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Robo-Pong 545 **OWNER'S MANUAL**

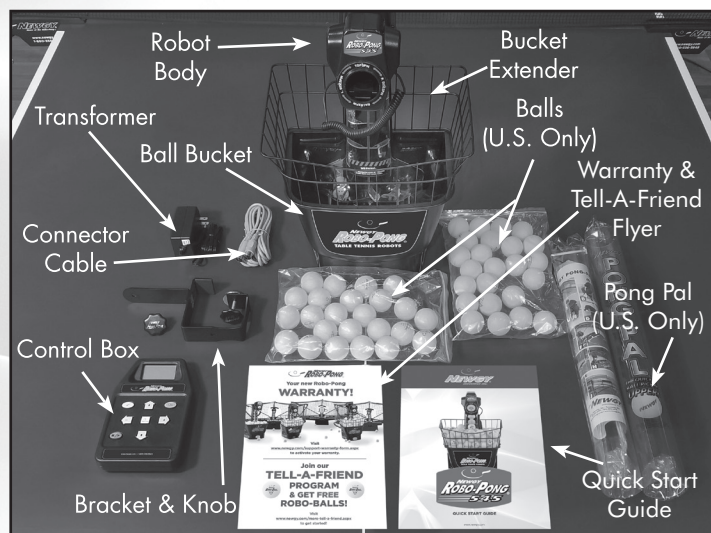
QUICK START

Follow these steps, or visit newgy.com for a short video, to learn everything you need to know about how to set-up and use your Robo-Pong 545.

1

Verify All Parts

Unpack all the parts and check that all parts are present. If unable to identify a part, look for a small silver label with the name of the part. If any part is missing, please contact Newgy immediately. You may want to keep your box and styrofoam pieces in case you ever need to ship your robot.



2

Wash Balls, Then Place In Bucket

Open the bag(s) of balls and wash them in lukewarm, soapy water. Then rinse in clear water and dry. Place the washed balls in the Ball Bucket. Other new balls you use should be washed and dried before placing them in the bucket. You may also include used balls with worn surfaces. Use only Newgy Robo-Balls™ or ITTF approved 2-star or better 40+ mm balls. Do not mix different size balls.

3

Adjust Head Angle

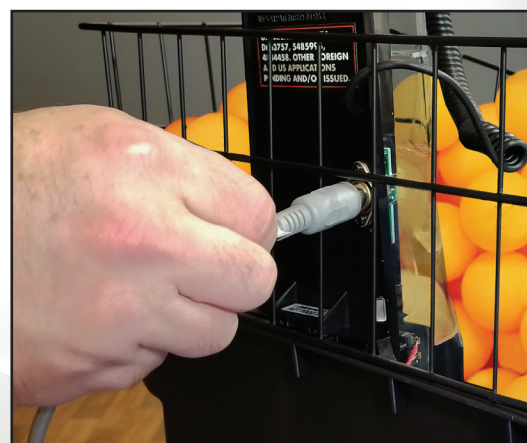
Loosen the Brass Knob on the right side of the robot (as you're facing it), and angle the head down as far as possible and then re-tighten. Verify that the word "topspin" is at the top of the ball discharge hole.



4

Connect Cable To Robot

Plug one end of the Connector Cable into the 5-Pin Connector on the back of the robot as shown.



5

Position Robot On Table

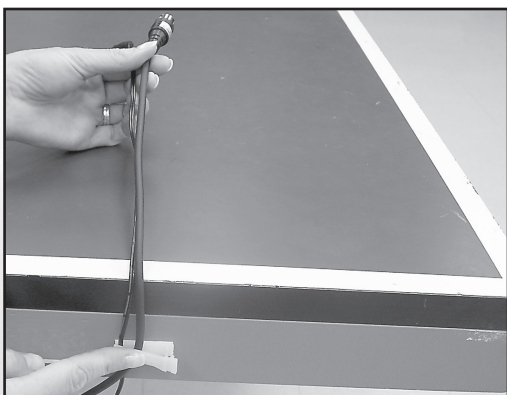
Position the robot in the center of the table close to the endline as shown. The robot's head should be in line with the centerline of the table.



6

Attach Cable Clip To Table

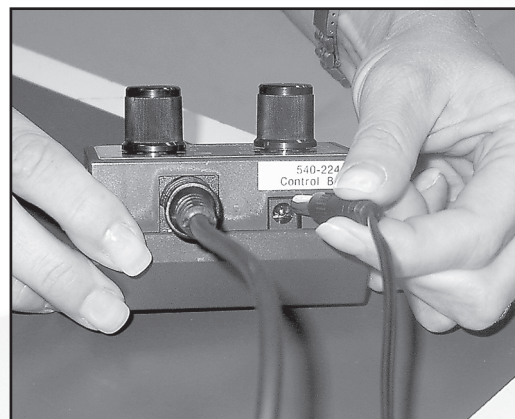
Bring the free end of Connector Cable to the player's end of the table. Remove the protective backing from the bottom of the Cable Clip. Press it onto the side of the table about 12 inches from the end in a horizontal position. If you're right-handed, place it on the left side of the table. If you're left-handed, place it on the right side of the table. Open the clip and place the Connector Cable and the Transformer's cord inside the clip so approximately 12 inches of cable are free. Close the clip. Plug the Transformer into a suitable electric power source as printed on top of the Transformer.



7

Connect Cables To Control Box

Plug the Connector Cable into the 5-pin socket on the rear of the Control Box. Then insert the Transformer's pin into the adjacent Power Jack. Position the Control Box at the corner of the table.



8

Get Ready To Play!

With your paddle in your playing hand, turn the Ball Speed knob to 2-3 and the Ball Frequency knob to 4-5. It takes about 30 seconds for the balls to load up before the first one is delivered.

For questions or troubleshooting, refer to this robot's Owner's Manual at www.newgy.com.

OPERATION OF YOUR ROBOT

Your robot is extremely versatile and fully adjustable to suit a wide variety of playing abilities and styles. Ball speed, frequency, spin, trajectory, and placement can all be adjusted, as well as oscillator speed and range. The following section will explain the various controls and adjustments of your robot.

CONTROL BOX

The robot's motors are controlled electronically by the Control Box. Figures 2A and 2B illustrate the functions and controls for the 545.

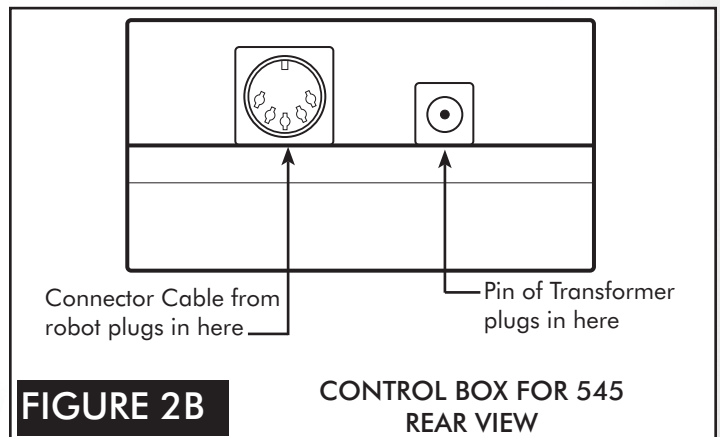
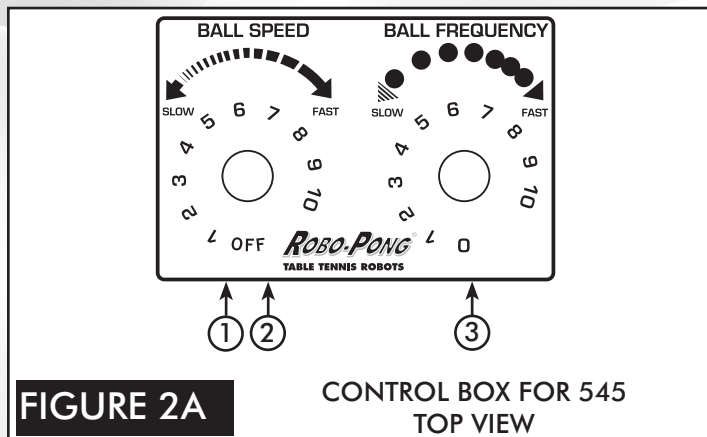
1. **POWER**—Used to turn the robot "ON" or "OFF".
2. **BALL SPEED**—Regulates the ball speed and spin. Higher settings increase the amount of spin and forward speed on the ball. On the 545, this control also functions as the on/off switch.
3. **BALL FREQUENCY**—Regulates the time between shots. Lower settings increase the time between shots.

Higher settings decrease time between shots. Lowest setting at which balls will come out is approximately 2. At a setting of 10, the robot delivers approximately 60 balls per minute for the 545.

545 AIM FUNCTION

The Newgy Robo-Pong 545 incorporates the AIM function, where the head of the 545 robot can be adjusted to one of three positions, Left, Center or Right. This is especially useful when using the 545 in a stationary holder such as the Newgy Versa-Net™ or Newgy Robo-Caddy™.

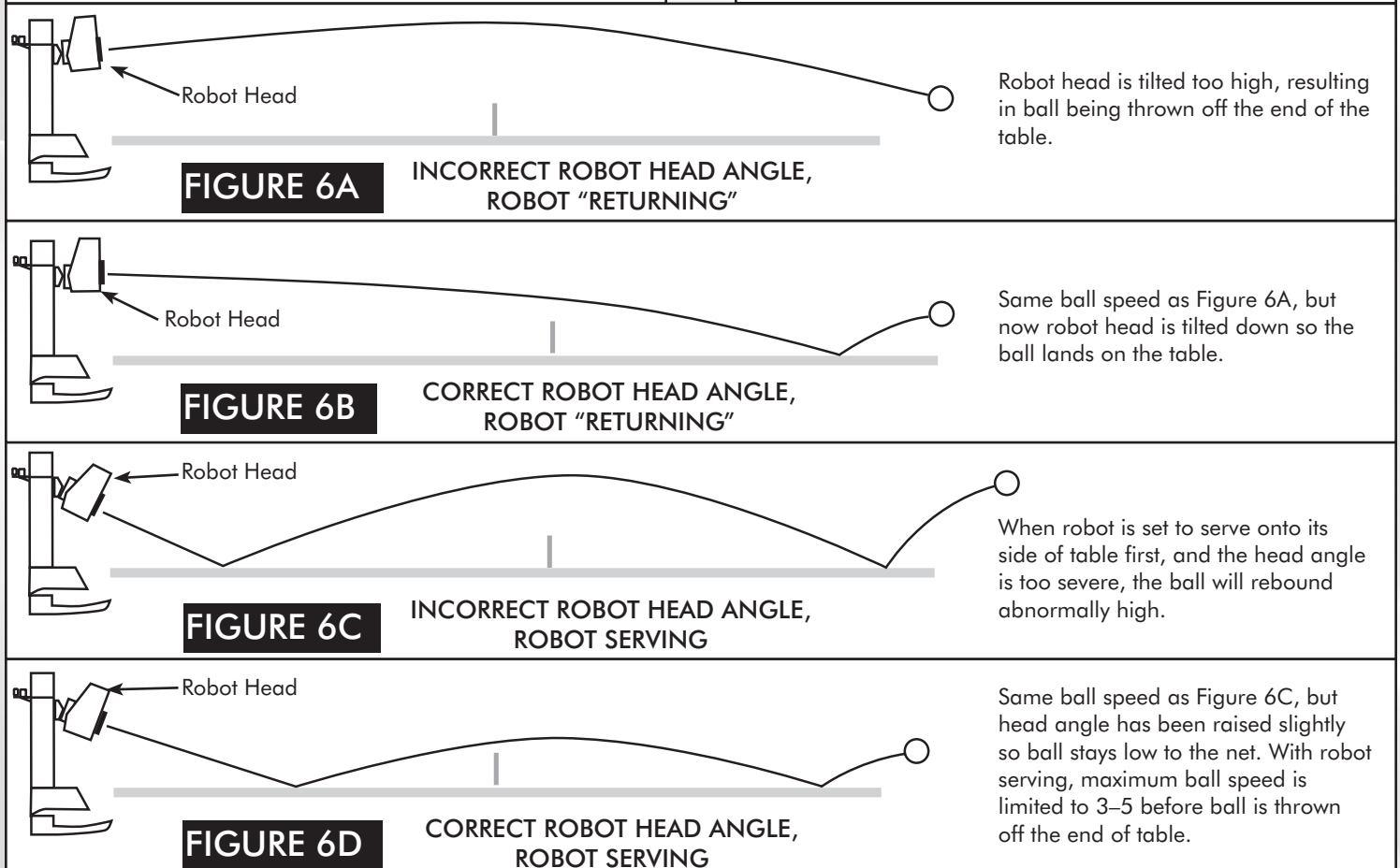
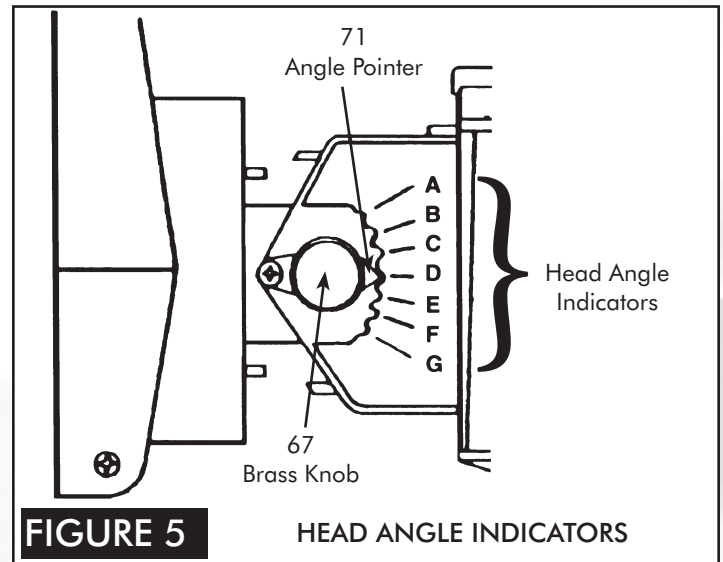
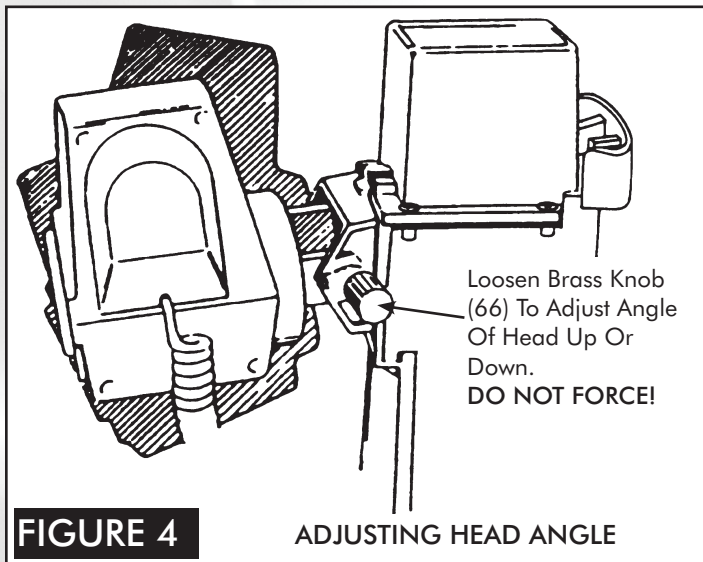
To adjust the head direction of your 545, hold the robot body firmly with one hand while adjusting the robot head horizontally to the Left, Center or Right positions. Make sure that the robot head position stops in one of the three detents. Do not use the AIM function between detent positions.



BALL TRAJECTORY

The trajectory of a ball is regulated by adjusting the angle of the robot head. The angle can be changed from low to high. At its lowest setting, the ball will be delivered so it first strikes the robot's side of the table, bounces over the net, and lands on the player's side of the table (just like a serve). At its highest setting, the ball will be delivered in a high arc over the net (like a lob return).

The trajectory is adjusted by loosening the Brass Knob on the right side of the robot head, tilting the head to the desired angle and then re-tightening the Brass Knob. For reference, there are head angle indicators next to the Brass Knob.



BALL SPIN

Robo-Pong robots are capable of putting any type of spin on the ball. Topspin, backspin, sidespin, and even combination spins can easily be selected. To change the spin, simply rotate the head of the robot until the desired spin is at the top of the Ball Discharge Hole (see Figure 7).

For combination spins, move the head until one of the rotational arrows is at the top of the Ball Discharge Hole. For instance, if the arrow between Topspin and Sidespin is selected, the robot will deliver a ball containing both topspin and sidespin. Likewise, if the arrow between Backspin and Sidespin is selected, the robot will deliver a combination backspin/sidespin ball.

Before discussing how to return spins, it's important to know that your robot simulates the play of a modern table tennis professional using inverted sponge rubber. With Robo-Pong robots, there is always some kind of spin on the ball. To learn how to produce your own spin and return an opponent's (or the robot's) spin, it is important to use the correct equipment—a quality inverted or pips out sponge rubber racket. Using old-style paddles such as hard rubber or sandpaper will make it more difficult to control spin.

Each spin has a different effect on the ball and how the ball reacts when you strike it with your paddle. Following are some brief pointers to help you return the different spins.

The secret to returning spin is to angle your paddle correctly when contacting the ball. Any spin can easily be returned if you angle your paddle properly. Set your paddle angle at the beginning of your stroke and maintain the same angle until your stroke ends. Avoid changing your paddle angle during your stroke. (See Figure 8.)

Topspin causes the ball to dip downward as it travels through the air. When you strike the ball with your paddle,

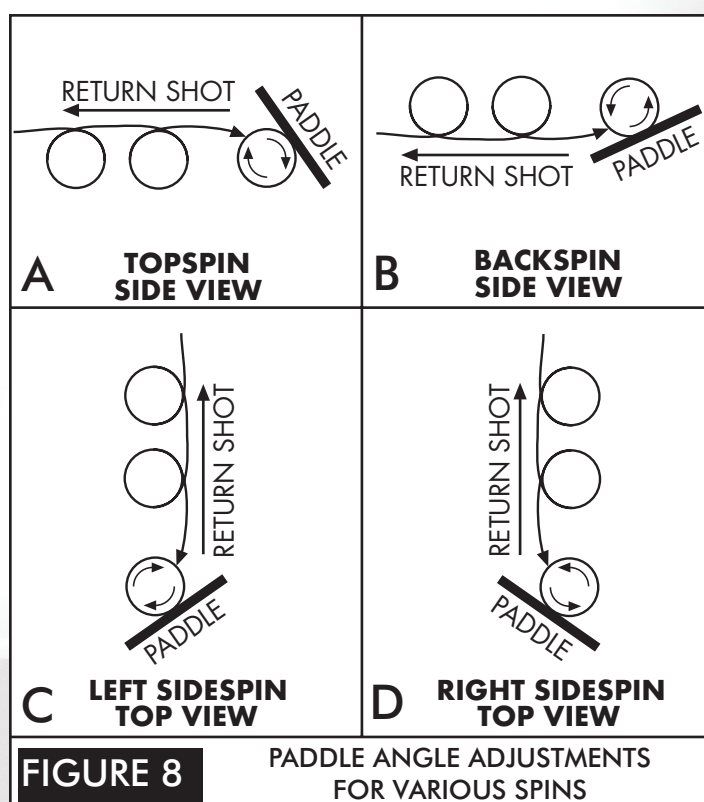
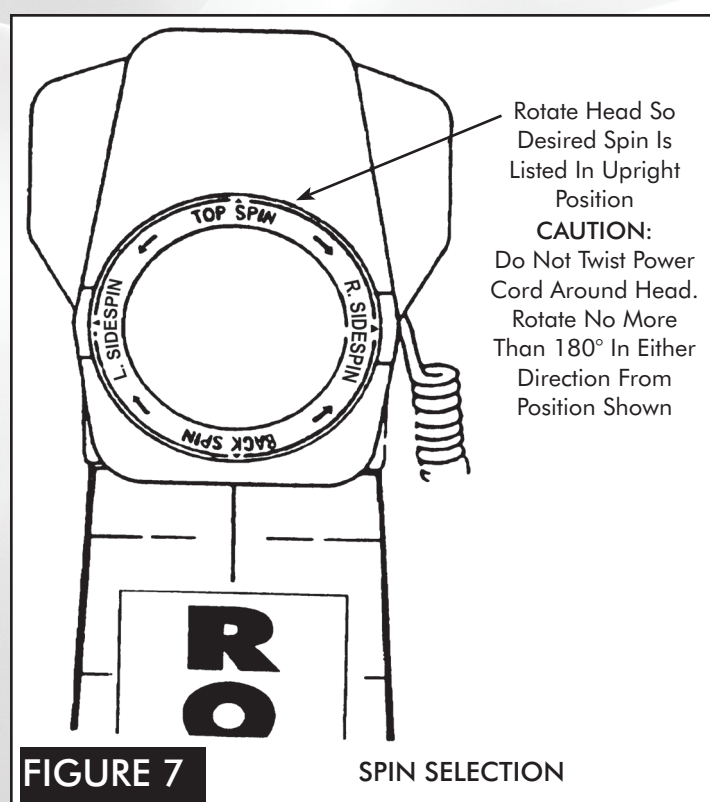
it has a tendency to pop up high in the air. To compensate for topspin, angle your paddle face down as you stroke through the ball in a forward and upward direction. Contact the top surface of the ball. (See Figure 8A.)

Backspin causes the ball to rise upward and float as it travels through the air. When you strike the ball with your paddle, it has a tendency to go straight down into the table. To compensate for backspin, angle your paddle face upward as you push your paddle straight forward. Contact the bottom surface of the ball. (See Figure 8B.)

Sidespin makes the ball curve sideways through the air. Left sidespin makes the ball rebound off your paddle to your right; right sidespin to the left. To compensate for left sidespin, angle the paddle face to the left and contact the right side of the ball. To compensate for right sidespin, angle your paddle face to the right and contact the left surface of the ball. (See Figures 8C & 8D.)

Combination spins take on the characteristics of both spins, although to a lesser degree than the pure spins. To compensate for topspin/right sidespin, you must angle your paddle face down *and* to the right and contact the top left surface of the ball. Likewise, a backspin/left sidespin ball is best returned by angling your paddle face up *and* to the left and contacting the ball on its bottom right surface.

Spins are increased by turning up the Ball Speed knob on the Control Box. You increase both the speed and spin on the ball every time you turn up the Ball Speed knob. It is not possible to adjust Robo-Pong robots to deliver a slow ball with lots of spin, for instance. It is also impossible for Robo-Pong robots to deliver a no-spin ball. Additionally, since backspin causes the ball to rise, the maximum setting for Ball Speed when the robot is set on Backspin is approximately 4-5.



REMOVING ALL BALLS FROM THE SYSTEM

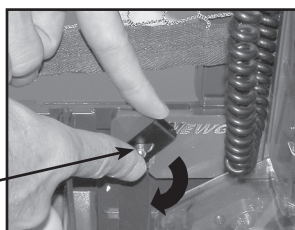
1 REMOVE BALLS FROM TRAY OR BUCKET

First, remove all balls from the Bucket and place them in a box where they will not get mixed in with balls of the other size. Then disconnect the Connector Cable from the back of the robot.



2 LOOSEN WING NUTS

Loosen the two Wing Nuts that hold your robot body onto the Ball Bucket or Center Trough. Rotate the black, rectangular Clip Washers 180°.



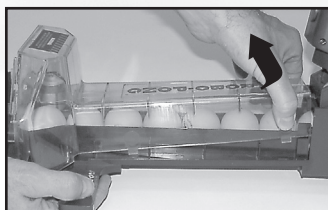
3 REMOVE ROBOT BODY

Pull straight up on the robot body to remove it from the Ball Bucket.

3

4 REMOVE CLEAR FRONT COVER

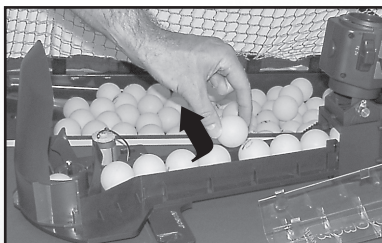
Place the robot body on your table. Pull the Clear Front Cover off by squeezing on the circular fingerholds on the sides of the cover with your thumb and forefinger, and then pulling up while squeezing. Pull the cover loose first at the top and then at the bottom.



5

5 REMOVE BALLS FROM INSIDE ROBOT

Remove all balls from inside the robot and place in the box with the other balls of the same size. Also gather up any balls that are on the floor or lying around loose in the playing area and place them inside the box too.



6

REATTACH ROBOT BODY

Reattach the Clear Front Cover (reverse of Step 6). Reattach the robot body, making sure that it fits fully down on the locating tab of the Ball Bucket. (See Figure 17, page 13.) Finally, re-tighten the Wing Nuts (reverse of Step 4).

7

FINAL PROCEDURES

Place balls of the other size in the Ball Bucket or Ball Trays. (Be sure to wash and dry new balls before using them for the first time.) Reconnect the Connector Cable (see Figure 17, page 13). Turn power back on and you're ready to play.

POSITIONING YOUR ROBOT AND CONTROLS

Robo-Pong robots are versatile in how they are positioned in relation to the table. The 545 normally sits on top of the table as shown in robot positions 1–4 in Figure 15. It can also be mounted in the optional Newgy Versa-Net for position 5, or in the optional Newgy Robo-Caddy for positions 5 or 6.

Some positions offer certain advantages while other positions compromise some of the robot's functions. By placing the robot in various positions you can achieve a variety of angles and trajectories to simulate almost any type of shot you would encounter in a regular game. The following paragraphs explain this further.

Position 1—Robot positioned square to the table where the centerline and endline of the table meet. This is the desired starting position when first setting up the 545. In this position, the 545 will shoot straight down the centerline of the table. Using the AIM Function you can also adjust the ball trajectory to either the left detent position or the right detent position.

Position 2—Robot positioned at the far left corner and angled cross-court. The 545 in this position would deliver the ball towards the player's right corner. This position would be the preferred direction when simulating typical right-handers' forehand to forehand rallies.

Position 3—Robot positioned at the far right corner and angled cross-court. A 545 placed in this position would direct its shots to the player's left corner. Typical backhand to backhand play for right-handers would be ideally simulated with the robot in this position.

Position 4—A robot placed in this position has the advantage of offering slower and faster ball speeds because it is closer to the landing spot of the ball. At a Ball Speed setting of 2, the ball is very slow and with light spin, but is delivered deep on the player's end. At a Ball Speed setting of 10, the ball speed is very fast and simulates the angle from which a typical kill shot would be hit. However, the 1040+'s oscillator ranges are narrower than if the robot had been positioned at the endline like Positions 1–3.

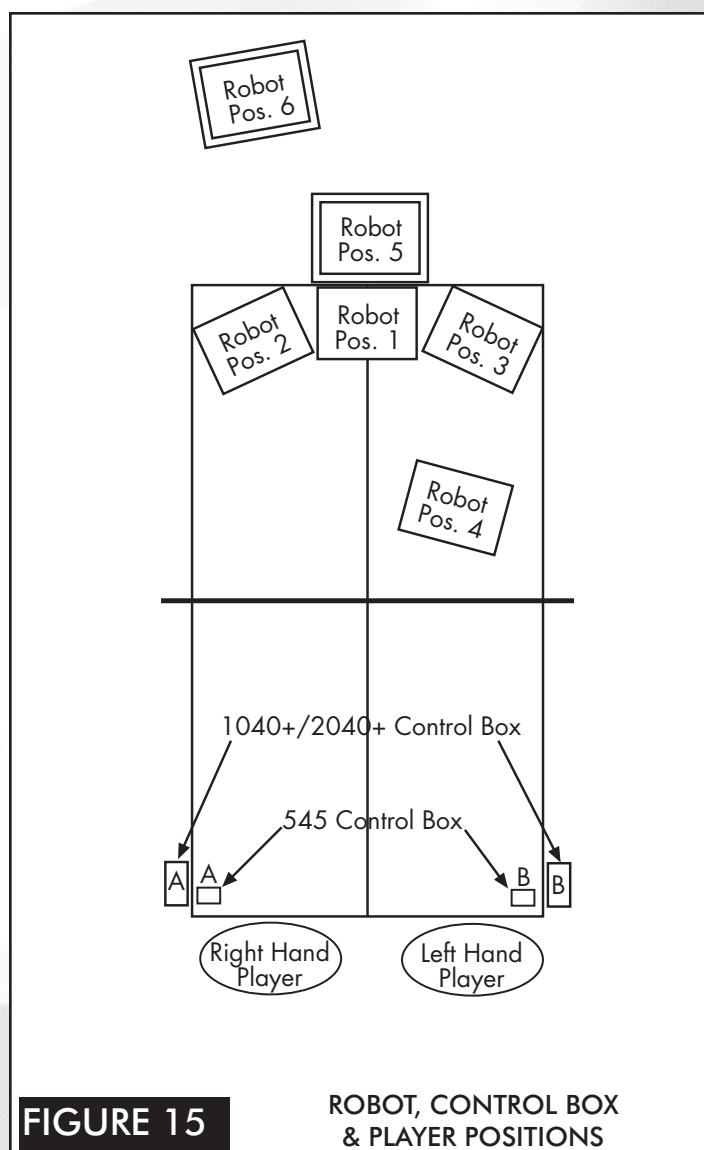
Position 5—The 545 would be mounted in a Versa-Net or a Robo-Caddy or similar holder.

Position 6—Mounted in a Robo-Caddy, the 545 can be freely moved around in back of the table. The Robo-Caddy also permits lowering or raising the height of the robot. This is great for simulating deep shots such as chops, lobs and loops. Additionally, you need to purchase a Connector Extension Cable (part# 2000-221) to extend the length of the Connector Cable from 10 to 20 feet. This permits the Control Box to stay within reach of the player.

These positions are only a few of the ones possible, but they will give you a good idea of the pluses and minuses of placing the robot in a particular position.

Figure 15 also illustrates the ideal positions for the Control Box. If you're right-handed, Position A is the preferred location for the controls. If you're left-handed, Position B is preferred. Locating the controls in these suggested positions permits the controls to stay within easy reach of the player's free hand.

Since a player has a longer reach on the forehand side, it is suggested that you position your body as shown. The overwhelming majority of tournament level players use their backhand to cover about one-third of the table and their forehand to cover the other two-thirds of the table.



IMPORTANT NOTICES

WARNING: These points are vital for proper use and care. Failure to heed these points may cause damage to the robot.

1. Before connecting your robot to power, be sure the transformer matches the power source in your area. Transformer specifications are printed on top of the transformer.
2. **Do not use petroleum based lubricants or solvents on the plastic parts of this product.** These chemicals are corrosive to the plastic and will result in structural failure of the plastic parts. Use of these chemicals will void your Warranty and /or Service Policy.
3. New balls cause many ball jams. Before using new balls, including those that came with your robot (if applicable), be sure to wash them in lukewarm, soapy water. After washing, dry all balls with a clean, dry cloth before putting them in the Ball Bucket. This removes the powder that is on the surface of the balls. This powder causes excess friction, making the robot run erratically until the powder is removed.

After putting them in the Ball Bucket or Ball Trays, run the balls through the machine **at high frequency** by setting the Ball Frequency to 10, the Ball Speed to 3, the spin to "backspin", and aim the head at the middle of the table net. The balls will hit the table net, rebound, and automatically return into the net system (for robots with net systems).

For robots mounted in Ball Buckets, catch these balls by hand or in a tray or box, and return them to the Ball Bucket. This procedure will further "rub the balls down". Continue this rub down procedure for about 15 minutes, then return to normal operation.

4. Use only Newgy Robo-Balls™ or ITTF approved 2-star or better 40+ mm balls. Do not mix
5. Store unit indoors only. Do not leave the robot or Control Box outdoors. Avoid leaving unit in a hot car or trunk. Plastic parts can warp, crack, or melt if exposed to extreme temperatures. Do not use robot around sand. Sand will abrade plastic surfaces.
6. Do not use sandpaper paddles with your robot. Sand can loosen from the paddle and end up inside the robot where it can abrade plastic surfaces and cause ball jams and other problems.

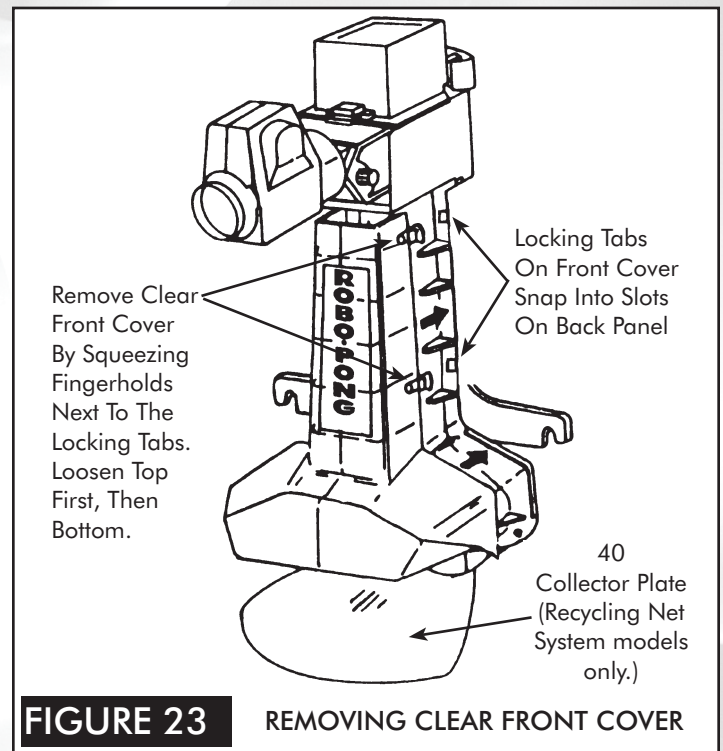


FIGURE 23

REMOVING CLEAR FRONT COVER

MAINTENANCE STEPS & TRANSFORMER SPECS

Robo-Pong robots are easy to maintain. The only maintenance that our robots require is an occasional cleaning. The Ball Discharge Wheel and Friction Block are especially prone to dirt build-up. Periodically inspect these parts and clean with Rubber Drive Cleaner and a cloth. One indicator that these parts are dirty is erratic delivery—balls are occasionally ejected sideways, down into the net, or popped up.

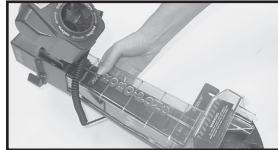
It's possible to clean these parts without disassembling the robot head. The following steps show how it is done using the Rubber Drive Cleaner and a cloth. This cleaner is terrific for removing dirt from rubber surfaces and restores the natural grip to these parts. If your fingers are too large to clean these parts through the discharge hole, you will need to disassemble the robot head.

To reduce the amount of dirt that enters your machine, keep the table, balls, and playing area clean. Dust, pet hairs, carpet fibers, and other fibrous material can wrap around the drive pin and literally "strangle" the Ball Speed Motor to stop it from functioning. When wiping off the outside of your robot, use a damp cloth. **Do not use any petroleum based solvent, cleaner, or lubricant as these chemicals are corrosive to the plastic. Be careful not to get water on the motors, Control Box, or the 5 Pin Connector.**

REMOVE ROBOT BODY

1

First, remove the robot body from the Ball Bucket. Then lay it on a flat work surface.

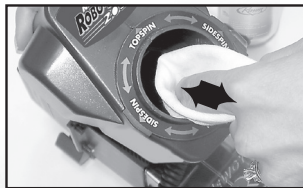


CLEAN FRICTION BLOCK

2

Make sure the word "Topspin" is at the top of the discharge hole. Wet your cloth with a small amount of Rubber

Drive Cleaner. Insert the wet cloth into the discharge hole with your index finger and rub it forcefully over the curved rubber surface of the Friction Block. Using a dry section of the cloth, wipe the Friction Block lightly to remove any remaining dirt and dry it off.



CLEAN DISCHARGE WHEEL

3

Rotate the head so the word "Backspin" is at the top of the discharge hole. To clean the Discharge Wheel, you must insert two fingers into the discharge hole. Wet a clean section of the cloth with the cleaner. Insert one finger into the hole to hold the side of the wheel and keep it from turning. Now, insert the wet cloth with your other finger and forcefully rub the rubber surface of the wheel. After you clean the initial exposed section of the wheel, rotate the wheel a little with your first finger to expose the next section of wheel for cleaning. Keep cleaning a small section of wheel at a time until you've cleaned the entire wheel. Then use a dry section of cloth to lightly dry off the wheel. Lastly reattach the robot body by reversing Step 1.



Country & Part #	Input Specs	Output Specs	Pin Shape
USA 545-222	120VAC, 60Hz	12VDC 600mA	
Europe 545-232	230VAC 50Hz	12VDC 600mA	
Australia 545-238	230VAC 50Hz	12VDC 600mA	
Japan 545-234	100VAC 50Hz	12VDC 600mA	
China 545-235	220VAC 50Hz	12VDC 600mA	

*Additional adapter (2000-233) required for UK and other British Commonwealth countries.

CHART A

545 TRANSFORMER SPECIFICATIONS

Countries/Areas	Part #	Pins
N. & S. America, Japan, Taiwan, China, India, Iran	2050-223B-US	
Europe, Africa, Korea, Russia, Middle East, S. America	2050-223B-EU	
British Isles, Hong Kong, India, Nigeria, Middle East	2050-223B-UK	
Australia, South Pacific, New Zealand, Argentina	2050-223B-AUS	

CHART B

TRANSFORMER SOCKET ADAPTERS

TROUBLESHOOTING GUIDE

- NOTES:**
1. There are no adjustments to any part, so if a faulty or worn part causes the robot to malfunction, replace that
 2. If the suggestions below do not help, please consult the troubleshooting section of our website at www.newgy.com. It is updated periodically and will be more current than the information given below.
 3. The following solutions will apply to all models of Newgy Robots, except if marked with the following footnotes:
⁵Robo-Pong 545 only.

NO POWER PROBLEMS

1. PROBLEM

No robot functions work.

SOLUTIONS

- A. Make sure transformer is plugged securely into a power outlet. Verify there is power in the outlet. Check that transformer input (on top of transformer) matches local electrical specifications.
- B. Check that the pin of the transformer cord is plugged securely into the Power Jack of the Control Box.
- C. Transformer is defective.
- D. If Control Box has been knocked off the table, a break may have been created on the circuit board.

2. PROBLEM

No robot functions work or only work intermittently.

SOLUTIONS

- A. Make sure Connector Cable is securely plugged in at both ends.
- E. Defective Connector Cable. See Solution 14A.

BALL FEED/FREQUENCY PROBLEMS

3. PROBLEM

Robot will not pick up balls.

SOLUTIONS

- A. Ball jam. See Problem 18.
- B. Ball Feed Motor is not running. See Problem 14.
- C. Ball Feed Motor runs backward. See Problem 13.
- D. Ball Feed transfer gears and/or Main Gear are damaged or assembled incorrectly. Replace gears with stripped teeth or other damage.
- E. Pickup fingers are broken or loose. If loose, tighten; if broken, replace.
- F. If problem occurs only at low ball frequency, spray inside Ball Feed Motor with tuner lubricant/cleaner.
- G. Ball Feed Main Gear is frozen to shaft of BF Mounting Plate. Replace gear and plate.

BALL SPEED/DISCHARGE PROBLEMS

4. PROBLEM

Ball speed seems to be slower than when new.

SOLUTIONS

- A. Incorrect Transformer.
- B. Hair or fibers are entwined around drive pin of Ball Speed Motor. Remove Ball Discharge Wheel and inspect at base of brass shaft on the motor. Clean, if necessary.
- C. The brass shaft on the Ball Speed Motor is loose. The Ball Discharge Wheel is screwed onto this shaft and

then the shaft is permanently pressed onto the motor's drive pin. It cannot be reattached. Replace the motor. Test by holding the rubber wheel with a finger and then turn power on and adjust Ball Speed to 10. If you hear the motor spinning while you are holding the wheel stationary, then the brass shaft is loose. If the motor does not spin, then shaft is securely fastened.

- D. Ball Discharge Wheel and/or Friction Block are worn. Replace both parts.
- E. Ball Speed Motor needs lubricating. Spray inside motor with an electrical contact cleaner/lubricant.
- F. Friction Block (FB) has excessive wear. Replace FB if necessary.
- G. Potentiometer, Voltage Regulator, and/or Bridge Rectifier inside the Control Box are bad. Replace.^{1,2}
- H. Balls are too small. Check with Ball Dam.

5. PROBLEM

Robot picks up balls, but balls just fall out of discharge opening instead of shooting out.

SOLUTIONS

- A. Use only 40+ balls.
- B. Ball Speed Motor is not running. See Problem 14.
- C. Friction Block is missing or not functioning properly.
- D. Ball Discharge Wheel has come off. Reattach.
- E. Ball Speed Motor is running backwards. See Problem 13.
- F. Balls are too small. Check with Ball Dam.

6. PROBLEM

Robot shoots erratically. Some balls delivered high, others low or off to the side or ball speed changes without the Ball Speed knob being turned.

SOLUTIONS

- A. Friction Block is dirty, worn or defective. If dirty, clean; otherwise, replace.
- B. Ball Discharge Wheel is dirty, worn, out of round, cracked, or loose. If loose, tighten; if dirty, clean; otherwise, replace.
- C. Ball Speed Motor mounting screws are loose. Tighten.
- D. Ball Discharge Spring is defective. See Solution 18F.

7. PROBLEM

Robot shoots more than one ball at a time.

SOLUTIONS

- A. Ball Discharge Spring has come off or is damaged. Replace.
- B. Using new, dirty, low quality, or oversized balls. Wash and dry new or dirty balls. After washing new balls, be sure to use rub down procedure. Check balls with a Ball Dam to be sure they are the correct size and roundness.

GENERAL MOTOR PROBLEMS

13. PROBLEM

Ball Speed Motor or Ball Feed Motor runs backward.

SOLUTION

- A. The 5 Pin Connector is incorrectly wired or the motor connections are reversed.

14. PROBLEM

One or two motors don't run.

SOLUTIONS

- A. One or more wires inside the Connector Cable are broken. Examine the cable by plugging it in and turning on the power. Adjust knob controlling the inoperative motor to 10, other knobs to 0. Then twist, turn, push, and pull a small section of cable at a time trying to get the broken wires inside the cable to make contact with one another. If the inoperative motor suddenly starts running, you have found the break. Also cable can be checked with a voltmeter. Replace.
- B. Check the 5-Pin Connector to see if two of the terminals are touching or if a wire is not soldered securely to its terminal. If so, carefully bend the terminals apart to keep them from touching or resolder the connection.
- C. A wire to the problem motor is unattached. Reattach.
- D. Wires attached to motor are shorting each other out. Bend terminals apart so wires don't touch each other.
- E. If the problem is the Ball Feed, check the nylon transfer gears connected to the motor for obstructions or wear. Clean and relubricate **sparingly** with a light grease. Replace any gears with worn teeth.
- F. Motor is "frozen" (especially likely if robot has not been used for awhile or is stored in a damp or humid environment). Turn knob controlling the inoperative motor to 10. Give the steel gear or rubber wheel at the end of the motor a turn with your fingers. If the motor was frozen, motor will start spinning. Lubricate motor with an electrical contact cleaner/lubricant.
- G. Motor is defective. The motor can be tested by touching the motor terminals with the posts of a 9-volt battery. Before testing, disconnect any gears that are connected in sequence to the motor. If the motor does not run from battery power, it must be replaced.
- H. The Voltage Regulator and/or the Potentiometer inside the Control Box that governs the inoperative motor has gone bad.
- I. If none of the above solutions work, the problem is likely a short or bad component inside the Control Box. Replace or send in for repair.

15. PROBLEM

A motor runs, but does not change speed when the knob on the Control Box is turned.

SOLUTIONS

- A. If all motors run at top speed, See Solution 14H.

16. PROBLEM

Turning a knob on the Control Box affects a motor other than the one the knob normally controls.

SOLUTIONS

- A. See Solutions 14A & 14B.

17. PROBLEM

All motors run slow.

SOLUTIONS

- A. Be sure you are using the correct transformer.
- B. Control Box is bad. Replace.^{1,2}

BALL JAMS

18. PROBLEM

Balls jam inside the machine.

SOLUTIONS

- A. See Solution 6A.
- B. Using new or very dirty balls. The tacky finish on new balls or the dirt on dirty balls creates excess friction as the balls move through the robot. As the finish wears off or the dirt is removed, there is less friction created.
- C. Oversize, irregular, or out-of-round balls. Check the balls using the ball checker holes in the Ball Dams². Discard any balls that do not pass easily through this gauge. Avoid any balls that have a rough seam even if they pass the ball gauge test. See page 11.
- D. Dented or cracked balls. Anytime balls jam, check to be sure none of them get dented or cracked; otherwise, those balls can cause additional jams. Ball denting may also be caused by build-up of dirt on the Friction Block and/or Ball Discharge Wheel. Periodically inspect these parts.
- E. Foreign objects or loose parts in the ball feed path. Remove the Clear Front Cover and inspect for objects that are preventing the Ball Pickup Wheel from turning or balls from sliding up the ball channel. Also check inside the robot head. Reattach any loose parts or remove any foreign objects.
- F. Worn or defective Ball Discharge Spring. Open the robot head and inspect the **back** surface of the Ball Discharge Spring for wear. Replace if any flat shiny surface is found or the spring is otherwise defective. This spring should be completely round with no flat spots.
- G. Ball Speed Motor runs backward. See Problem 13.
- H. Restricted ball feed channel. Occasionally the walls of the ball feed channel may warp inward enough to keep balls from moving easily upward. Remove the Front Cover and while holding a known good ball (as tested per Figure 14, 1) slide the ball up and down the ball feed channel to verify that it does not hang up. If it does, it is possible to warm the walls with a hair dryer and carefully bend the walls apart at the restricted area to increase the clearance.
- I. Short inside Connector Cable. Replace Connector Cable.
- J. See Solutions 3E, 3F, and 3G.

EXPLODED VIEWS, DISASSEMBLY, AND REPAIR

- NOTES:**
1. Refer to the following drawings when disassembling or assembling the robot. The key numbers used to identify the parts correspond to the key numbers on the Parts List.
 2. There are no adjustments to any robot parts. If there is a faulty or worn part that causes the robot to malfunction, that part must be replaced. Your robot is designed to be easily serviced and repaired.
 3. Use grease sparingly on the gear trains connected to a motor since excess grease will get on other parts of the robot and the balls, and will attract dirt to the gears, causing clogs.

FIGURE A

TESTING BALL FEED
CHANNEL FOR
RESTRICTIONS

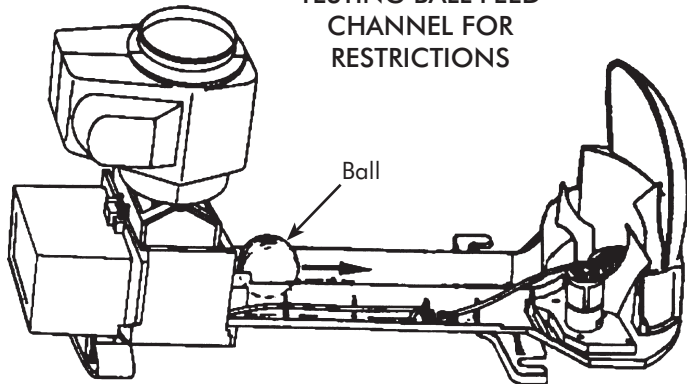


FIGURE B

OSCILLATOR
GEARS & MOTOR
ASSEMBLY
(1040/2040
ONLY)

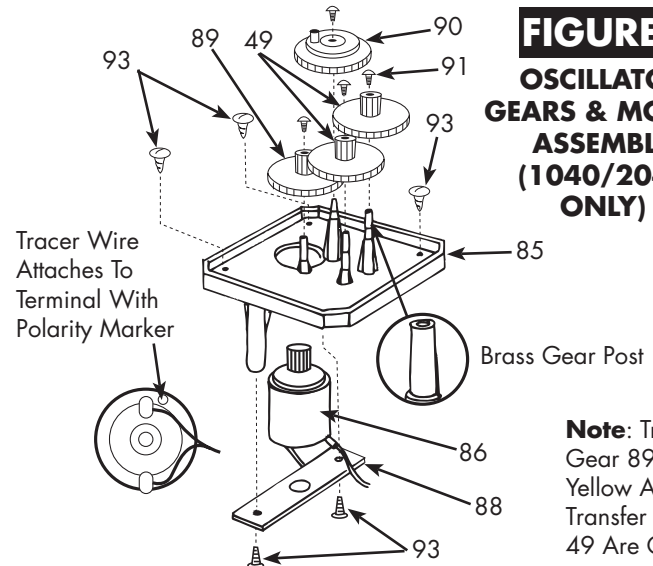


FIGURE C

OSCILLATOR
MECHANISM
TO HOUSING

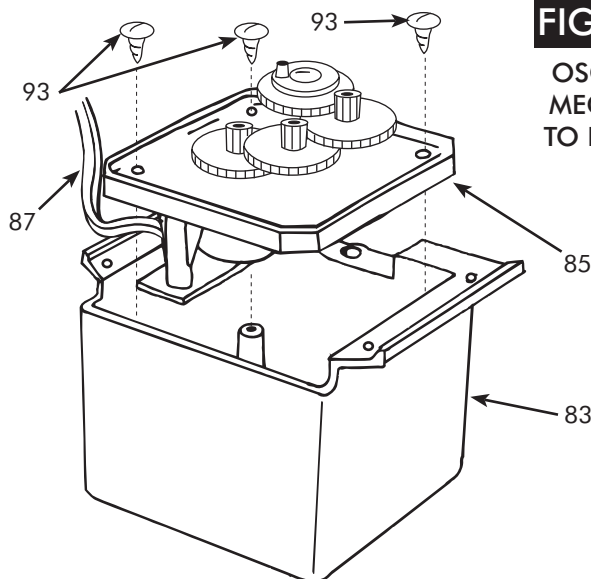


FIGURE D

BALL SPEED
MOTOR & WHEEL
TO HOUSING

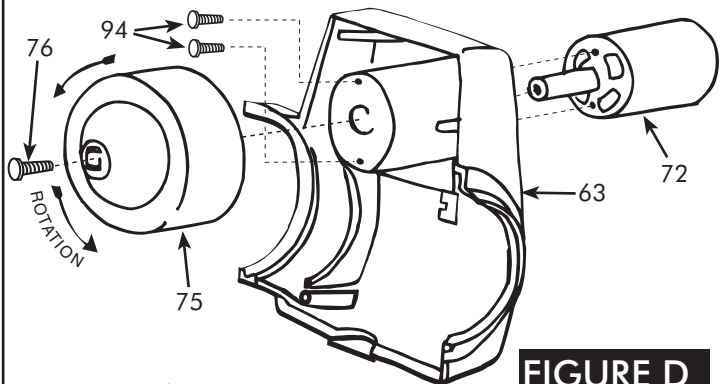


FIGURE E

ROBOT HEAD ASSEMBLY

1. When disassembling the robot head, do not let the Detent Pin (65) fall out of the Left Housing (61) since it's small and easy to lose! Work atop a towel to prevent loss of parts.
2. A small amount of Superglue® (cyanoacrylate) holds the Ball Discharge Spring (60) onto the Discharge Tube (58). Scrape off old glue before replacing the spring.
3. Keep Friction Block (77) and Discharge Wheel (75, Figure D) clean for correct ball speeds. See page 20 for cleaning procedure.

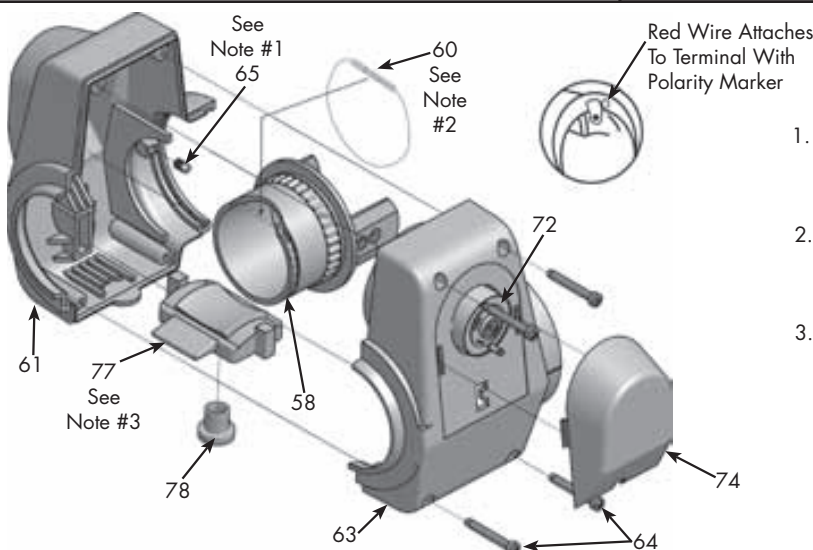


FIGURE F

ROBOT HEAD TO PIVOT GUIDE

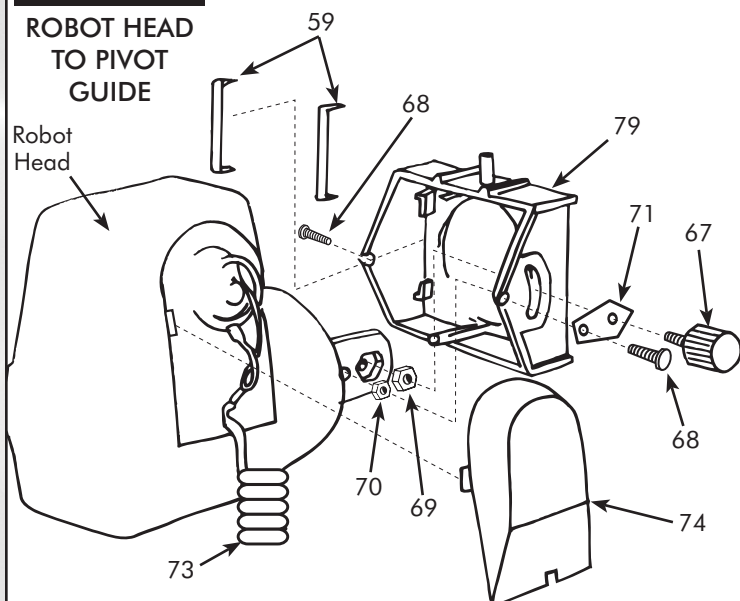


FIGURE G

OSCILLATOR COVER TO UPPER GUIDE

When attaching the Oscillator Motor Cover (83) to the robot, move the Oscillator Control Levers (81 & 82) to positions 1 and 6 (see page 9). This makes it easier for the oscillator drive shaft to fit between the levers.

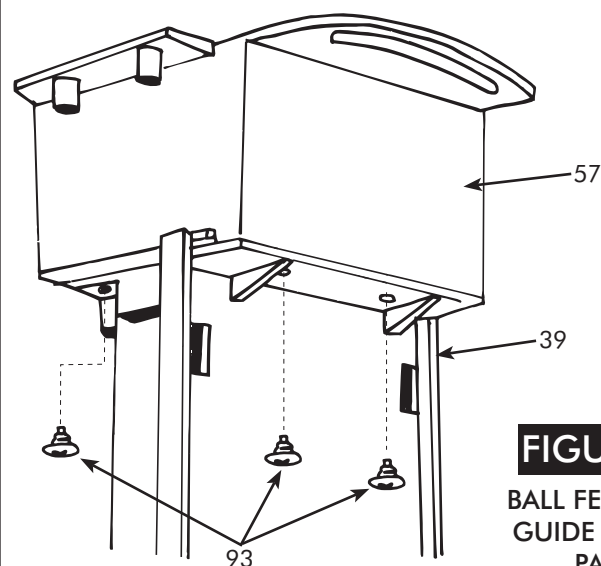
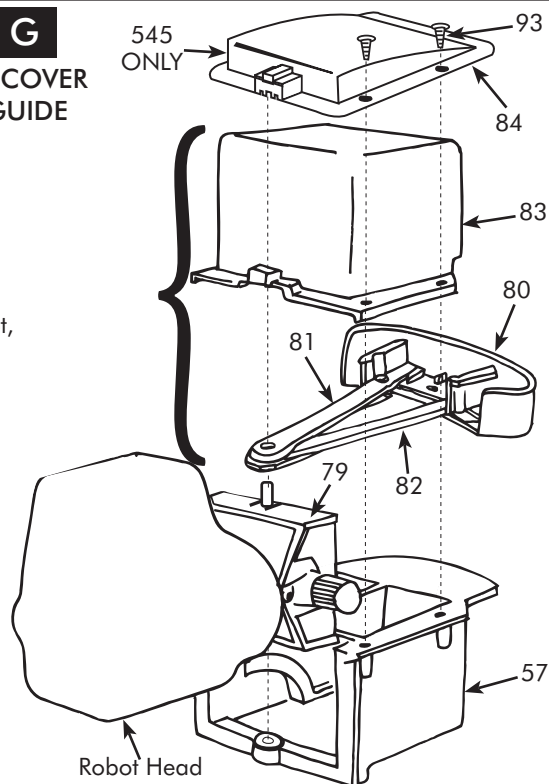


FIGURE H

BALL FEED UPPER GUIDE TO BACK PANEL

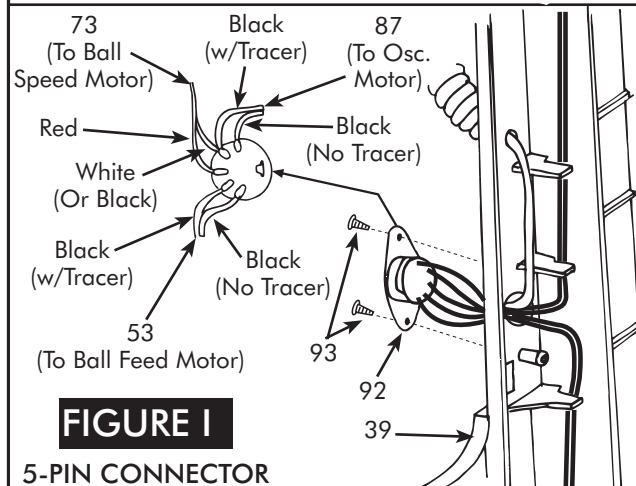
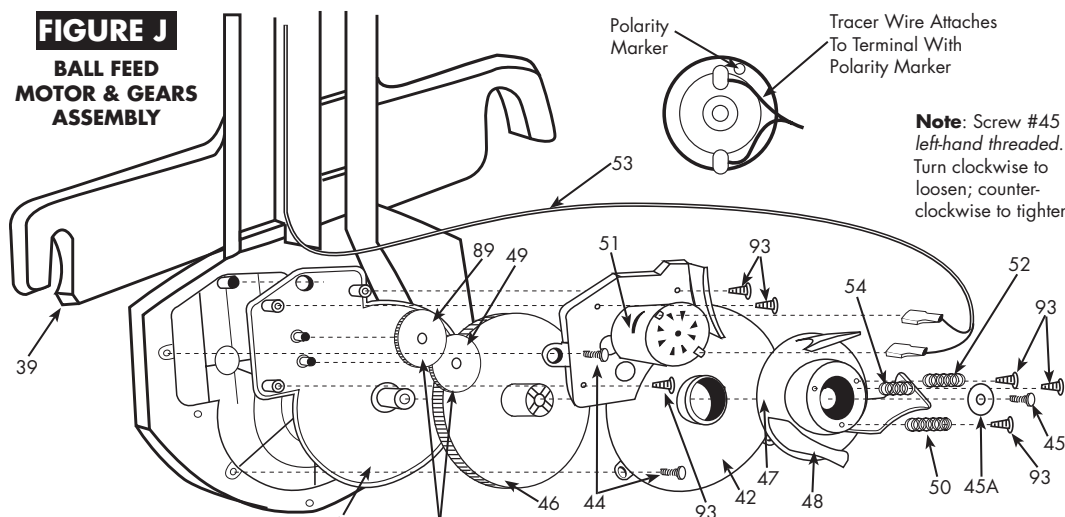


FIGURE I

5-PIN CONNECTOR

FIGURE J

BALL FEED MOTOR & GEARS ASSEMBLY



Yellow transfer gear (89) is closest to pinion gear of the Ball Feed Motor (51) and green transfer gear (49) is closest to Main Gear (46). When replacing any plastic gear, be sure to lubricate the gear and gear post with silicone grease to reduce gear noise. Do not use petroleum based lubes or sprays as those chemicals are corrosive to the ABS plastic parts.

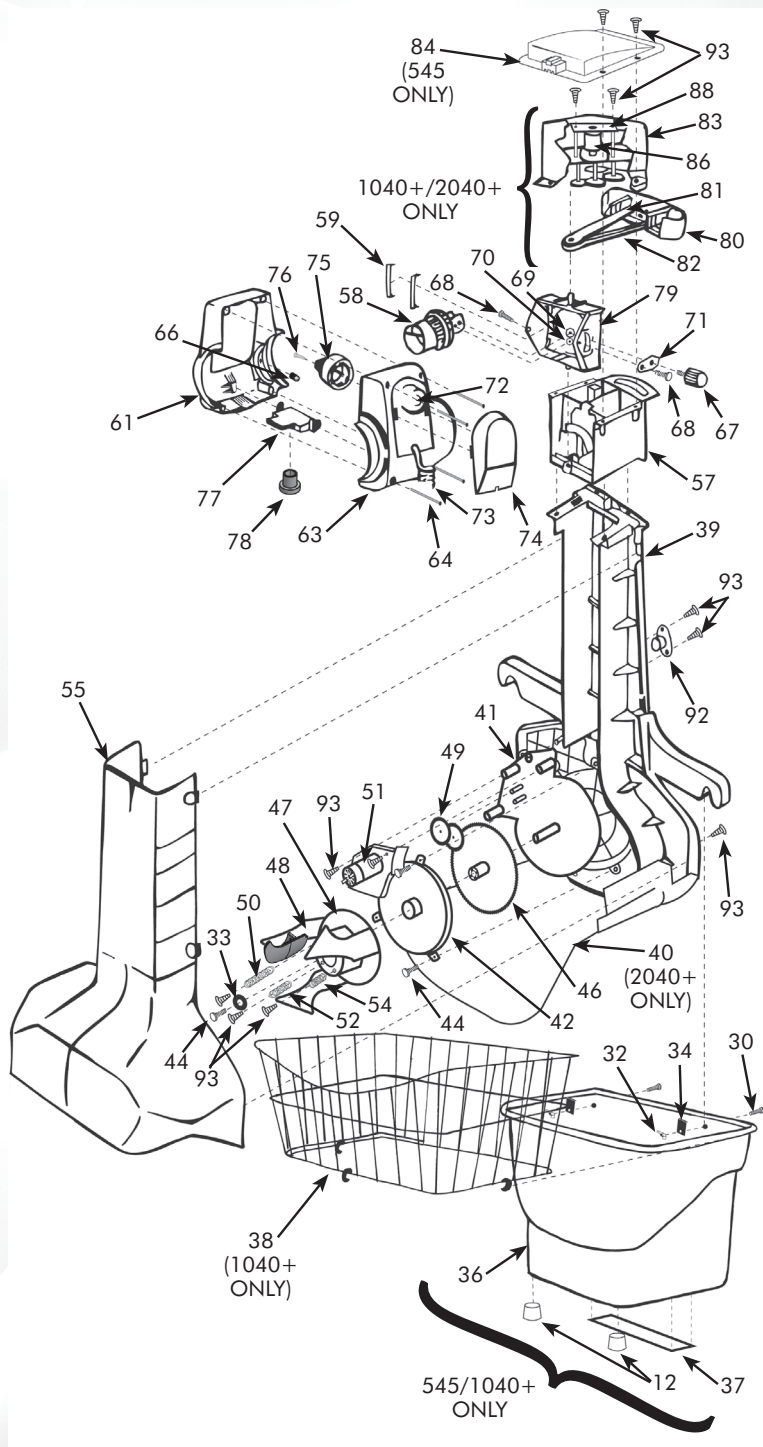
Note: Screw #45 is left-hand threaded. Turn clockwise to loosen; counter-clockwise to tighten.

PARTS LIST FOR ROBOT BODY ASSEMBLY/BALL BUCKET

Key#	Part #	Item	Qty.
36	1040-100A	Ball Bucket ^{1,5}	1
37	1040-101	Ball Bucket Pad ^{1,5}	1
38	1040-105	Bucket Extender ¹	1
39	2040-142A	Ball Feed Back Panel, 40+mm	1
40	2000-144B	BF Collector Plate ²	1
41	2000-145	BF Mounting Plate	1
42	2040-147A	BF Top Cap, 40+mm	1
43	2040-147-1	BF Top Cap Plug (not shown)	1
44	2000-318	BF #4 x 5/16" Machine Screw	5
45	Obsolete part—use Part #44.		
46	2000-149A	BF Main Gear	1
47	2040-151C	BF Pickup Wheel, 40mm	1
48	2040-153A	BF Pickup Finger, 40mm	3
49	2000-155A	BF Transfer Gear	2
50	2040-157A	BF Spring, Long	1
51	2000-158	BF Motor w/Gear	1
52	2040-159A	BF Spring, Medium	1
53	2000-160A	BF Power Wire (Figs. J & I, pg. 25)	1
54	2040-161B	BF Spring, Short	1
55	2040-162A	BF Clear Front Cover, 40mm	1
57	2040-164B	BF Upper Guide, 40+mm	1
58	2040-166A	BF Discharge Tube, 40mm	1
59	2000-168	BF Discharge Tube Brake	2
60	2000-170A	BF Discharge Spring (Fig. E, pg. 24)	1
61	2050-173	Robot Head Housing, L, 40mm	1
63	2050-174	RH Housing, R, 40mm	1
64	2000-320	RH #8 x 1 3/16" Machine Screw	4
66	2050-177	Detent Pin	1
67	2040-180	RH Angle Adjustment Knob, 40mm	1
68	2040-321	RH Pivot Screw	2
69	2000-322	RH Angle Adjustment Knob Nut	1
70	2040+-323	RH Pivot Screw Nut	2
71	2000-182	RH Angle Pointer	1
72	2000-184	Ball Speed Motor w/Brass Shaft	1
73	2000-186B	BS Coiled Power Wire	1
74	2000-188	BS Motor Cover	1
75	2000-190	BS Discharge Wheel	1
76	2000-324	BS Discharge Wheel Screw (LH Thread)	1
77	2040-192A	BS Friction Block, 40mm	1
78	2050-193	BS Friction Block Bushing	1
79	2040-196B	Oscillator Pivot Guide w/Detents, 40+mm	1
80	2000-198	Osc. Control Lever Adapter ^{1,2}	1
81	2000-200A	Osc. Control Lever, L ^{1,2}	1
82	2000-202A	Osc. Control Lever, R ^{1,2}	1
83	2000-204	Osc. Motor Cover ^{1,2}	1
84	545-204	OSC Cap w/Detent Pin ⁵	1
85	2000-206	Osc. Motor Mounting Plate ^{1,2} (Fig. B)	1
86	2000-208	Osc. Motor w/Gear ^{1,2}	1
87	2000-210A	Osc. Power Wire w/Connector ^{1,2} (Fig. B)	1
88	2000-212	Osc. Motor Mounting Bracket ^{1,2}	1
89	2000-214A	Osc. Transfer Gear ^{1,2} (Fig. B, pg. 24)	3
90	2000-216	Osc. Drive Gear ^{1,2} (Fig. B, pg. 24)	1
91	2000-326	Osc. #1 x 3/16" Machine Screw ^{1,2}	4
92	2000-218	5-Pin Connector	1
93	2000-328	#4 x 3/8" Self Tapping Screw	21 ¹ /24 ² /16 ⁵

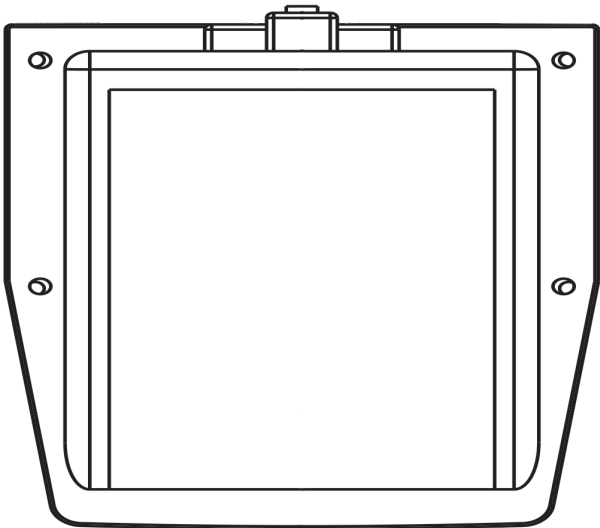
Key#	Part #	Item	Qty.
94	2000-330	#2 x 1/4" Machine Screw (Fig. D)	4
95	2000-220	Connector Cable (not shown)	1
96	see pg. 20	Transformer (not shown)	1
97	2000-224	Control Box (not shown) ^{1,2}	1
98	545-224	Control Box (not shown) ⁵	1
99	2000-225	Control Box Rubber Tip (not shown) ^{1,2}	1
100	545-219	Cable Clip (not shown) ⁵	1

¹Robo-Pong 1040+; ²Robo-Pong 2040+; ⁵Robo-Pong 545

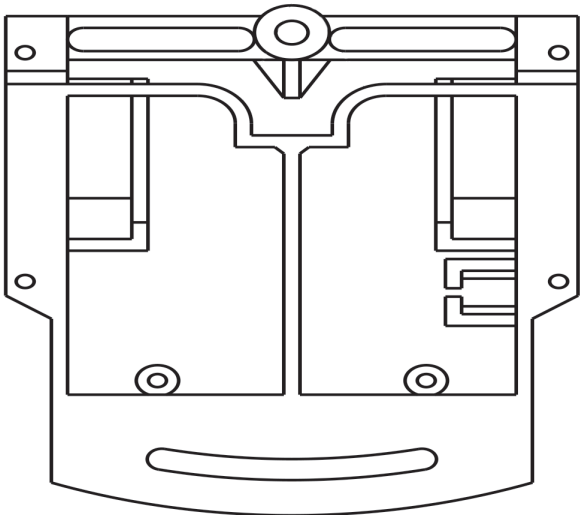


ROBO-PONG 545 AIM PARTS

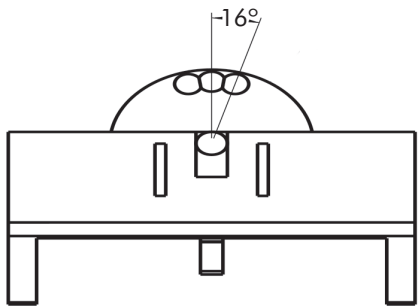
Key#	Part #	Item	Qty.
57	2050-164A	BF Upper Guide, 40+mm	1
79	2040-196B	Oscillator Pivot Guides w Detents, 40+mm	1
84	540-204	OSC Cap w/Detent Pin	1



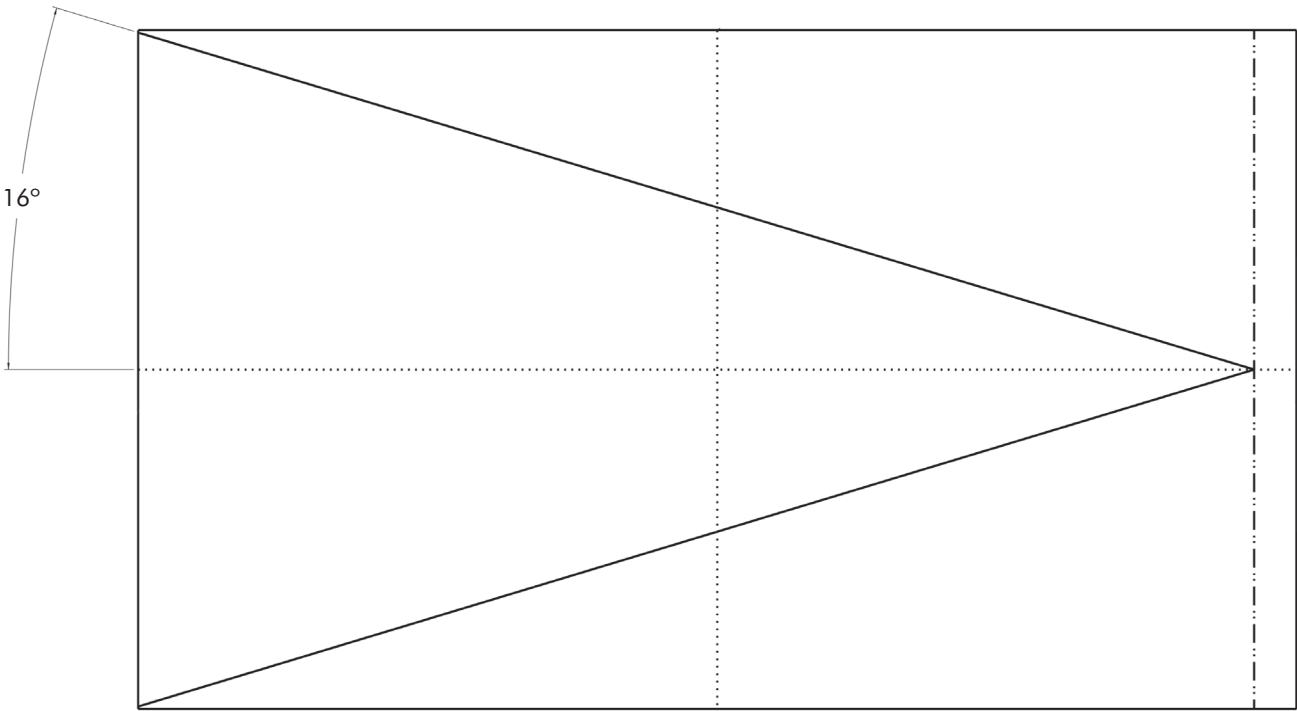
KEY 84 Part# 540-204
545 OSC Cap w/Detent Pin



KEY 57 Part# 2050-164A
545 BF Upper Guide



KEY 79 Part# 2040-196B
545 OSC Pivot Guide w/Detents



TRAINING LOG

[illegible]



Thank you for purchasing a Newgy Robo-Pong robot. We inspect our products to be sure they are of high quality and free of defects. However, if you need service or advice on your robot, please contact our Customer Service Department. The information below is applicable only to Newgy customers in North and South America. If you are in another area of the world, please contact the distributor for your area for service policies that apply to your country. A list of distributors can be found at www.newgy.com.

Please call us for return authorization before you send in your robot for repair. Often, repairs can easily be handled on the phone. Have you tried to troubleshoot the problem by trying the tips on page 39 or performing a Factory Default Restoration (pg. 14) You may also want to visit our website to see if any information has been updated. When you do call, please have your serial number and this manual handy. (The serial number is located on the Support Flange—see Fig. 14, pg. 19.) If, after talking with our Service Department, you need to send in your robot, include a brief note describing the problem and listing your daytime phone number and shipping address.

If you know which part you want to order, you may order it by phone if you have a credit card (Visa, MasterCard, American Express, or Discover). Parts are not available via our website.

OUT OF WARRANTY SERVICE POLICY: When your 1 Year Limited Warranty expires, Newgy will repair any normal wear and tear to the robot for our current hourly service charge, plus the cost of parts and shipping and handling (for Contiguous U.S., other areas carry additional fees) for a period of 5 years from date of purchase. This policy does not cover damage due to abuse, misuse, or improper handling and applies only to the original retail purchaser of Newgy robots bought from the USA.

Your Warranty Card should be registered on line within 15 days of purchase. Go to www.newgy.com/support-warranty-form.aspx to register. A place to copy the warranty information is given below. Be sure to keep your purchase receipt. We suggest you keep your receipt with this manual and record the following information:

Date Purchased _____ Serial # _____
Store Name _____ City, State _____

Extended warranties are available at www.newgy.com.

LIMITED 1 YEAR WARRANTY*

Manufacturer warrants to the original retail purchaser this product to be free from defects in material and workmanship for a period of 1 year from date of purchase.

Should this product become defective due to material or workmanship during the warranty period, contact our Customer Service Department describing the defect. Always provide your serial number. We will provide you with return authorization and shipping instructions. If you are asked to return the product, pack it securely and ship it PREPAID.

If defective as provided by the terms of this warranty, we will, at our option, repair or replace the product and return it prepaid to a continental U.S. address (other areas carry a shipping charge).

This warranty is not transferable and does not cover normal wear and tear, or damage caused by improper handling, installation, or use. This warranty is void if the product is in any way abused, damaged, or modified from its original state.

This warranty gives you specific legal rights, and you may have other rights that may vary from state to state.

*Warranty and service valid only in territory of original sale.



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