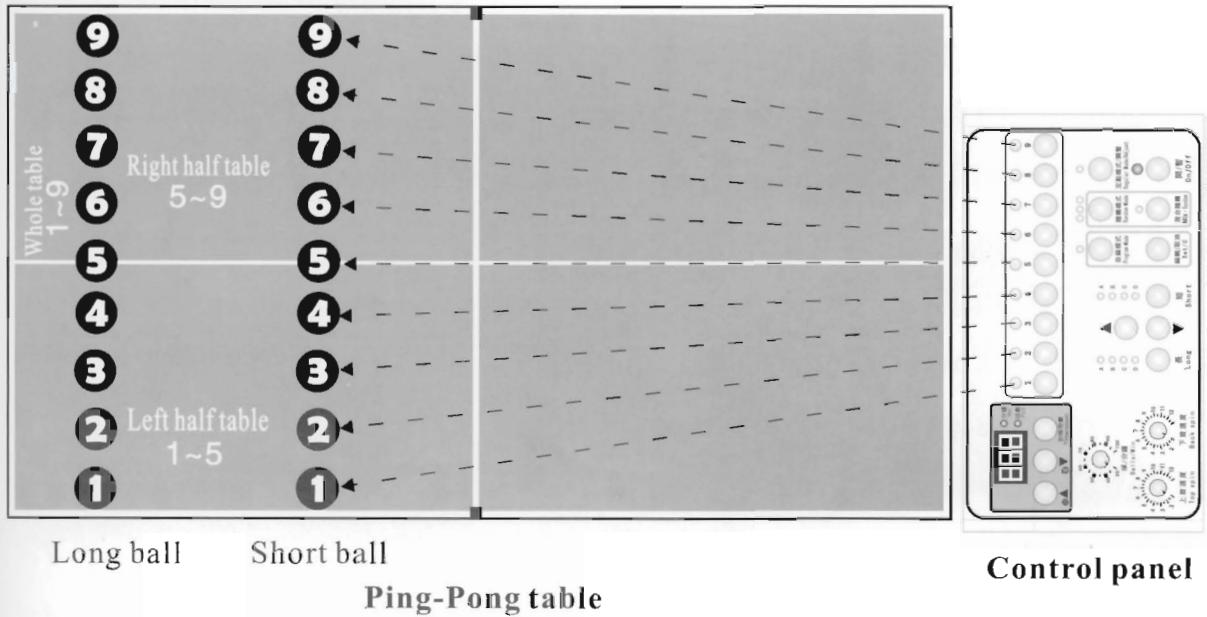
- ★ There are all together 18 ball falling positions for long ball and short ball on the table:
 - a. 1-9 ball falling positions for long ball;
 - b. 1-9 ball falling positions for short ball;

9 spinning balls

Top spin, bottom spin, left spin, top left spin, bottom left spin, right spin, top right spin, bottom right spin and non-spin (straight ball).

Tips: the shift of serving mode of the machine, the option of ball falling positions and the curve of serving can all be adjusted during the normal operating situation.

Fixing of ball falling position



Factory setting and the recommended parameters

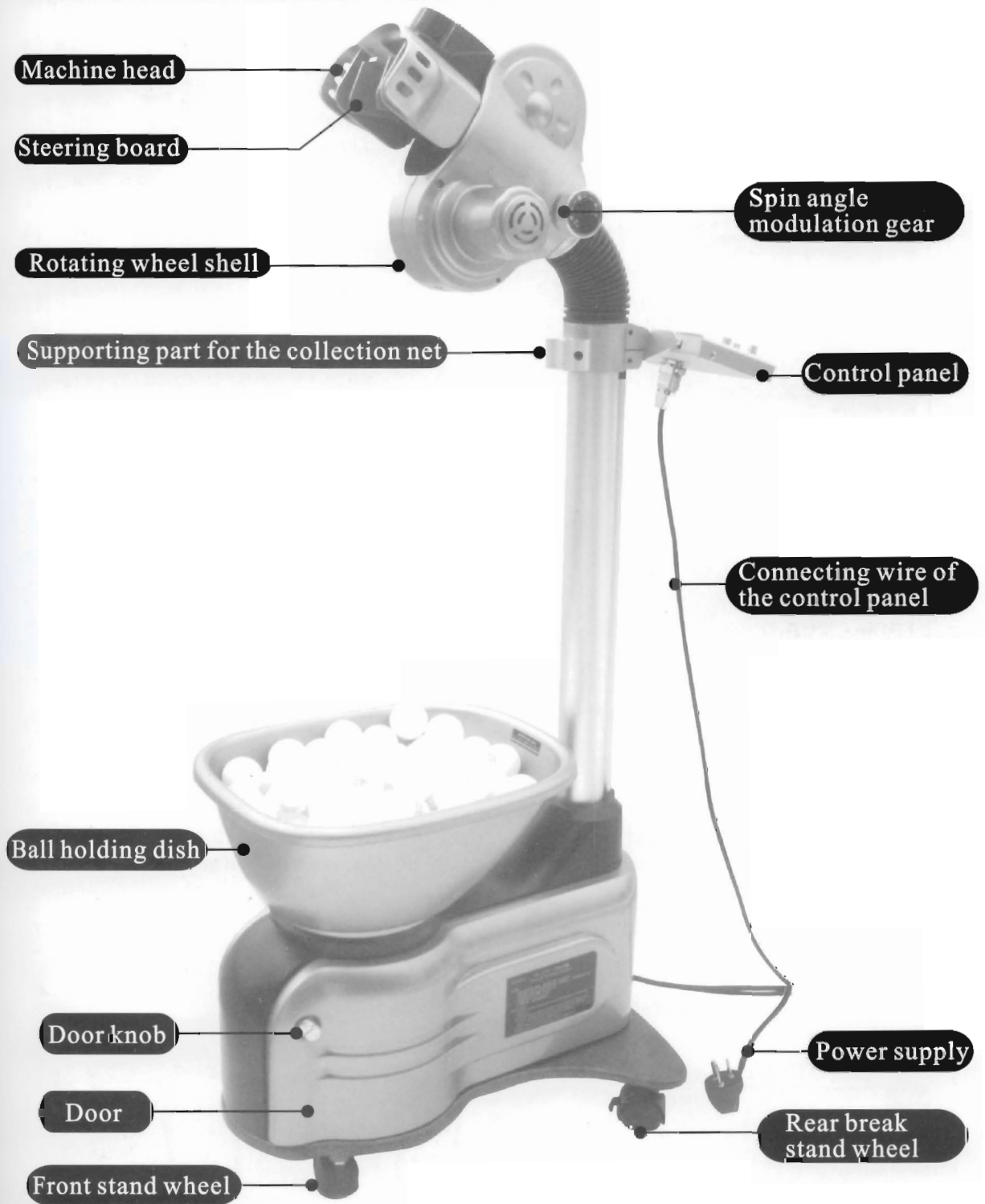
Spin mode	Top spin speed (knob calibration)	Bottom spin speed (knob calibration)	Serving frequency	Falling position of long or short ball
Factory setting	6	3	45	Long: C short: B
Recommended parameters	Straight ball	6	3	When adjusting the speed of top spin or bottom spin, the ball falling positions of ABCD of long ball or short ball shall be respectively adjusted. See details on p8 for the steps of adjusting the serving cure (arc).
	Top spin	7~9	3	
	Bottom spin	1.5~2.5	6.5~9	
	Top left spin	7~9	3	
	Top right spin	7~9	3	
	Bottom right spin	1.5~2.5	6.5~9	
	Bottom left spin	1.5~2.5	6.5~9	
	1-18	7~9	3	
Auto-mode	7	3	45~60	

Note: Before you use the machine for the first time, please set the parameters as the factory setting ones provided above, and then press the ON/OFF button to start training. Later on, you can adjust the parameters (top spin speed, bottom spin speed and serving frequency) according to your own level and needs.

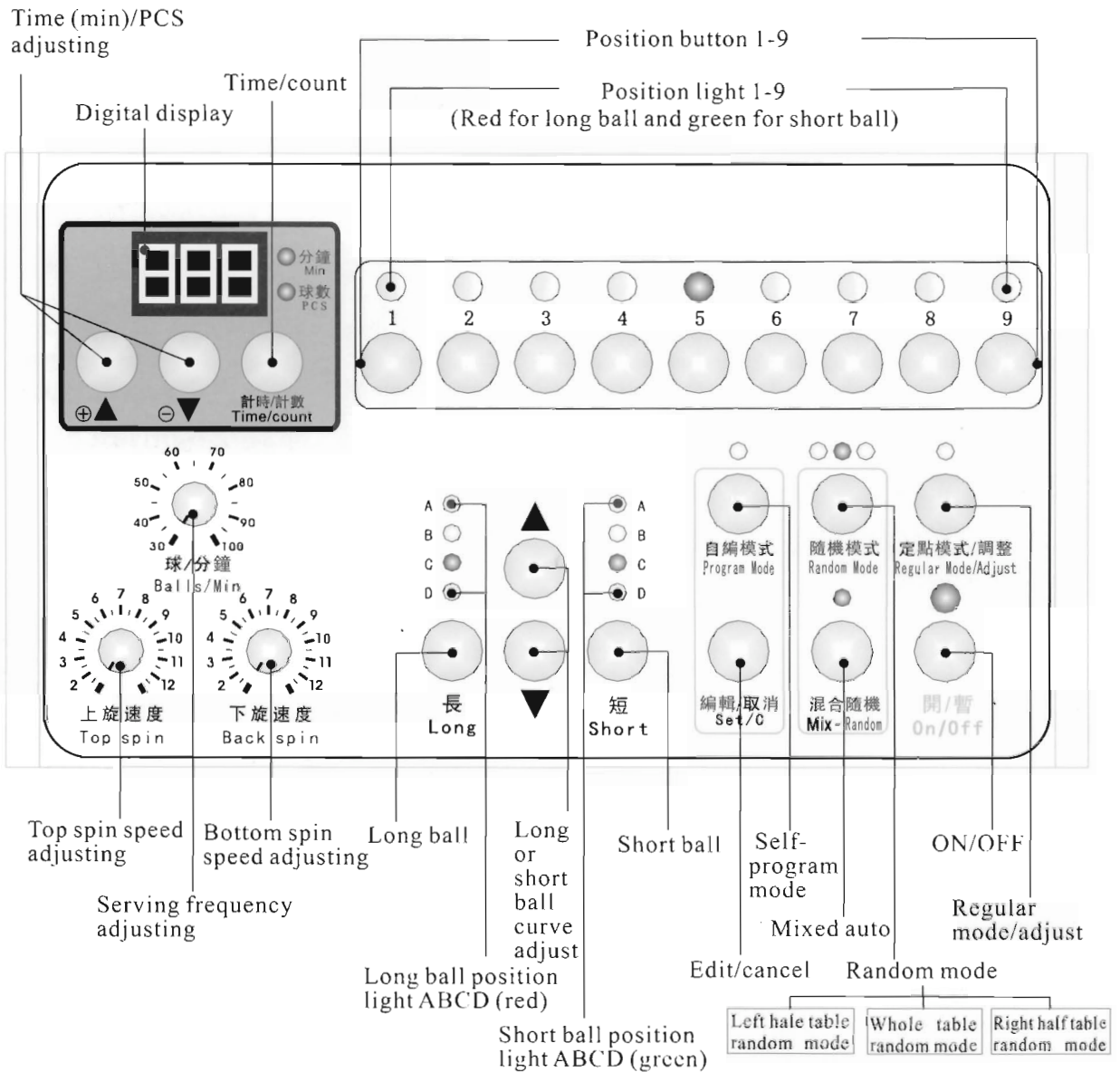
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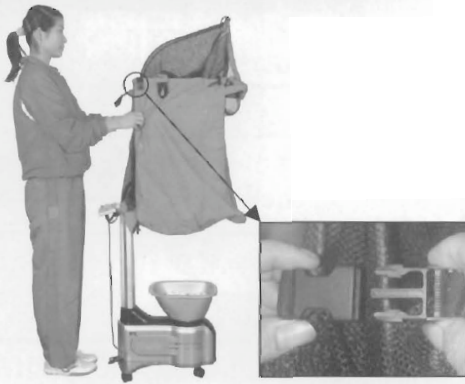
I. Name of all parts of the Table Tennis Robot



II. Name of all parts of the control panel



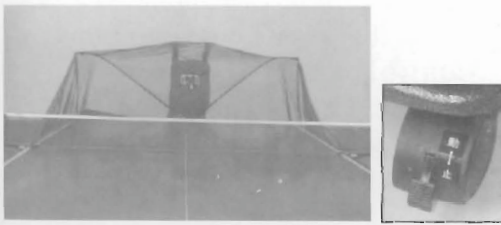
III. Using the collection net



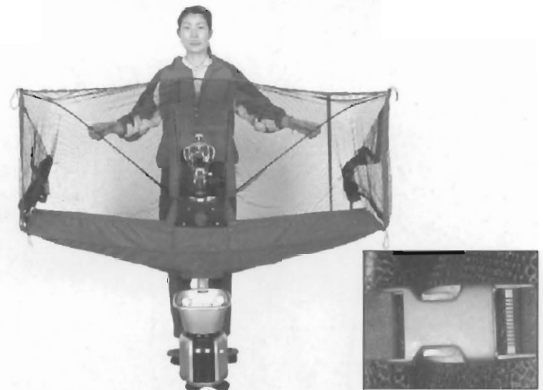
1. Unlock the buckles of the collection net.



2. Slightly unfold the collection net. Put the Robot head into the round hole of the net. Then insert the collection net into the supporting part on the Robot.



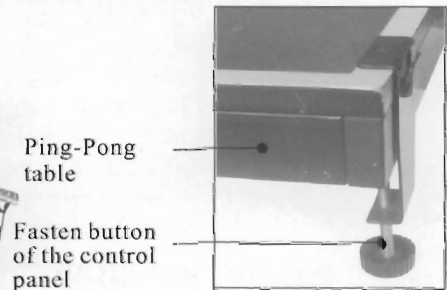
3. Move the Robot up to the table and press the black buckle of the stand wheel down and fasten the rubber band on both sides of the collection net to the clamps of the net on the table.



4. When training finishes, gather the collection net according to the converse steps. Lock the buckles and store at any place.



Drawings of complete installation



★ The fasten button of the control panel can be installed at any position of the edge of the table. Put the control panel on the fasten button will make the operation easier.

IV. Starting and stopping the Table Tennis Robot

Tips when using the machine for the first time, please take out, from the machine head, all the foam blocks which are used to protect the steering board.



1 Plug in the power supply and then switch on the Robot.

2 Once the Robot is on, the on/off light on the control panel will light up (red), the selected mode lights and the currency position lights will all light up. When using the machine for the first time, please adjust the parameters according to the *Factory setting and the recommended parameters*. Then press the on/off button on the control panel and a green light will appear. The Robot will start serving balls.

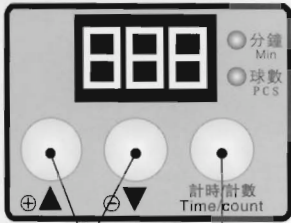
Factory setting	Spin mode	Top spin speed (knob calibration)	Bottom spin speed (knob calibration)	Serving frequency
	Straight ball	6	3	45

3 When you press the on/off button again, the on/off light will light up as red and the Robot will stop serving.

Caution

After pressing the on/off button, do not get close to the serving point of the machine head in case that it hurts your body.

V. Timer/counter



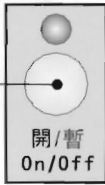
Operating steps of the timer/counter

When choose the timer function:

- 1 Push the timer/counter button until the corresponding light is on.
- 2 a. Push once the ⊕▲ button, the set time will be added one minute. Push the ⊕▲ button long; the set time will increase quickly. The maximum set time can be 120 minutes.
b. Push once the ⊖▼ button, the set time will be deducted one minute. Push the ⊖▼ button long; the set time will decrease quickly.

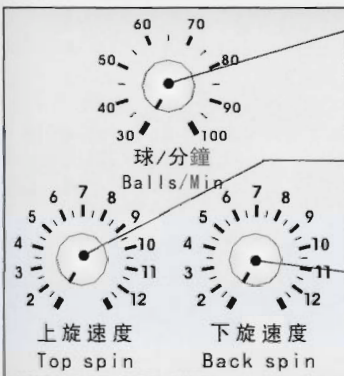
When choose counter function:

- 1 Push the timer/counter button until the corresponding light is on.
- 2 a. Push once the ⊕▲ button, the set number of balls will be added 10 more. Push the ⊕▲ button long; the set number will increase quickly. The maximum set number can be 990.
b. Push once the ⊖▼ button, the set number of balls will be deducted 10. Push the ⊖▼ button long; the set number will decrease quickly.
- 3 Push ON/OFF button to start the machine and the countdown will start. When the timer/counter reaches the set time or number the machine will stop automatically.



Tips If push ON/OFF without setting the time or number, the counter will start automatically and display the number beginning with 001.

VI. Adjusting knob of serving parameters



Adjusting the serving frequency

Turn the serving frequency knob clockwise and the serving ball numbers will increase 30-100/min. the calibration shows the numbers of serving per minute.

Adjusting the top spin speed

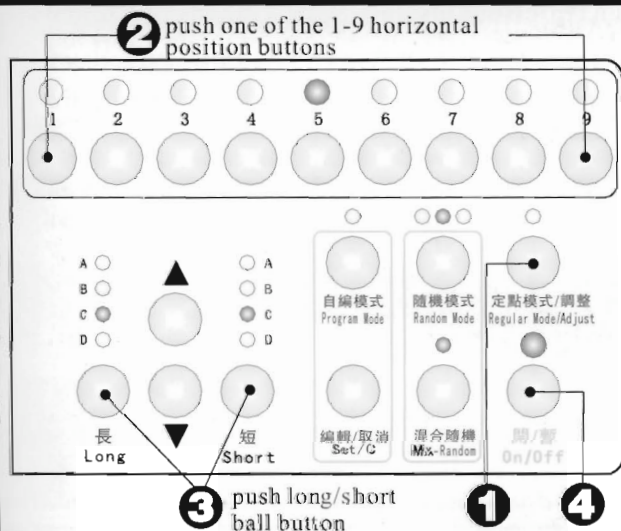
Turn the top spin speed knob clockwise and the top spin motor speed will change from low to high.

Adjusting the bottom spin speed

Turn the bottom spin speed knob clockwise and the bottom spin motor speed will change from low to high.

Tips: please refer to Factory setting and the recommended parameters

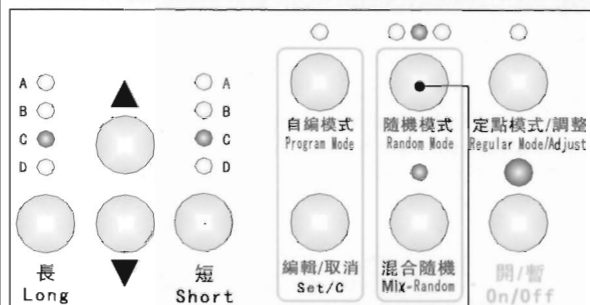
VII. Operating steps of the serving function



A. Operating steps of the serving function of regular mode

- 1 Push the regular mode button until the corresponding light is on.
- 2 Push 1-9 horizontal position button and choose one of the falling position. The corresponding position indicating light will be on (red for long ball and green for short ball).
- 3 Push long ball or short ball button to choose long ball or short ball falling position. One of the corresponding ABCD lights will be on.
- 4 Push ON/OFF button, the corresponding light will change from red to green and the chose position will serve continuously.

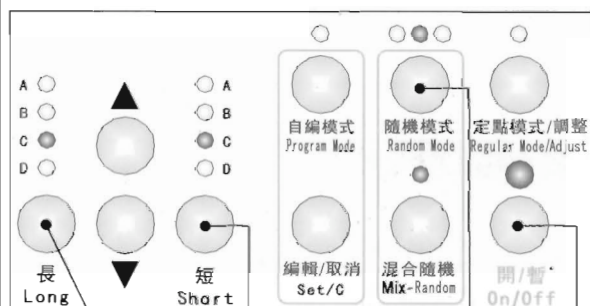
B. Operating steps of the random serving function (horizontal)



B-1 Using the random mode button (cycle display mode)

1 2 3

- 1** Push the random mode button. The indicating light in the middle of this button will be green which means the whole table horizontal 1-9 random mode is chosen.
- 2** Push again the random mode button. The indicating light on the right of this button will be red which means the right half table horizontal 5-9 random mode is chosen.
- 3** Then push the horizontal random mode button. The indicating light on the left of this button will be red which means the left half table horizontal 1-5 random mode is chosen.

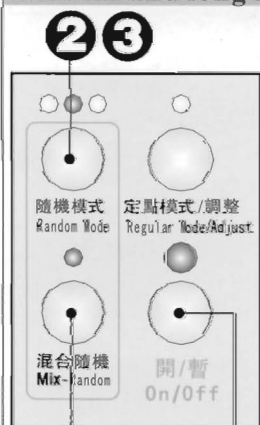


B-2 Operating steps

- 1** Push random mode button to choose random serving mode whole table/right half table/left half table;
- 2** Push long ball or short ball button to choose long ball or short ball falling position. The corresponding light will be on;
- 3** Push ON/OFF button and the serving mode is long ball or short ball's random serving mode corresponding to the choice of step 1 (whole table/right half table/left half table).

Tips: if push the mixed random mode button, the light on this button will be on and the serving mode will be the mixed random mode of the random modes you have chosen (horizontal/vertical)

C. Operating steps of the mixed random mode of horizontal random and long and short ball random mode

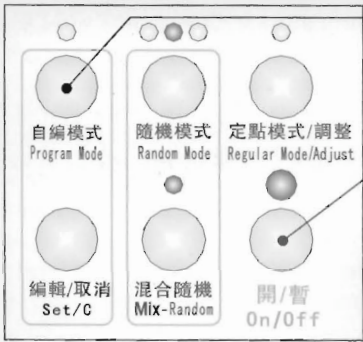


- 1** Push the mixed random mode button and the corresponding light will be on. The indicating light in the middle of the random mode button will be green (interlocking set), which means the mixed random mode is whole table 1-9 random and long and short ball random.
- 2** Push the random mode button. The right indicating light on this button will be red, which means the mixed mode is right half table 5-9 random and long and short ball random.
- 3** Push the random mode button again. The left indicating light on this button will be red, which means the mixed mode is left half table 1-5 random and long and short ball random.
You may repeatedly push the random mode button to choose whole table/right half table/left half table serving mode.
- 4** Push the ON/OFF button. The serving mode will be the mixed random mode you have chosen.

Tips: If push the mixed random mode button, the indicating light of this mode will be off and the serving mode will change automatically to random mode (horizontal).

Tips The shift of serving mode functions can be done under the normal operating situation

VIII. How to use self program mode

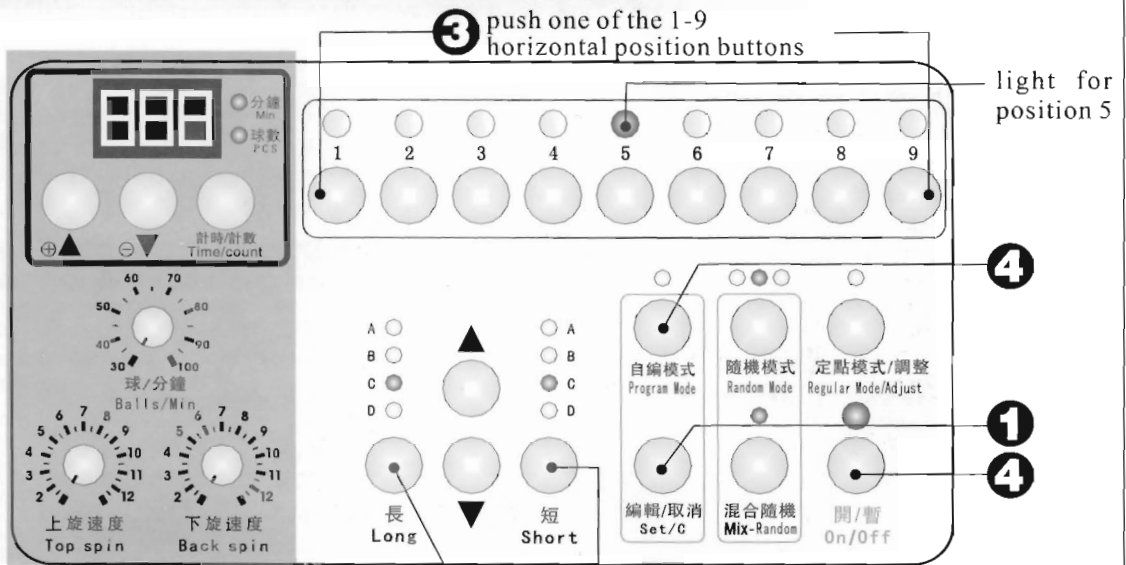


1 Push the self program mode button and the indicating light on this button will be on.

2 Push ON/OFF button. The serving mode will be the saved self program mode.

Tips The factory setting of self program mode is long ball's 1, 5 and 9 positions; Users may edit it according to own needs. The editing steps can refer to the *Operating steps of editing the ball falling positions* on this page.

IX. Operating steps of editing the ball falling positions



3 push one of the 1-9 horizontal position buttons

light for position 5

4

2 push long/short ball button

- 1** Push edit/cancel button. The light of self program mode will shine. The long ball or short ball indicating lights ABCD will all be on. The light of horizontal position 5 will also shine. Now it's the editing state. Note: if push the edit/cancel button under the normal operating situation, the machine will stop automatically and enter into editing state.
- 2** Push long ball or short ball button to set the long ball or short ball falling position. The corresponding long ball or short ball indicating lights ABCD will all be on. Red for long ball and green for short ball. (if the long ball or short ball position indicated by the lights are the one you want to choose, this step can be omitted and go to step 3 directly).
- 3** Push the horizontal position button to choose any position in the 1-9 positions. The corresponding indicating light will be on. Then the edit/save of one position is done. Repeat the step 2 and 3 to edit the second, third and fourth...position. One program can edit 32 positions (any position can be edited repeatedly without restriction).
- 4** Push the self program button or the ON/OFF button. The corresponding light will be on. The serving mode will follow the program you have edited. (last program will be eliminated automatically)

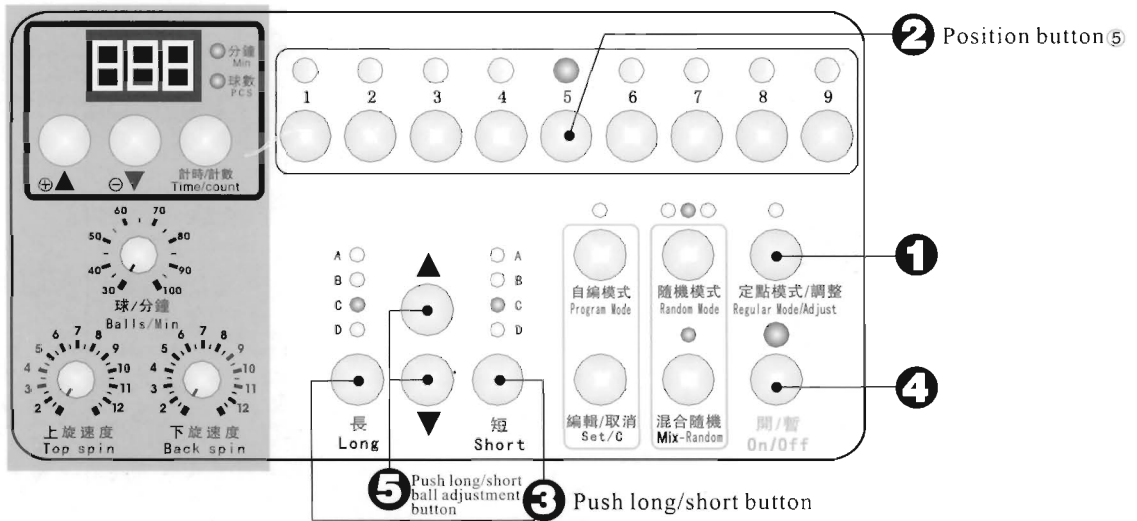
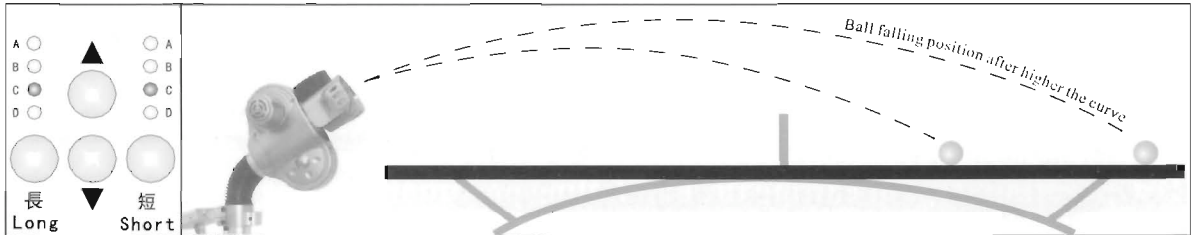
Tips

If you need to modify during the editing procedure, you may push the edit/cancel button.

X. Operating steps of adjusting the serving curve (arc)

When the long ball of the machine is out of boundary or the short ball falls into the net, or the falling positions are changed due to the adjustment of serving force and spin, the serving curve needs to be adjusted. First adjust the top spin speed and bottom spin speed according to own training needs. Please refer to the Factory setting and the recommended parameters in this manual and adjust the serving frequency to 30 balls/min.

The adjustment of serving curve (arc) should be carried out under the regular mode (void in random mode and self program mode). When higher the serving curve (arc) the ball falling position will move outward the table. On the contrary, when lower the serving curve (arc), the ball falling position will move inward the table. (See the figure below)



1. Operating steps of adjusting the long ball falling position

- ① Push regular mode/adjust button. The corresponding light will be on;
- ② Push horizontal position button 5. The corresponding position light will be on; (adjustment based on the middle position 5)
- ③ Push long ball button. One of the corresponding lights ABCD will be on;
- ④ Push ON/OFF button to start the machine. Observe the falling position;
- ⑤ If need to higher the serving curve (arc), push ▲ button. Each push will make the corresponding position light move one space toward A direction, and the serving ball falling position will move outward the table; If need to lower the serving curve (arc), push ▼ button. Each push will make the corresponding position light move one space toward D direction, and the serving ball falling position will move inward the table; adjust until the falling position meets your requirement.

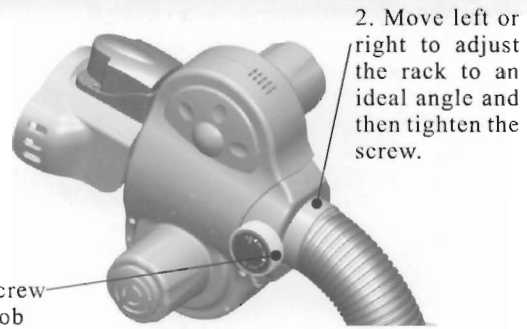
2. Operating steps of adjusting the short ball falling position

- ① Push regular mode/adjust button. The corresponding light will be on;
- ② Push horizontal position button 5. The corresponding position light will be on; (adjustment based on the middle position 5)
- ③ Push short ball button. One of the corresponding lights ABCD will be on;
- ④ Push ON/OFF button to start the machine. Observe the falling position;
- ⑤ If need to higher the serving curve (arc), push ▲ button. Each push will make the corresponding position light move one space toward A direction, and the serving ball falling position will move outward the table; If need to lower the serving curve (arc), push ▼ button. Each push will make the corresponding position light move one space toward D direction, and the serving ball falling position will move inward the table; adjust until the falling position meets your requirement.

Tips when the falling position of long ball or short ball reaches position A and still can not meet your requirement, you may push longer the ▲ button, the serving ball's falling position will move outward the table to the limitation but the light A will not change. The same, the serving ball's falling position can move inward the table to the limitation but the light D will not change.

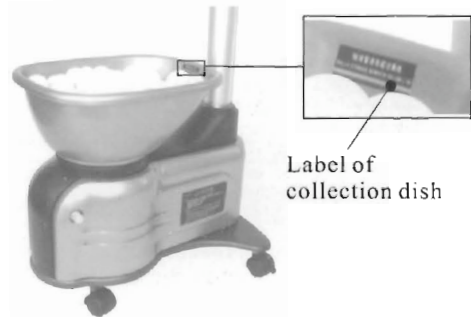
XI. Adjusting the spin angle

The Table Tennis Robot can serve at different angles. There are all together 9 different serves including top spin, bottom spin, left spin, top left spin, bottom left spin, right spin, right top spin, right bottom spin and straight ball. Each spin is done by adjusting the speed of the top and bottom spin gears and the spin racks spin angle (see picture on the right). The maximum adjustment margin is 45% on both the right and left.



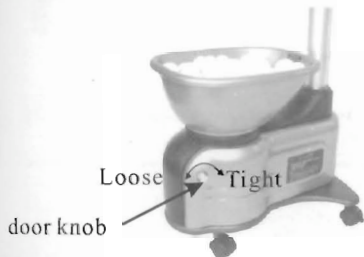
XII. Capacity of collection dish

Capacity of collection dish: up to 120 Ping Pong balls (40mm). When being put in it, the balls must not exceed the yellow line marked on the inner side of the dish by the label. (See figure on the right). Other objects must not be placed into the dish, or else it will damage the machine and obstruct the operation of the machine.

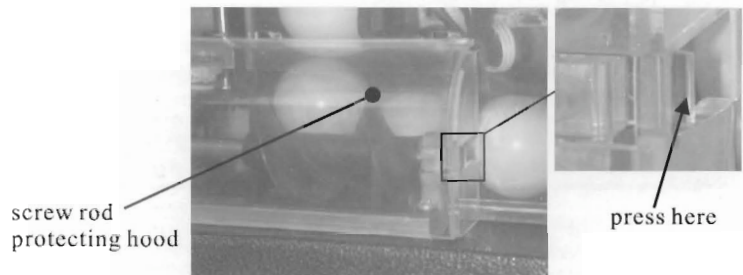


XIII. How to remove stuck ball

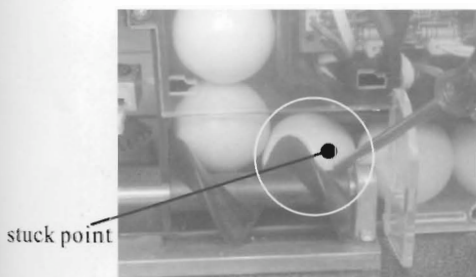
A ball may be stuck due to a damaged ball blocking the alley. If a ball is stuck, please switch off the main power at first and then open the door to remove the screw rod protecting hood. Then pick out the damaged ball following the indication on the picture. Finally put the screw rod protecting hood back and close the door. Restart the machine.



1 Loosen the door knob to open it.



2 As shown on above picture, press the fasten position and push the screw rod protecting hood to the left to take it out.



3 Use a screwdriver to make the stuck ping pang ball up and not stuck anymore. Move its position. Then turn on the machine to move the damaged ball out of the machine head. Finally put the screw rod protecting hood back and close the door. Restart the machine.



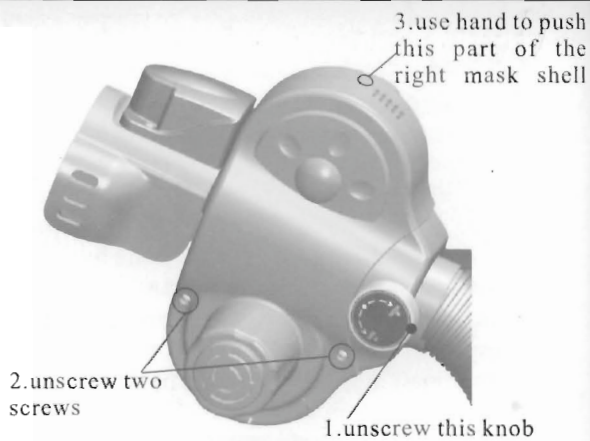
★ If there is serious bad ball or other stuff the transparent cover needs to be removed (unscrew the four screws shown on above picture and remove it). Pick out all the stuck balls or other stuffs and put the cover back. Finally restart the machine.

XIV .How to adjust spin gear

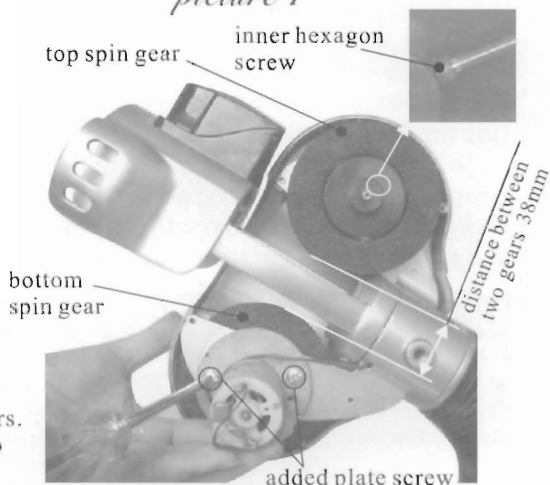
When the machine is used for a long time, the two spin gears may be worn down, which may weaken the serving power. In this situation the distance between two spin gears should be adjusted.

When adjust the bottom spin gear:

- 1** Switch off the power supply. Unscrew totally the fix knob. Use the bundled screwdriver to unscrew the two screws on the left side of the motor mask. (See picture 1)
- 2** Use hand to push the position shown on the right picture (there is a fasten position inside the mask), then remove the mask shell toward left.
- 3** Use the screwdriver to slightly unscrew the screw on the added plate. Put a Ping Pong ball between the two spin gears. Upraise the bottom spin gear to clamp the ball between two gears. Make sure the distance between two gears is about 36mm. Then use the screwdriver to fix the added plate screw. (See picture 2)



picture 1



picture 2

When adjust the top spin gear:

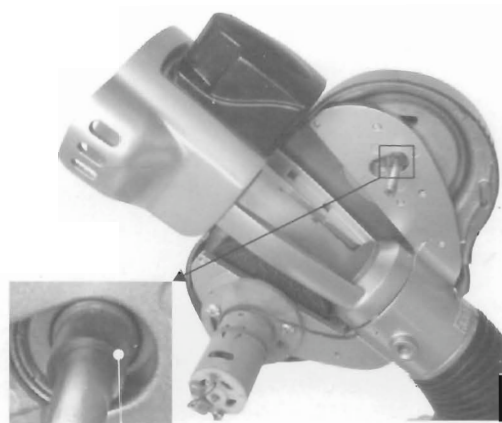
- 1** Switch off the power supply. Use the bundled screwdriver to unscrew the two screws on the right side of the motor mask. (See picture 1)
- 2** Use hand to push the position shown on the right picture (there is a fasten position inside the mask), then remove the mask shell toward right.
- 3** Use the screwdriver to slightly unscrew the screw on the added plate. Put a Ping Pong ball between the two spin gears. Upraise the bottom spin gear to clamp the ball between two gears. Make sure the distance between two gears is about 36mm. Then use the screwdriver to fix the added plate screw. (See picture 2)

Tips

The adjusting range of spin gears is big. Generally it can still be used after adjustment. If the diameter wear is 70mm it can be changed.

XV .How to change spin gear

- 1** Refer to step 1 and 2 of adjusting of spin gears, remove the left and right motor mask shell.
- 2** Use the inner hexagon spanner to remove the top and bottom spin gears. Attach the compass tube to the extension stem (See picture 3) and then put the bundled two spin gears onto the top and bottom added plate motors. Use the inner hexagon spanner to tighten the two gears and fix the inner hexagon screw on the gears. Slightly unscrew the added plate screw and put a Ping Pong ball between the two spin gears. Make sure the distance between two gears is about 36mm. Then fix the added plate screw.
- 3** Put the left and right motor mask shell back and turn on the machine. Try a serving and observe the falling positions and force.



picture 3

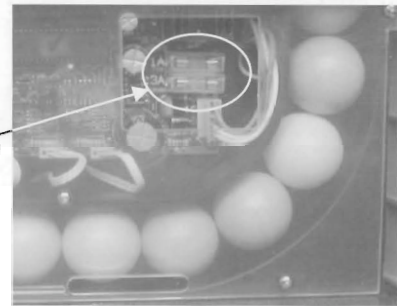
Tips

when the falling position and force is not appropriate, you may adjust at the same time the distance between top and bottom spin gears.

XVI. How to change protection tube

When the protective tube needs to be changed, please switch off the power supply and open the door. The protective tubes are at the jaw opening of the transparent cover. Note: the top one is 1A protective tube and the bottom one is 3A protective tube. Then follow the picture to pull out the tube cover and take out the bad protective tube. Install the bundled qualified protective tube and put the cover back.

protective tube



XVII. Breakdown and troubleshooting and treatment

Problem	Reason to the problem	Troubleshooting method
The machine is not working	1. The light on control panel does not light up	• Check if the plug is correctly plugged in.
		• Check if the AC Switch is on
		• Check if the plug of the control panel is plugged correctly and firmly.
	2. All three function buttons and the ON/OFF button are shining	• Check if the ON/OFF button is pressed. The light turns green when it is on.
		• Switch off the main power supply and check if the fuse at "3A" point on the main board at the basement is burned out.
		• Check if all the plugs are plugged correctly and firmly
3. The light on control panel lights up but the machine doesn't work.		• Switch off the main power supply and open the door to check if the ball at the bottom of the entrance tube is stuck. Remove the screw rod protecting hood. Use a screwdriver to make the stuck ping pang ball up and not stuck anymore. Move its position. Then turn on the machine to move the damaged ball out of the machine head. Finally put the screw rod protecting hood back and close the door. Restart the machine. (Attention: don't let any damaged ball into the tube)
		• When used for a certain period, the dust and other stuff may block off the alley inside the straight tube and affect the moving of balls. In this situation, you can pour out all the balls and then spray some cleansing car wax into the straight tube from the ball entrance and the exit.
The control panel is out of order	1. The lights on the control panel are shining	• Switch off the main power supply and restart.
	2. The ON/OFF button is out of control	• Switch off the main power supply. Check if the plug is correctly plugged and restart.

If problem still occurs, please contact our maintenance center.

Tel:415-391-0601

XVIII. Maintenance of the Table Tennis Robot

- ① The electrical parts of this machine are mainly composed by main board and operating board, which is the directing system of the machine. It should be prevented from strong vibration and any liquid to avoid electricity leakage and damage to the inner components.
- ② After long time use, the spin gears may be worn and lead to inaccuracy of falling position and insufficient force of serving. Then you may adjust the distance between them. Please refer to □ the method of adjusting the spin gears □.
- ③ When the machine is used for 1-2 months, there might be dirt or debris gathering in the ball path. Then you should pour out all the balls and spray some cleansing car wax into the straight tube from the ball entrance and the exit.
- ④ When the shell is dirty, you may use a wet cloth to clean it. The base tube should be cleaned after 1-2 months' use. You may remove the transparent cover to clean it with a wet cloth.
- ⑤ When you do not use the machine for a long time, please switch off the power supply and cover the machine with cloth or plastic.

XIX. Table of performance and parameters

Item		Parameters	
Used power supply	Rated AC voltage (V)	220	110
	Rated power (W)	50	
	Rated frequency (Hz)	50	60
Functions	Serving spin	9 different spins	
	Serving frequency (times/min)	30 ~ 100	
	Serving speed (m/s)	4 ~ 40	
	Serving ball's falling position	18 positions	Short ball 1-9 Long ball 1-9
	Side spin adjusting angle	The range is 45°	
	Regular mode	Choose freely the falling position	
	Random mode	Whole table (3 serving mode)	
		Left half table (3 serving mode)	
		Right half table (3 serving mode)	
	Self program mode	Edit falling position among 18 fixed positions. 32 positions/program	
	Long and short ball	Long ball, short ball and long and short ball random	
Memory	Auto memorize the program and position		
Timer/counter	Display the set ball numbers or time		
Packaging	Gross weight (kg)	20	
	Net weight (kg)	11	
	Packaging volume (mm)	1190X535X435	

Note: If there is difference between this table and that on the plate, the parameters on the plate prevail.

Our company keeps the right to modify the product in this manual without further notice