

# YAMAHA P-850

*Natural Sound Direct Drive Turntable  
Microcomputer-Controlled, Fully Automatic Operation  
Independent Tonearm Positioning and Cueing Motors  
Yamaha Optimum Mass, Minimum Resonance Straight Tonearm  
Quartz-Lock PLL Servo System*



OWNER'S MANUAL



*Thank you for purchasing the YAMAHA P-850 direct drive turntable.*

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## IMPORTANT

Please record the serial number of your unit in the space below.

Model: P-850  
Serial No.:

The serial number is located on the rear of the cabinet. Retain this Owner's Manual in a safe place for future reference.

## WARNING

To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

**CAUTION (PREPARED IN ACCORDANCE WITH UL REGULATION 1270)**

**1** Read instructions—All the safety and operating instructions should be read before the appliance is operated.

**2** Retain Instructions—The safety and operating instructions should be retained for future reference.

**3** Heed Warnings—All warnings on the appliance and in the operating instructions should be adhered to.

**4** Follow Instructions—All operating and other instructions should be followed.

**5** Water and Moisture—The appliance should not be used near water—for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.

**6** Carts and Stands—The appliance should be used only with a cart or stand that is recommended by the manufacturer.

**7** Wall or Ceiling Mounting—The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.

**8** Ventilation—The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

**9** Heat—The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including other audio components) that produce heat.

**10** Power Sources—The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

**11** Grounding or Polarization—Precautions should be taken so that the grounding or polarization means of the appliance is not impeded.

**12** Power-Cord Protection—Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plug, convenience receptacles, and the point where they exit from the appliance.

**13** Cleaning—The appliance should be cleaned only as recommended by the manufacturer.

**14** Nonuse Periods—The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

**15** Object and Liquid Entry—Care should be taken so that objects do not fall into and liquids not spilled into the inside of the appliance.

**16** Damage Requiring Service—The appliance should be serviced by qualified service personnel when:

- A. The power-supply cord or the plug has been damaged; or
- B. Objects have fallen, or liquid has been spilled into the appliance; or
- C. The appliance has been exposed to rain; or
- D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
- E. The appliance has been dropped, or the cabinet damaged.

**17** Servicing—The user should not attempt to service the appliance beyond those means described in the operating instructions. All other servicing should be referred to qualified service personnel.

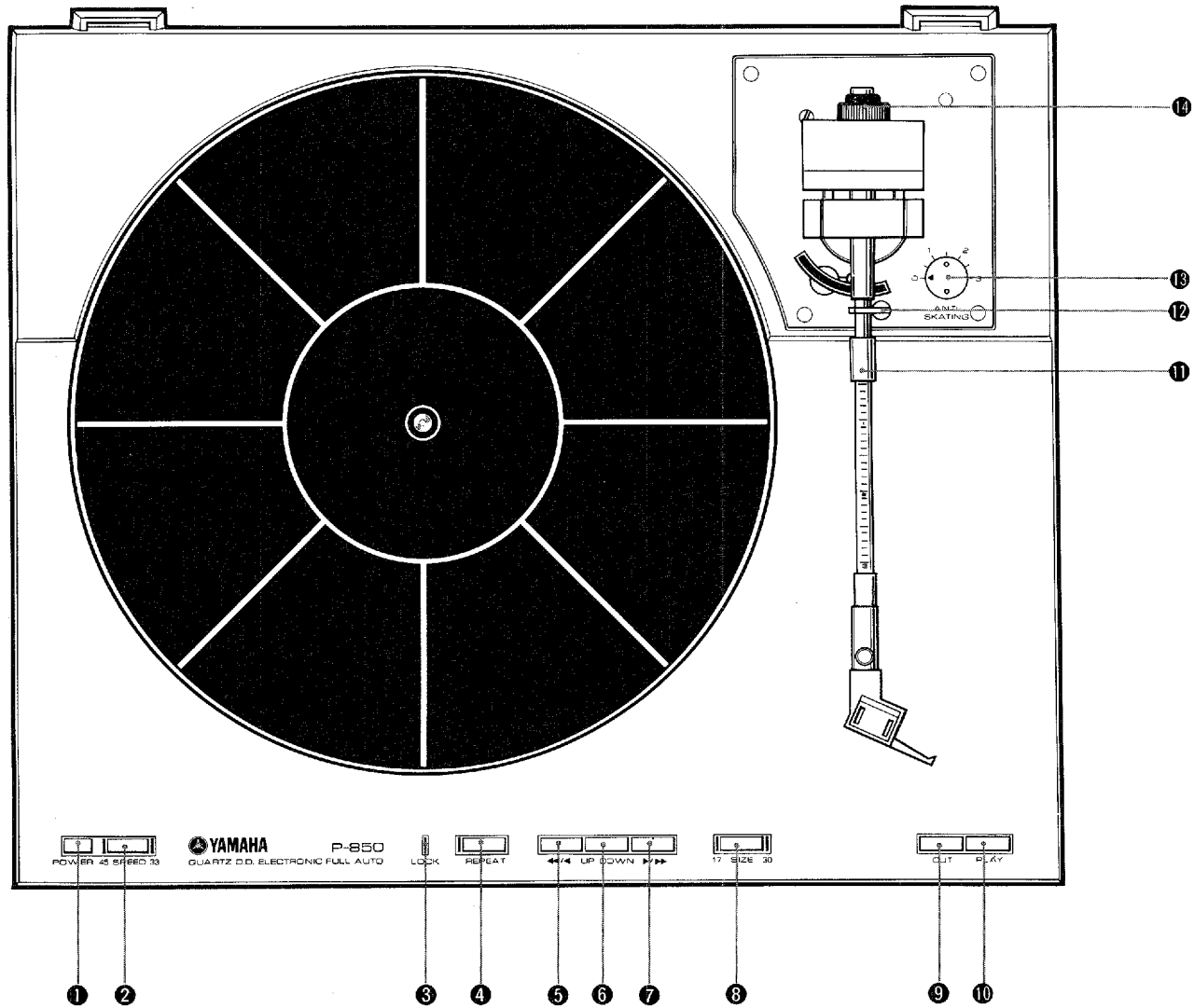
# P-850

**CAUTION: READ THIS BEFORE OPERATING YOUR P-850**

- 1** The P-850 is a sophisticated microcomputer-controlled, fully automatic turntable. To ensure proper operation for the best possible sound reproduction, please read this manual carefully.
- 2** Treat the P-850 with the utmost of care, as it is extremely easy to jar fine settings such as tonearm tracking force out of adjustment. If the unit is bumped, it is important that all settings be re-checked.
- 3** Avoid installing the tonearm side of the P-850 next to the power transformer of your amplifier.
- 4** Be sure to locate the P-850 in a flat and level place, out of the direct rays of the sun. Also avoid locations subject to vibration and excessive dust, heat, cold or moisture. Also avoid placing it directly in front of or too close to your speakers.
- 5** If it becomes necessary to relocate the P-850 do so with extreme care. If possible, re-pack the unit in its original packing for transportation.
- 6** Do not attempt to clean the P-850 with chemical solvents as the unit is coated with a mat lacquer. Use a clean, dry cloth.
- 7** It is extremely important that the stylus tip be kept free of dirt. Regular cleaning ensures the best possible sound reproduction.
- 8** Keep your records clean. Dirty records reduce the life of the stylus. A stylus with a diamond tip should be replaced after every 200—300 hours of use.
- 9** Be sure to read the "troubleshooting" section for advice on common operating errors before concluding that your P-850 is faulty.
- 10** Keep this manual in a safe place for future reference.

# P-850

NAMES OF THE PARTS AND THEIR FUNCTIONS



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## NAMES OF THE PARTS AND THEIR FUNCTIONS

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### ❶ POWER SWITCH

Turning power on automatically selects 33-1/3 rpm and 30 cm record size.

Note:

If the power switch is switched to on and nothing happens, do not switch it off and on repeatedly. Simply switch it off, wait a little while, and switch it on again.

### ❷ SPEED SWITCH

Selecting 33-1/3 rpm automatically sets the P-850 for a record size of 30 cm, while selecting 45 rpm sets record size to 17 cm. Automatic size selection can be overridden by selecting the size manually after selecting the speed.

### ❸ SPEED LOCK INDICATOR

This allows you to check the motor (platter) speed. When this indicator is illuminated, the platter is rotating at the correct rated speed.

### ❹ REPEAT SWITCH

Depress the repeat switch when you want to repeat the same side of a record. Press the switch again to end repeat operation.

### ❺ ◀◀/▶ (Manual Right-to-Left Movement)

The tonearm will move to the left as long as this switch is depressed. When the switch is slightly depressed, the tonearm will move slowly; when depressed further the tonearm will move quickly. If the switch is pressed while a record is being played, the tonearm will automatically rise from the record first. When the tonearm has moved to the extreme left, the arm will automatically stop.

### ❻ UP/DOWN SWITCH

Pressing the switch while a record is playing causes the tonearm to rise. Pressing the switch while the tonearm is positioned over the record lowers the tonearm to begin record play.

### ❼ ▶/▶▶ (Manual Left-to-Right Movement)

The tonearm will move to the right as long as this switch is depressed. When the switch is slightly depressed, the tonearm will move slowly; when depressed further the tonearm will move quickly. If the switch is pressed while a record is being played, the tonearm will automatically rise from the record first. When the tonearm has moved to the extreme right, the arm will automatically stop. Using switches ❺, ❻, and ❼ gives you complete manual control over the tonearm.

### ❸ RECORD SIZE SELECTOR SWITCH

Used to select the correct lead-in position for the auto-play function (❶). Because record size is set to 30 cm when power is turned on and switched automatically when the speed selector switch is used, it is not normally necessary to use the record size selector switch.

### ❹ CUT SWITCH

Depress this switch when you want to stop record play. The tonearm will rise and return to the arm rest and the motor will stop.

### ❶ PLAY SWITCH

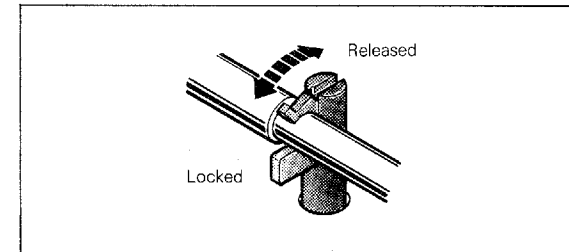
When this switch is depressed, the auto play system is activated. The turntable speed and the record size should have previously been set correctly. If there is no record on the platter or if the record size has been set incorrectly, the arm will descend to the turntable mat. This error may be rectified by immediately pushing the Cut switch to stop the cartridge's descent.

### ❶ TRACKING FORCE ADJUSTMENT WEIGHT

Allows easy adjustment of tracking force to match your cartridge. Refer to page 7.

### ❶ ARM REST/ARM LOCK

When transporting the turntable, be sure that the arm has been secured to the rest.



### ❶ ANTI-SKATING KNOB

This is a spring-lever type of anti-skating control. Refer to page 7 for adjustment.

### ❶ TONEARM BALANCE WEIGHT

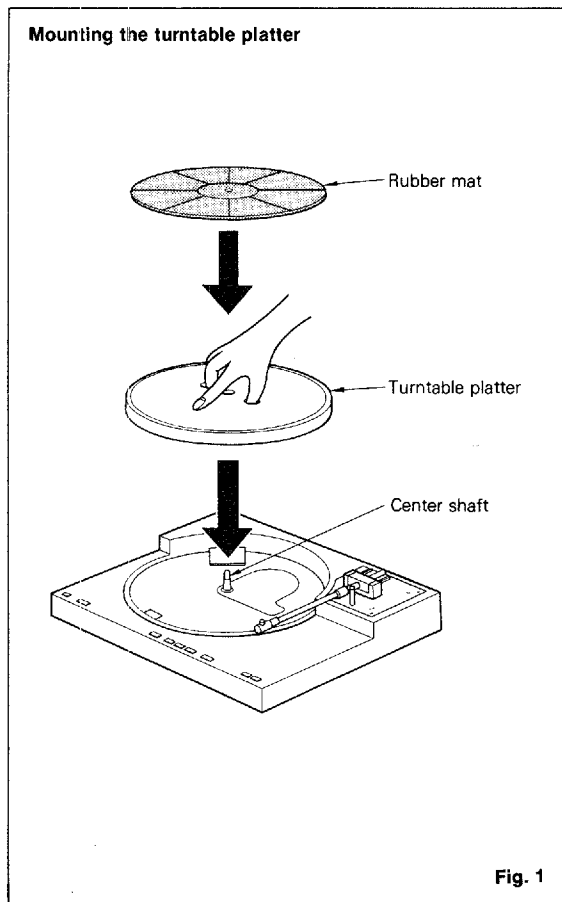
Used to balance the tonearm. Refer to page 6.

# P-850

## ASSEMBLING THE TURNTABLE AND TONEARM

### MOUNTING THE TURNTABLE PLATTER

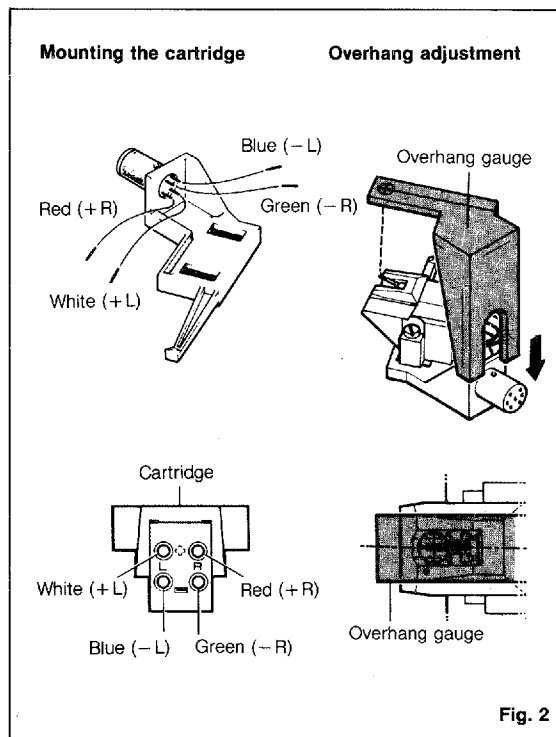
1. Insert your fingers into the two holes in the turntable platter as shown in fig. 1 and then securely position it over the center shaft. Check to make sure that the platter is securely positioned.
2. Place the rubber mat on top of the turntable platter.



### MOUNTING THE CARTRIDGE

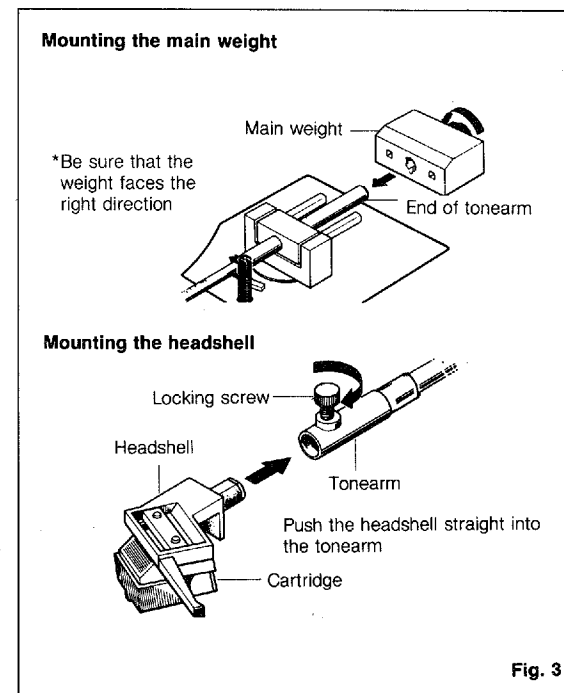
Cartridges with weights ranging from 2.5 to 10 grams may be used with this turntable.

1. Properly connect the headshell leads to the pins on the cartridge.
2. Loosely mount the cartridge to the headshell with cartridge mounting bolts.
3. Align the stylus with the accessory overhang gauge and after adjusting the overhang, secure the cartridge mounting bolts. Overhang is correct when the + on the overhang gauge lines up with the tip of the stylus.



### ASSEMBLING THE TONEARM

1. To mount the main weight rotate the black knob in the direction indicated by the arrow in fig. 3.
2. The grooves inside the main weight and the click stopper on the end of the tonearm interlock, thus when the main weight knob is rotated in a counter-clockwise direction (as seen from the front of the unit) the main weight will smoothly move forward.
3. To mount the headshell, loosen the headshell locking screw and insert the headshell with the cartridge in place. Next, securely tighten the locking screw. Be sure to keep the headshell straight when inserting it into the tonearm as it is very easy to damage the four contact pins inside the headshell.



# P-850

## ADJUSTMENTS/CONNECTIONS TO YOUR AMPLIFIER

### ADJUSTING TONEARM BALANCE

Proceed with the balance adjustment after mounting and installing the tonearm assembly. Be sure to set the Anti-Skating control to "0".

1. Turn the power on and press the Cut switch to get the arm lifter to the down position.
2. Align the front end of the tracking force weight with the "0" line on the tracking force scale.

3. Flip the stylus cover to its up position. (Remove the stylus cover completely on cartridges where this is possible. Free the tonearm from the tonearm rest.
4. Carefully release the finger hook and check to see if the tonearm is horizontally balanced.
5. Adjust the main weight until the tonearm will float in a perfectly horizontal position.
6. Once the tonearm has been balanced, return it to the arm rest.

#### Balance adjustment

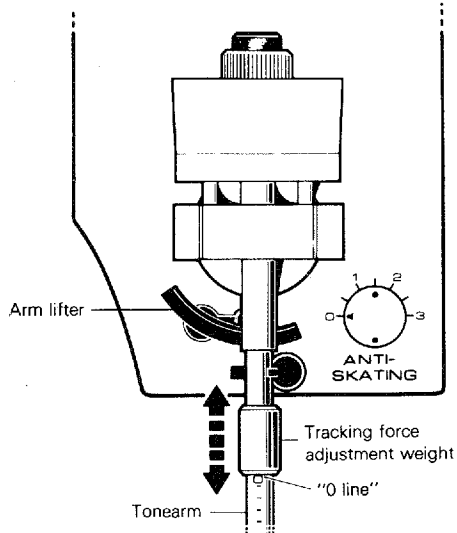


Fig. 4

Headshell is too heavy  
(rotate the black knob in the direction of the arrow)



Rear assembly is too heavy  
(rotate the black knob in the direction of the arrow)



Tonearm is balanced perfectly

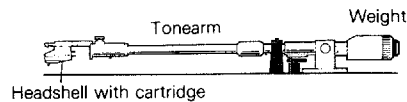


Fig. 5

### STYLUS HEIGHT ADJUSTMENT

When the tonearm is in the up position, the height of the stylus above the record should be about 6 mm. If it is more or less than this, loosen the adjustment screw on the arm lifter, and adjust the height of the arm lifter so the distance of the stylus to the record is 6 mm.

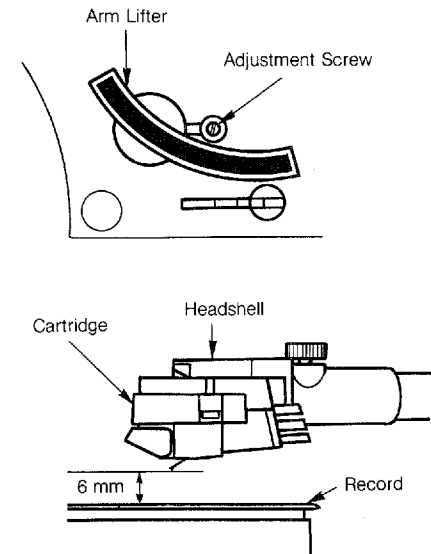


Fig. 6

### ADJUSTING TRACKING FORCE

1. Make sure that the position of the main weight does not move once the tonearm has been horizontally balanced.
2. Move the tracking force adjustment weight along the tracking force scale on the tonearm until it corresponds with the rated tracking force of your cartridge. The scale is marked in units of 0.1 gram.

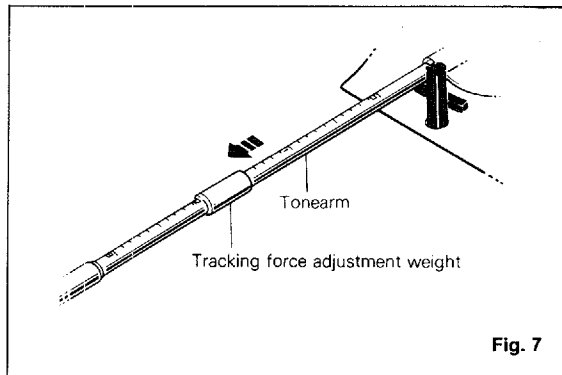


Fig. 7

### ADJUSTING THE ANTI-SKATING

Align the index mark on the anti-skating knob with the scale marking which corresponds to the rated tracking force of your cartridge.

Note: If the anti-skating is not set correctly, the tonearm will deviate horizontally as it lowers onto the record, and it may miss the correct lead-in position. Be sure the anti-skating control setting is correct.

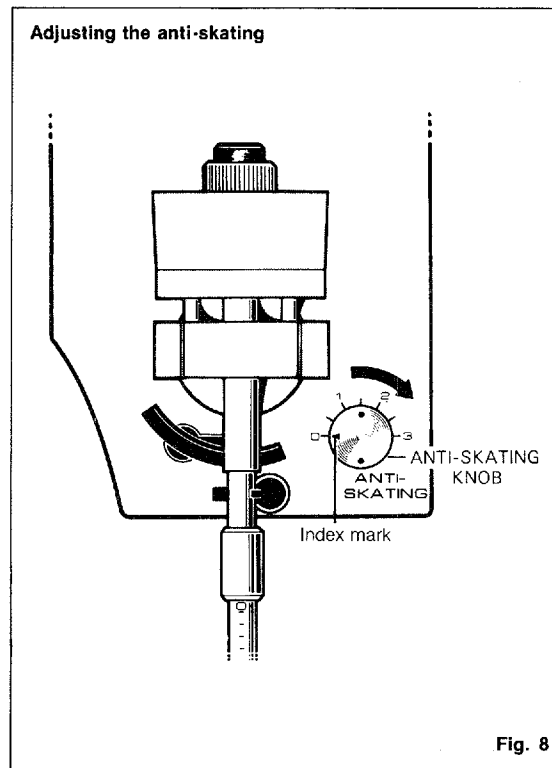


Fig. 8

### CONNECTIONS TO YOUR AMPLIFIER

Perform these connections after turntable and tonearm assembly and all adjustments have been completed.

1. Connect the output cords from the rear panel of the cabinet to the Phono terminals on the audio amplifier. Make sure that the left and right channels are properly matched. The white cord signifies the left (L) channel and the red the right (R) channel.
2. Connect the black ground wire to the Ground (GND) terminal on the audio amplifier. Depending on the amplifier, better sound is sometimes obtained by not connecting the ground wire.
3. Connect the power plug to the AC wall outlet or an auxiliary outlet on the audio amplifier.

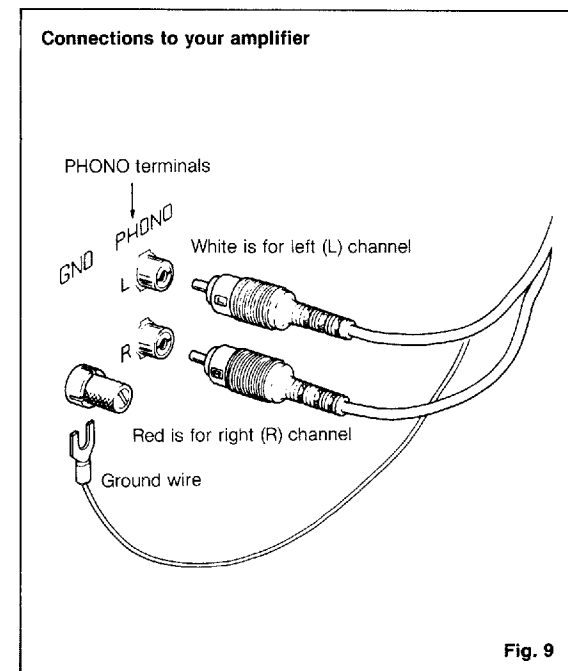


Fig. 9

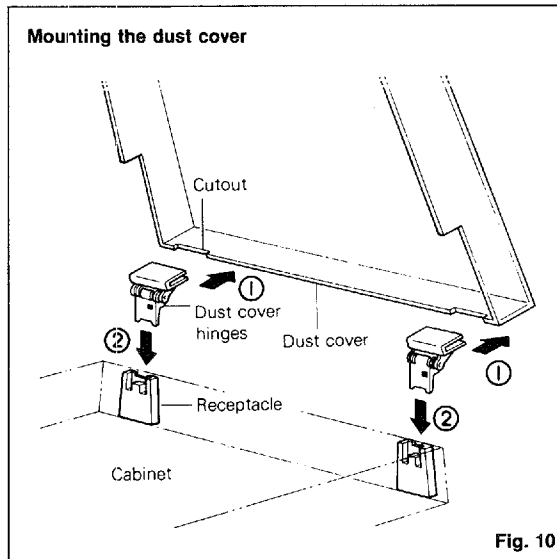


# P-850

## MOUNTING THE DUST COVER/MANUAL CUEING FUNCTIONS/REPEAT PLAY/FUNCTION INTERRUPT CAPABILITY

### MOUNTING THE DUST COVER

1. Fit the dust cover hinges into the two cutouts at the rear of the dust cover and slide them into place. (arrow 1)
2. Next, simultaneously insert the two hinges into the left and right receptacles on the rear of the cabinet. (arrow 2)
3. It is possible to remove the dust cover. Just pull the hinges gently out of the cabinet hinge receptacles.

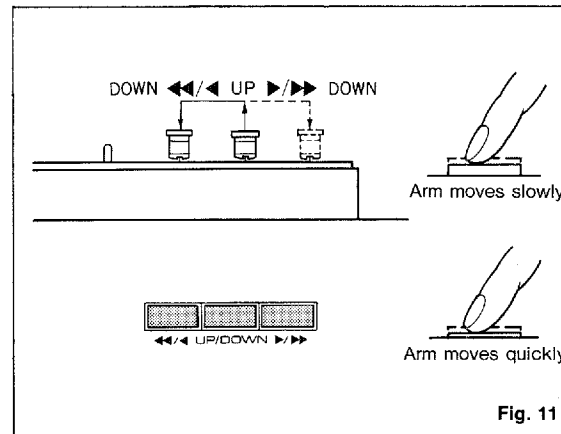


### MANUAL CUEING FUNCTIONS

The P-850's advanced three-motor system allows flexible control over all tonearm positioning functions even with the dust cover down.

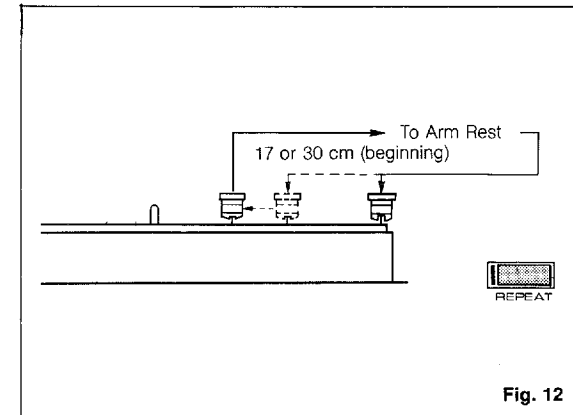
1. Pressing the Up/Down switch when a record is playing raises the tonearm. Pressing it when the tonearm is positioned over the record lowers the tonearm and begins play.
2. Pressing the <</> (move left) or >>/>> (move right) switch moves the tonearm to the left or right. Pushing either of these switches while record play is in progress automatically raises the tonearm first. Pressing either switch gently causes the tonearm to move slowly for accurate positioning, while pressing it all the way down causes rapid movement.

\*Pressing any of the above manual function switches clears repeat mode, so the Repeat switch should be pressed again if repeat play is desired.



### REPEAT PLAY

Pressing the Repeat switch causes the P-850 to enter repeat mode. In this mode, the turntable replays the same side of the record again and again. Pressing the Repeat switch a second time ends repeat mode, causing play to stop when the end of the record is reached.



### FUNCTION INTERRUPT CAPABILITY

Unlike many automatic turntables, the P-850's various function switches all take effect immediately even if another function is in progress. This means that if you press the wrong switch by mistake, this can be instantly corrected by pressing another switch. This turntable is so foolproof that you can even stop the tonearm with your hand with no adverse effect on the mechanism.

# P-850

## HOW TO PLAY RECORDS

### PLAYING RECORDS

After you have assembled the turntable, made the necessary adjustments and connected the turntable to the audio amplifier, you are ready to start playing records. Proceed as follows.

#### 1

##### Check to see that the turntable, amplifier and speaker connecting cords have been inserted into the correct terminals.

- The power cord should be plugged into an AC wall outlet or into the audio amplifier's auxiliary power outlet.
- If you are using the ground wire, check to see that it is securely fastened to the amplifier's Gnd terminal.

#### 2

##### Switch on the amplifier

- Set the input selector switch to Phono. Lower the volume control.

#### 3

##### Place your selected record on the turntable platter

- When playing 45 rpm singles, slip the accessory 45 adaptor over the center shaft.

#### 4

##### Switch on the turntable

#### 5

##### Set the Speed switch so that it corresponds to the rated speed of the record

- Turning on the turntable power automatically selects 33-1/3 rpm. Press the Speed switch once to change to 45 rpm if necessary.

#### 6

##### Set the Size switch so that it corresponds to the size of the record

- Record size is automatically set to 30 cm on 33-1/3 rpm records and 17 cm on 45 rpm records. Normally it will not be necessary to manually set record size. Press the Size switch to change record size if necessary.

#### 7

##### Remove the stylus cover

#### 8

##### Remove the arm rest lock and depress the Play switch. Record play will start automatically.

#### 9

##### Record play

- Adjust the amplifier's volume and tone controls to your own preferred levels.

#### 10

##### Once record play has been completed, the tonearm will automatically rise and return to the arm rest and the platter will stop rotating.

- Depress the Cut switch if you want to stop record play altogether.
- Depress the Up/Down switch (refer to page 4) if you want to interrupt record play.
- If the Repeat function has been activated, the unit will indefinitely repeat the same side of the record. Depressing the Cut switch overrides the Repeat function.

# P-850

## TROUBLESHOOTING

Before assuming that your turntable is faulty, check the following troubleshooting list which details the corrective action you can take yourself without having to call a service engineer. If you have any doubts or questions, get in touch with your nearest YAMAHA dealer.

Fault	Cause	Cure
<b>Platter does not rotate, although PLAY switch is depressed.</b>	Power cord is not firmly plugged into AC power outlet or into auxiliary power outlet of amplifier.	Connect the power cord securely to the AC power outlet or to the amplifier's auxiliary power outlet.
<b>Tonearm is not properly balanced when cartridge is replaced.</b>	The cartridge is either too heavy or too light.	The proper cartridge weight ranges from 2.5 to 10 grams. If the weight of the cartridge used is within this range, slide the weight to the front or rear and re-adjust.
<b>There is no sound or low sound although the stylus descends to the record surface.</b>	Defective contact of headshell connector pins.	Mount the headshell firmly onto the tonearm.
	Amplifier's function switch is not set to PHONO.	Set the function switch to PHONO.
	Amplifier's volume control is at lowest position.	Turn up the volume control to the required position.
	Defective connection of turntable's output cords.	Check the connecting terminals on the rear panel and amplifier.
<b>The body of the cartridge catches on the record surface.</b>	Tracking force is too high.	Re-adjust to the proper tracking force.
<b>Reproduced sound is distorted and unpleasant, particularly the treble, with a clicking or scraping noise.</b>	Turntable is not set horizontally.	Install the turntable horizontally.
	Dust on stylus.	Clean the stylus with a stylus cleaning brush.
	Worn stylus.	Replace the stylus.
	Damaged or dusty, dirty record.	Replace with a new record.
	Tracking force is either too high or too low.	Readjust the tracking force for the cartridge to the recommended value.
	Amplifier's treble control is turned up too high.	Try returning the treble control to the FLAT position.
<b>Reproduced sound quivers and a howl (acoustic feedback) is heard.</b>	Installation locations of speaker systems and turntable are too close together or turntable is unstable and vibrations are being transmitted to cause resonance.	Move the turntable to a stable location, move it some distance from the speakers, or change the speaker locations (in particular, avoid installation in corners).
<b>A loud humming sound is heard during record play.</b>	Turntable's ground wire is not connected to amplifier's ground terminal.	Connect the ground wire to the ground terminal. (Sometimes a better effect can be obtained by not connecting this wire, however.)
	Defective contact of headshell connector pins.	Mount the headshell properly onto the tonearm.
<b>The muting circuit fails to silence the click when the stylus first contacts the record surface.</b>	The stylus height has not been adjusted properly.	Adjust according to instructions on page 6.

## SPECIFICATIONS

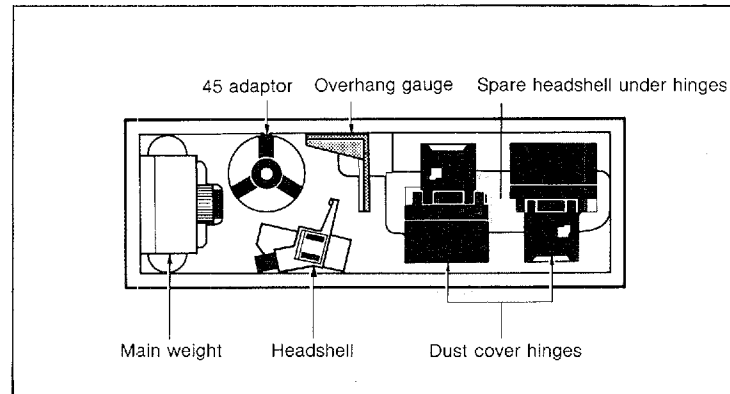
TURNTABLE	
Drive System	Direct drive
Servo System	Quartz-lock PLL
Motor	DC brushless, coreless, 8-pole motor
Platter	Aluminum diecast, 30 cm (11-3/4"), 1.6 kg (3 lbs. 8 oz.) incl. mat
Platter Moment of Inertia	210 kg-cm <sup>2</sup>
Speeds	33-1/3 and 45 rpm
Signal-to-Noise Ratio	Better than 77 dB (DIN-B, IEC 98A wtd)
Wow and Flutter	0.015% WRMS (FG direct measurement)
TONEARM	
Type	Straight, tubular

Effective Length	222 mm (8-3/4")
Overhang	16 mm
Offset Angle	23°
Arm Lifter	Independent motor
Tracking Force	Static balanced, sliding weight, Adjustment 0—3 g, 0.1 g steps
Effective Mass	11 g (without cartridge)
Horizontal Tracking Error	-1° to 3°
Anti-Skating	Spring type
Lateral Access	Coreless, direct drive motor (2-speed control)
Vertical Access	DC servo motor (with muting function)
Headshell	Resin, 20% carbon fiber

Suitable Cartridge	
Weight	2.5—10 g
PU Cable Capacitance/ Resistance	100 pF/1 ohm
GENERAL	
Power Supply	120 V AC 60 Hz
Power Consumption	10 W
Cabinet	BMC (Bulk Molding Compound)
Dust Cover	Acrylic resin, 800 g
Hinges	Free-setting, detachable
Dimensions (W x H x D)	440 x 132 x 376 mm 17-3/8" x 5-1/8" x 14-3/4"
Weight	7.5 kg (16 lbs. 8 oz.)

*Specifications subject to change without notice.*

## ACCESSORIES



SINCE 1887  **YAMAHA**  
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