BIC™

Multiple Play Manual Turntable

Technical Service Manual

For the Model 1000

IMPORTANT

Our experience shows that 75% of so-called repairs can be directly attributed to improper installation or the user not being familiar with the operation of the unit.

For this reason, we have decided to include the Owner's Manual supplied with the B·I·C Model 1000 with the Technical Service Manual.

We recommend that you read the instructions pertaining to set-up prior to attempting to repair or adjust the unit.

CONTENTS

OWNERS MANUAL (Enclosed)

MODEL 1000 - FAULT FINDING CHART

(All reference numbers shown on this chart correspond to Exploded View)

SYMPTOM	CAUSE	REMEDY
AC SUPPLY		
Unit fails to start	Fuse blown	Replace
	Open or imporperly wired power supply	Re-wire
	AC switch defective or misaligned	Replace or re-align
TONEARM		
1. Lowers to incorrect position	Stylus out of position	Reset or replace
	Setdown adjusted improperly	Re-adjust by turning setdown adjustment scre..
	Pickup lever bent	Re-align
2. Lifts too high or too low	Lift height screw improperly adjusted	Re-adjust by turning lift height screw
3. Lands at 45 position when set for 33	Pickup lever (Ref. # 186) not engaging correct step on size selector lever (Ref. # 206)	Observe point pickup lever engages size selector lever, re-align pickup lever. Make certain is moving and spring attache..
	Pickup lever movement restricted by tonearm lead	Pull so slight slack exist-
4. Tonearm drift	See #3 under Cue and Cycle	
5. Fails to track	Tonearm leads too tight	Free tonearm leads
	Pickup lever (Ref. # 186) bent, hitting on Main Cam (Ref. # 96)	Re-align

SYMPTOM	CAUSE	REMEDY
7. Fails to track (con't)	Brakepin not disengaging	See #3 under Cue and Cycle
	Lateral friction	Check lateral bearings and pivot - clean or replace
8. Stylus does not track first grooves of record	Setdown not properly adjusted	Re-adjust setdown position
9. Stylus sticks on last band of record	Pickup lever bent, rubbing on Main Cam	Re-align
	Excessive friction in trip mechanism	Clean pivot with cotton swab saturated in alcohol
8. Tonearm will not leave rest post	Missing spring on drive plate (Ref. # 210)	Replace spring (Ref. # 215)
	Cam gear does not cycle	See #6 under Cue and Cycle
9. Tonearm movement rough	Drive plate (Ref. #210) bent or movement restricted	Reshape and/or lubricate
10. Tonearm restricted when returning to rest	Rest post switch (Ref. #194) restricting movement of tonearm	See Adjustment Procedures Page 17
TURNTABLE SPEED		
1. Consistently fast or slow	Motor pulley height mis-adjusted, belt rubbing	Re-adjust, top of pulley should be level with top of speed cam (Ref. #39)
	Drive motor control board (Ref. #32) mis-adjusted or defective	See Schematic - Page 20 for adjustment
	Grease or oil on drive surface	Clean drive surfaces with alcohol
2. Turntable revolves when programmer is switched to manual	Misadjusted or defective rest post switch (Ref. #194)	See Adjustment Procedures Page 17
	Yellow leads to Motor Control Board (Ref. # 32) open	Check continuity to determine which lead is open, re-wire or replace

SYMPTOM	CAUSE	REMEDY
3. Turntable does not revolve	Defective or misadjusted rest post switch (Ref. #194)	Replace or Adjust - See Page 17
	Switch lever (Ref. # 103) misaligned	Re-align or replace
	Defective drive motor (Ref. # 36)	Replace
	Defective switch (Ref. # 139) or leads to switch shorted	Replace or rewire
	DC leads to terminals #4 and #7 reversed	See Schematic Function Control Board- Pgs. 2[illegible]
	Drive motor control board defective or voltage too low	See Schematic Page 20 [illegible] adjustment or replace b[illegible]
4. Variable Pitch Control not centered	Drive motor control board (Ref. # 32) not properly adjusted	See Schematic Page 20 [illegible] adjustment
RECORD DROP		
1. Tonearm lifts and moves to platter but record doesn't drop	Automatic spindle and/or record support not seated properly	See Page 7 Owner's Manu[illegible] for proper installation
	Record does not meet NAB standards	Play manually
	Automatic spindle defective	Replace
	Spindle actuator spring not engaging or applying tension to spindle pawl	Replace spindle housing (Ref. # 73)
2. Drops more than one record	Spindle latches sticking	Clean spindle pawl with alcohol or replace spindle
	Record is too thin	Play manually
AUDIO		
1. Loss of one or both channels	Cartridge improperly wired	See page 3 Owner's Man for correct wiring code

SYMPTOM	CAUSE	REMEDY
1. Loss of one or both channels (con't)	Defective audio cable	Reverse audio cable at phono socket. If defective channel moves to other speaker, replace audio cable
	Broken wire at phono socket or inside tonearm	Check solder connections. Check continuity from phono socket to pickup lead connector. If an open wire is found replace harness
	Muting switch shorted or not opening	Lever (Ref. # 120) sticking or spring (Ref. # 121) missing.
	Defective cartridge	Replace
CUE AND CYCLE		
1. Cueing drops too fast or too slow	Adjusting knob for descent rate improperly set	See Page 8 in Owner's Manual
2. Drops too fast	Inadequate supply of silicon damping compound	Replenish
3. Cueing drifts	Brake rod (Ref. # 181) not operating properly	Brake rod should contact pickup lever (Ref. # 186). If not, rod is sticking, should be lubricated
	Brake rod releasing: a. Too soon - arm falls to right b. Too late - stylus "pops"	Turn lift pin (Ref. #176) clockwise if releasing too soon; counterclockwise if releasing too late. Pickup height must also be re-adjusted
4. Arm will not cue up (Cycle over-rides cue controls)	Momentary cue up switch not making contact	Clean/re-align contacts
	Momentary cue down switch not open	Clean/re-align contacts
	Limit switch (Ref. # 64) defective or has open lead	Check continuity; resolder or replace open lead, replace defective switch

SYMPTOM	CAUSE	REMEDY
4. Arm will not cue up (Cycle over-rides cue controls) - continued	Defective cue up or cycle relay	See Electronic Analysis Page 11
5. Arm will not cue down	Cue up contacts not opening	Re-align
	Spring (Ref. #109) stretched or missing	Relocate or replace
	Time delay lever (Ref. # 105) sticking	Clean excess lubricant; relocate spring
	Open wire to or defective switch in cue down circuit (Ref. #'s 79, 107 & 112)	Refer to wiring diagram Page 22. Replace, rewire or solder open connections
	Cue detent switch (Ref. #79) misadjusted	See Cycle Motor Adjustment page 19
6. Will not cycle when implusing control	Momentary cycle switch not making contact	Clean/re-align
	Cycle detent switch (Ref. # 80) misadjusted or defective	See Cycle Motor Adjust Page 19 or replace
	Defective cycle relay	See Electronic Analysis Page 11
	Defective cycle motor (Ref. # 85)	Replace
7. Continuous cycle	Cycle detent (Ref. # 80) not opening	See Cycle Motor Adjustment, page 19
	Trip switch lever (Ref. #45) not resetting	Re-align or replace
	Trip switch (Ref. # 58) shorted or misaligned	Check solder connections or re-align
	Cue detent switch (Ref. # 79) not opening	See Cycle Motor Adjustment, page 19

SYMPTOM	CAUSE	REMEDY
8. Intermittent trip	Cue detent switch (Ref. # 79) not opening	See Cycle Motor Adjustment, page 19
	Cycle motor misadjusted	Same as above
9. Fails to trip	Pickup lever bent, not contacting trip pawl plate	Re-align
	Trip switch lever (Ref. #45) not allowing trip switch contacts to close	Re-align trip switch lever where it contacts the cam gear
	Trip pawl not engaging cog on platter	Re-align or replace

ANALYSIS OF THE MECHANISM

The B•I•C Model 1000 employs two motors. One motor drives only the platter; the other motor drives the cycle and cue up mechanism. These will be referred to as cycle motor (mechanism) and drive motor (platter). All reference numbers refer to the exploded view.

CUEING

A. Cue up

Activating the cue up (v) control closes a momentary contact switch, energizing the K-2 relay. This allows current to flow to the cycle motor (Ref. No. 85) which drives the main cam (Ref. No. 96) in a counterclockwise direction.

The main cam contains an eccentric track which varies in depth. As the cam rotates, the drive plate (Ref. No. 210) rides out of the deep portion of the cams' track. This motion causes the opposite end of the drive plate to raise the lift pin (Ref. No. 176) which raises the tonearm. As the main cam rotates 65° the switch lever (Ref. No. 103) is activated opening the 65° limit switch (Ref. No. 64) This stops current flow to the cycle motor. Also the time delay lever (Ref. No. 105) has been impulsed opening the time delay switch (Ref. No. 107). As the 65° limit switch opens, simultaneously switch (Ref. No. 139) is closed, cutting off current to the drive motor (Ref. No. 36). At this point the cue up sequence is complete. The tonearm is raised and the platter stopped.

B. Cue Down

Activating cue down (v) closes a momentary contact switch which de-energizes relay K-2. The cam gear rotates 10° clockwise. Switch, (Ref. No. 139) is opened, starting platter rotation. At this 10° point the 55° limit switch (Ref. No. 112) is opened stopping the cycle motor. Simultaneously the time delay lever (Ref. No. 105), which opened the time delay switch (Ref. No. 107) during cue up, begins to return and will close the time delay switch. The time delay allows the platter to achieve nominal turntable speed before the tonearm begins to lower.

When the time delay switch has closed, the main cam continues its clockwise rotation until the detent pin on the cycle motor enters the notch in the cam gears' outer track. This opens the cue detent switch (Ref. No. 79). Prior to detent, the drive plate (Ref. No. 210) returns to the deep portion of the cams' track which allows the lift pin (Ref. No. 176) to lower. The lift pin is viscous damped and under tension from the rocker plate (Ref. No. 177) and acting springs (Ref. Nos. 182 and 184) causing the tonearm to lower slowly and smoothly.

CYCLE

Activating the cycle control closes a momentary contact switch which closes relay K-1. This starts the cycle motor (Ref. No. 85) which drives the main cam (Ref. No. 96) in a counterclockwise direction. This action closes the cycle detent switch (Ref. No. 80) and holds the K-1 relay closed. The main cam gear has an eccentric track which varies in depth and causes the drive plate (Ref. No. 210) to move in and out and up and down. This mechanism works in the following manner:

As the cam gear rotates, the following pin on the drive plate (Ref. No. 210) is pushed down causing the opposite end to raise. This pushes up the lifting pin (Ref. No. 176) which raises the tonearm. As the arm raises, the follower pin is pushed outward. This motion is transmitted to the tonearm through the pickup arm lever (Ref. No. 186) and it, too, is moved outward. As the cam continues to rotate, the eccentric track moves the follower pin inward and, in turn, the tonearm is moved inward until the pickup arm lever engages the record size selector lever (Ref. No. 206). The drive plate now disengages from the pickup arm lever and enters the deepest portion of the track releasing the lifting plate. The cam gear enters detent allowing the cycle detent switch (Ref. No. 80) to open which shuts down the cycle motor. The tonearm lowers gently (See Cue Down) and begins tracking inward.

Note: When a cycle is initiated during record play, platter rotation is stopped in the same manner as described under Cue Up.

CENTER TRIP

When the tonearm reaches the lead out grooves at the end of a record, the pickup arm lever (Ref. No. 186) causes the trip pawl plate (Ref. No. 99) to move inward carrying the trip pawl (Ref. No. 100) inward. The cog on the turntable spindle (Ref. No. 12) engages the trip pawl, (Ref. No. 100). The trip pawl is impulsed and activates the trip switch lever (Ref. No. 45). This allows the trip switch (Ref. No. 58) to close. This lever is reset by the main cam gear. From this point on the mechanical sequence is identical to the automatic cycle previously described.

MULTIPLE RECORD PLAY AND AUTOMATIC SHUTOFF

As the program selector knob (Ref. No. 134) is moved from the "Off" position to the number of records to be played, the AC switch (Ref. No. 83) is closed energizing the power supply.

The strobe light (Ref. No. 19) is illuminated, however the platter remains stationary. A separate switch (Ref. No. 194) is located directly beneath the pickup arm lever (Ref. No. 186). The rest post switch (Ref. No. 194), which parallels the platter stop switch (Ref. No. 139), is activated by the movement of the pickup arm lever. With the tonearm on the pickup rest, the pickup arm lever closes the rest post switch (Ref. No. 194) stopping current flow to the platter drive motor (Ref. No. 36). Moving the tonearm off the pickup rest opens the rest post switch and starts platter rotation.

B·I·C Turntables have eliminated the selector sensing mechanism used on other automatic turntables. This mechanism works as follows: The program selector knob moves the program cam plate (Ref. No. 201) via the program rod (Ref. No. 110). The program cam has detents which cross reference to the number of records previously selected on the programmer. Every time a cycle occurs, as described previously, the program cam plate (Ref. No. 201) is impulsed to the right by the main cam. This movement engages the program extension (Ref. No. 114) in the program cam teeth, which in turn moves the program extension one notch. This sequence is repeated during every automatic cycle until the program selector knob is in the "Man" position. When the next cycle occurs, after the last record has played, the program rod and extension will move in to the larger angled area of the program cam. This will allow the program cam to swing to the left opening the AC power switch, turning the unit off automatically.

ADJUSTABLE CUEING RATE

Our cueing rate adjustment works as follows:

If the spring (Ref. No. 184) that applies tension to the rocker plate (Ref. No. 177) is varied, the amount of thrust given to the lifting pin (Ref. No. 176), which is damped, will also vary. The heavier the spring tension, the faster the pin will move through the damping compound; the lower the tension, the slower it will move through the damping compound. Adjustable cueing rate is, therefore, accomplished in exactly this way. As the adjusting knob (Ref. No. 166) is turned clockwise, it turns screw (Ref. No. 185) which allows the spring to expand. Turning the knob counterclockwise compresses the spring.

33 AND 45 SPEEDS

The speed of the drive motor in the Model 1000 is 300 RPM. To achieve 33 and 45 speeds, the belt is moved from one position on the motor pulley to another position on the motor pulley, in the following manner:

The speed control knob (Ref. No. 134) moves the speed/size rod (Ref. No. 115). This moves the speed cam lever (Ref. No. 41). The speed change cam (Ref. No. 39) is attached to the speed lever and, as the lever moves, the cam moves with it. You will notice that there are two cam surfaces on the speed change cam. The lower surface for the 33 position pushes the belt upward so that it engages the 33 step of the motor pulley. The upper surface pushes the belt down from the 33 step to the 45 step of the motor pulley.

Record size: The size of the record to be played is set at the same time the speed is selected. When the speed/size selector knob (Ref. No. 134) is set to 33 the speed/size rod (Ref. No. 115), which travels in a slot in the unit plate, allows the speed/size selector lever (Ref. No. 206) to pivot to its maximum. As the tonearm moves inward the pickup arm lever (Ref. No. 186) stops at the edge of the speed/size selector lever. This prevents the tonearm from landing past the setting for 12" 33 RPM.

When the speed/size selector knob is set at 45 the speed/size rod prevents the speed/size selector lever from pivoting, thereby allowing the pickup arm lever to move inward. The step on the speed/size selector lever stops the tonearm at the correct setting for 7" 45 RPM.

(All reference numbers correspond to the Exploded View)

ELECTRONIC ANALYSIS

Reading this analysis while referring to the schematic diagram will greatly aid your understanding of the operation and, therefore, improve diagnosis.

1. All wiring within terminals 3 thru 7 are relay operating and are energized by the DC supply of the Wein Bridge Oscillator.

2. The remaining terminals are motor operating and are energized by 24v AC.

3. K-1 is the cycle relay and a dotted line between it and the contacts associated with it are identified K-1A and K-1B.

4. K-2 is the cue up relay and the contacts are also identified by a dotted line and labeled K-2A and K-2B.

5. Units should not be tested upside down. All references to mechanical motion are viewed from the bottom.

CYCLE

When the momentary cycle contact switch is closed, relay K-1 is energized. K-1B contact 6 swings to position 7; K-1A contact 9 swings to position 10 supplying current to the cycle motor. The cycle motor rotates the main cam counterclockwise, closing the cycle detent switch (Ref. No. 80). (The cycle detent and cue detent switches are stacked. The cycle detent switch is mounted closest to the cycle motor bracket). Current now flows from B+ thru the K-1 relay, thru the LED and thru the cycle detent switch. The cycle detent switch holds the relay closed. Full 360° cam rotation opens the cycle detent switch, stopping the cycle motor.

CENTER TRIP

The circuit for center trip is identical to cycle with the following exception:

The center trip switch (Ref. No. 58) parallels the cycle switch and initiates center trip cycle.

CUE UP

As the momentary cue up (v) contact switch is closed, relay K-2 closes, making contact between 6 and 7 (K-2B) and 9 and 10 (K-2A). Note that the closure of contacts 9 and 10 holds K-2 closed,

however, this curcuit is thru contacts 8 and 9 of K-1A allowing cycle to override cue up.

Current now flows thru terminal #8, contacts 5 and 6 (K-1B), 6 and 7 (K-2B) and thru the 65° limit switch (Ref. No. 64) which is normally closed.

The cycle motor, now energized, rotates the main cam counterclockwise. As the main cam rotates the following sequence occurs, setting up the curcuit for cue down. The cam rotates counterclockwise, closing the cue detent switch (Ref. No. 79), opening the time delay switch (Ref. No. 107), and closing the 55° limit switch (Ref. No. 112). When the cam reaches 65° counterclockwise rotation the 65° limit switch (Ref. No. 64 will open. This breaks the circuit stopping cam rotation. When the 65° limit switch opens, switch (Ref. No. 139) closes and platter rotation stops. The unit is now fully cued, the LED remains lit and the platter is stopped.

CUE DOWN

When the momentary cue down (v) contact switch is closed, voltage across the coil of K-2 is shorted, de-energizing and opening K-2. Contact 9 of K-2A closes to 8, turning off the cue up LED. Simultaneously contact 6 of K-2B closes to contact 5. Current now flows thru 5 and 6 of K-1B, 6 and 5 of K-2B and the 55° limit switch (Ref. No. 112). The cycle motors' AC supply is now on the other side of C-3. The cycle motor reverses direction, causing the main cam to rotate clockwise, opening switch (Ref. No. 139) and starting platter rotation. After 10° rotation clockwise, the 55° limit switch opens, stopping the cam.

Now the time delay lever (Ref. No. 105) gradually (2 to 6 seconds) closes the time delay switch (Ref. No. 107). When the time delay switch closes, the main cam will continue its clockwise rotation until the cue detent switch (Ref. No. 79) opens. The circuit is broken, the cycle motor stops, the main cam is in detent and the tonearm is cued down.

REST POST SWITCH

As the program selector knob (Ref. No. 134) is moved from the "Off" position to the number of records to be played, the AC switch (Ref. No. 83) is closed energizing the power supply. The strobe light (Ref. No. 19) is illuminated, however the platter remains stationary. A separate switch (Ref. No. 194) is located directly beneath the pickup arm lever (Ref. No. 186).

The rest post switch (Ref. No. 194), which parallels the platter stop switch (Ref. No. 139), is activated by the movement of the pickup arm lever. With the tonearm on the pickup rest, the pickup arm lever closes the rest post switch (Ref. No. 194) stopping current flow to the platter drive motor (Ref. No. 36). Moving the tonearm off the pickup rest opens the rest post switch and starts platter rotation.

General Disassembly Instructions

The exploded view provides very useful illustrations which, in most cases, will answer your questions regarding disassembly. We list below some general disassembly instructions:

1. Platter - Instructions for removing the platter are found on Page 9 in the Owner's Manual.

2. Electronic Circuit Boards and LEDs

   a. Drive Motor Board - Remove the two 1/4" hex screws located on top of the unit plate (beneath the platter), unplug the three plug-in connectors and disconnect the four wires noting their location.

   b. Function Control Board - Disconnect the LED wires noting their polarity. Unplug the ten pin and remote connectors from the board. Remove the nine screws holding the board in place.

   c. LED - Relax the tension applied by the lens and the LED can be removed.

3. Main Cam Gear - Remove the platter and rubber belt. Remove the retaining clip, washer, spring, bracket and drive plate. Remove the three hex screws and nut holding the cycle motor in place. Lift the cycle motor off and away from the cam gear. Remove the two hex screws holding the spindle housing. The bearing, washers and "O" ring on the spindle housing may fall off. Do not lose these. The cam gear can now be removed from its stud and replaced. When installing the new gear be sure that:

   a. The two rotating levers below the drive plate clear the pins on the main cam.

   b. The "O" ring, washers and bearing are on the spindle housing. The "O" ring must be installed first, before the washer, bearing and washer.

   c. The detent pin, located on the under side of the cycle motor, is seated in the notch on the cam gear.

4. Strobe Light - Remove the switch cover and unsolder the two leads that go from the strobe light to the terminal strip, noting the position of the wires. Remove the pitch control knob by lifting straight up. Remove the two nuts located on

the underside of the unit plate which hold the strobe housing in place, and lift off the strobe housing. Remove the nut which holds the pitch control potentiometer in place.

5. AC Switch - Remove the switch cover, the press on connectors, and the one 3/16" hex screw holding the switch in place.

6. Terminal Strip - The terminal strip consists of a capacitor, a resistor and a fuse. The resistor is supplied with a press on connector at one end. A separate wiring diagram is available and we recommend that only original parts be used. These should be obtained through B·I·C or one of their authorized service stations.

7. Escutcheons

   a. Rear - Remove the stylus mode selector knob, speed selector knob and program knob by lifting straight up. With the stylus removed, or the stylus guard in place, free the tonearm from the pickup rest. The pickup rest is held in place by a palnut located directly beneath it on the underside of the unit. The palnut and pickup rest must be removed. Remove the four 1/4" palnuts and one 1/4" hex nut holding the escutcheon in place. The escutcheon may now be lifted off.

   b. Front - Remove the rear escutcheon. Using a sharp knife or Xacto, lift off the model identification trim disc (ELECTRONIC BELT DRIVE 1000). The screw located under this disc must be removed along with the two screws located in the tab under the rear escutcheon. There is a piece of double faced adhesive between the escutcheon and the unit plate.

8. Tonearm - Unplug the audio cables and unsolder the tonearm leads that attach to the phono socket. Remove the 7/16" nut at the bottom of the pickup shaft and lift off the pickup arm lever. Remove the "c" clip from the pickup shaft. The entire tonearm assembly can now be lifted out of the unit and, if necessary be replaced. To avoid losing the anti-skate spring, this should be disconnected from the tonearm before removing the arm.

   Tonearm Harness - Remove the tonearm. Remove the two screws holding the coupler in place. Remove and replace coupler and wires.

. Lateral Bearing - Remove the tonearm as described and lift the lateral bearing out of the top of the pickup base casting. Ball bearings face up.

. Connector Block - Remove the head from the tonearm. Insert a straight blade screw driver under the pin holding the connector block in place. Pry out the pin. The connector block will lift out.

IMPORTANT: Most of the parts of the tonearm are available separately and are replaceable. Before removing the horizontal gimbal held in place with the two #3 Allen screws, scribe a line on the tonearm tube so that the arm can be repositioned to its exact location. If this is not done, there will be no way to determine the location of the tonearm tube in regard to the gimbal and an increase in tracking error may result.

. Elastomer Damper in the Counterbalance Weight - This can be easily replaced in the following manner. Simply press out the old elastomer insert. You will notice that the mount consists of a single insert with two spider-type webs. Place a new web at one end of the insert; press this into the front of the counterbalance weight, take the second web and engage around the flange of the insert.

. Speed Change Lever - Lift the end of the speed cam and slide the speed lever off. Raise the lever up, rotating it until the notch in the speed lever aligns with the crimped portion of the speed change rod. The speed lever can then be removed.

. Speed Change Rod - Remove the drive plate assembly and the nut holding the pickup arm lever in place. Slide the pickup arm lever off and out of the way. Pull the rod out of the fastener and rotate until the crimped portion aligns with the notch in the unit plate. Remove the speed rod.

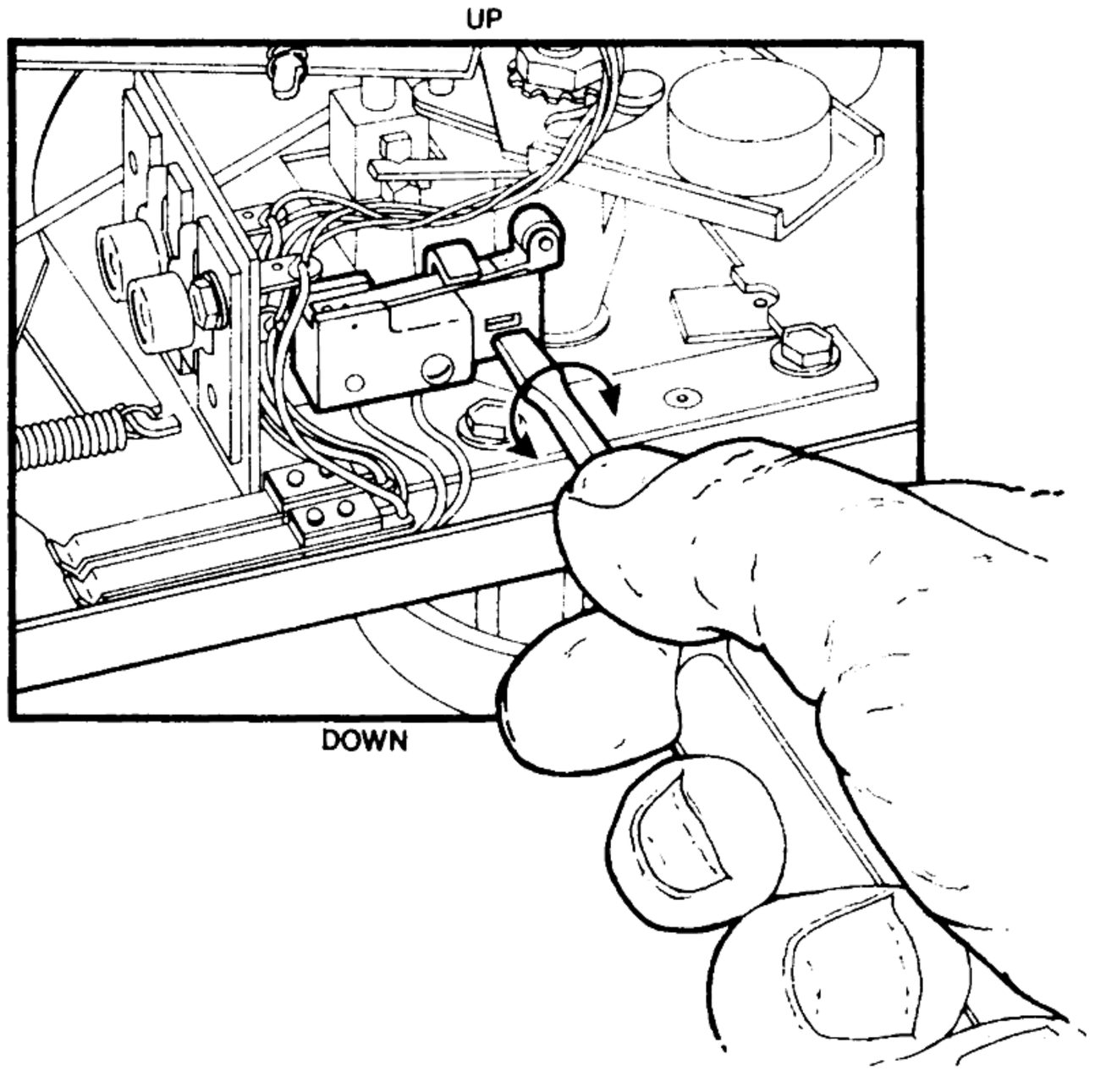
ADJUSTMENT PROCEDURES

1. Rest Post Switch

The rest post switch is mounted on the phono socket bracket and is activated by the movement of the pickup lever. This switch starts and stops platter rotation. It should just engage the pickup lever with the arm over the rest and disengage with the arm in the cycle position.

If the switch is interfering with the movement of the pickup lever, raise the switch by inserting a screw driver into the slot and turning counterclockwise (See Diagram below). If the pickup lever does not activate the rest post switch, lower the switch by turning clockwise.

NOTE: Adjustment should be made with the unit in the play position as the tonearm will not be in its correct vertical position when the unit is upside down.

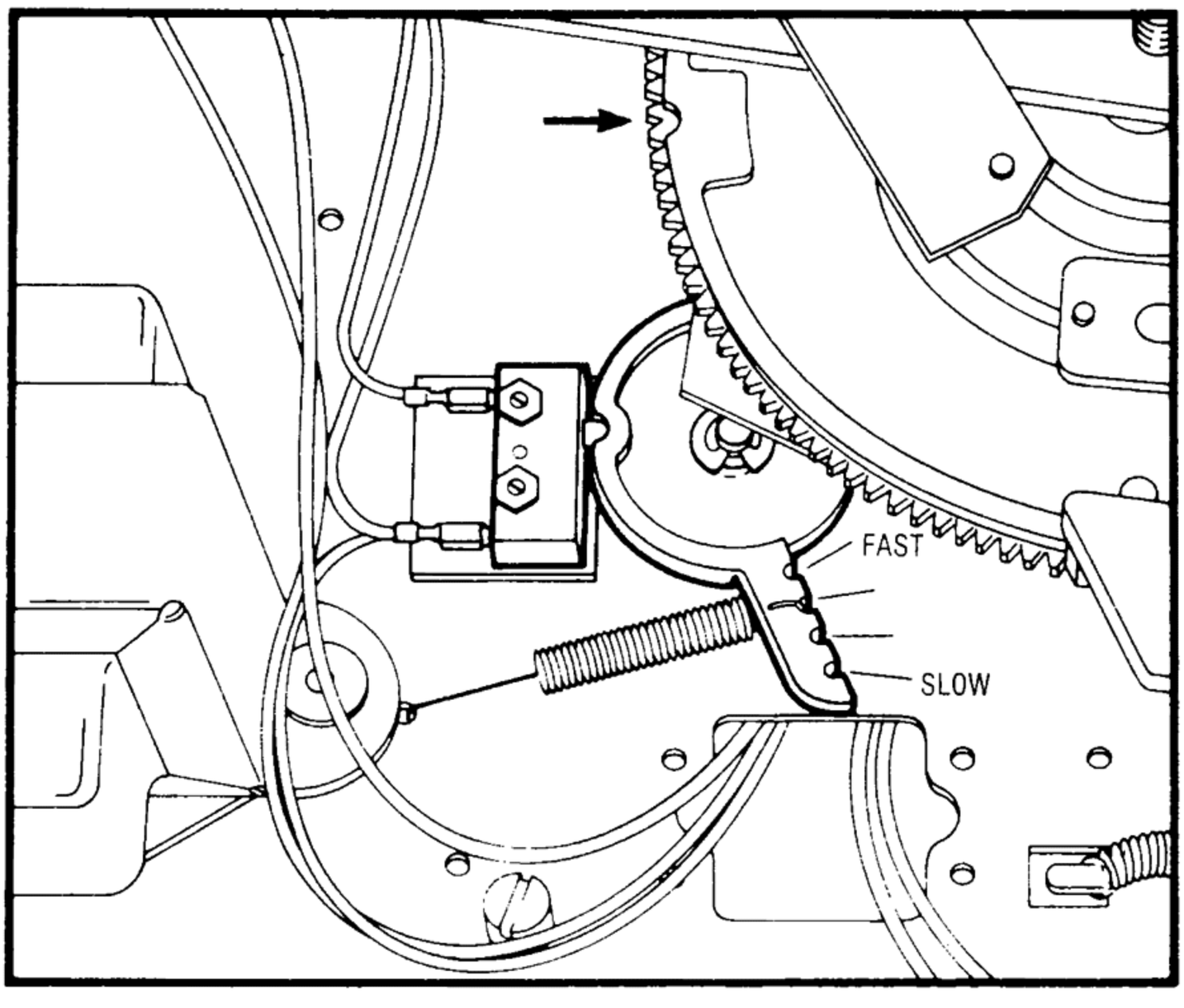


2. Time Delay for Cue Down

The time delay allows the platter to achieve nominal turntable speed before the tonearm begins to lower. The length of delay can be varied by adjusting the spring tension applied to the time delay lever (See Diagram below). This does not affect the rate of descent (the time it takes the arm to lower) but does affect when descent begins.

The time delay assembly is located beneath the cycle motor. Adjustment can be made without removing the cycle motor, however if this becomes necessary see #3 - Cycle Motor Adjusment when replacing. Excessive delay or failure of the arm to descend is caused by either insufficient spring tension or too much silicon compound under the lever. Failure of the time delay is caused by either insufficient silicon compound or excessive spring tension.

Time delay is required for multiple play (stacking records) only. The delay can be defeated by removing the brown wire from the cue detent switch and replacing it with the red wire from the time delay switch.

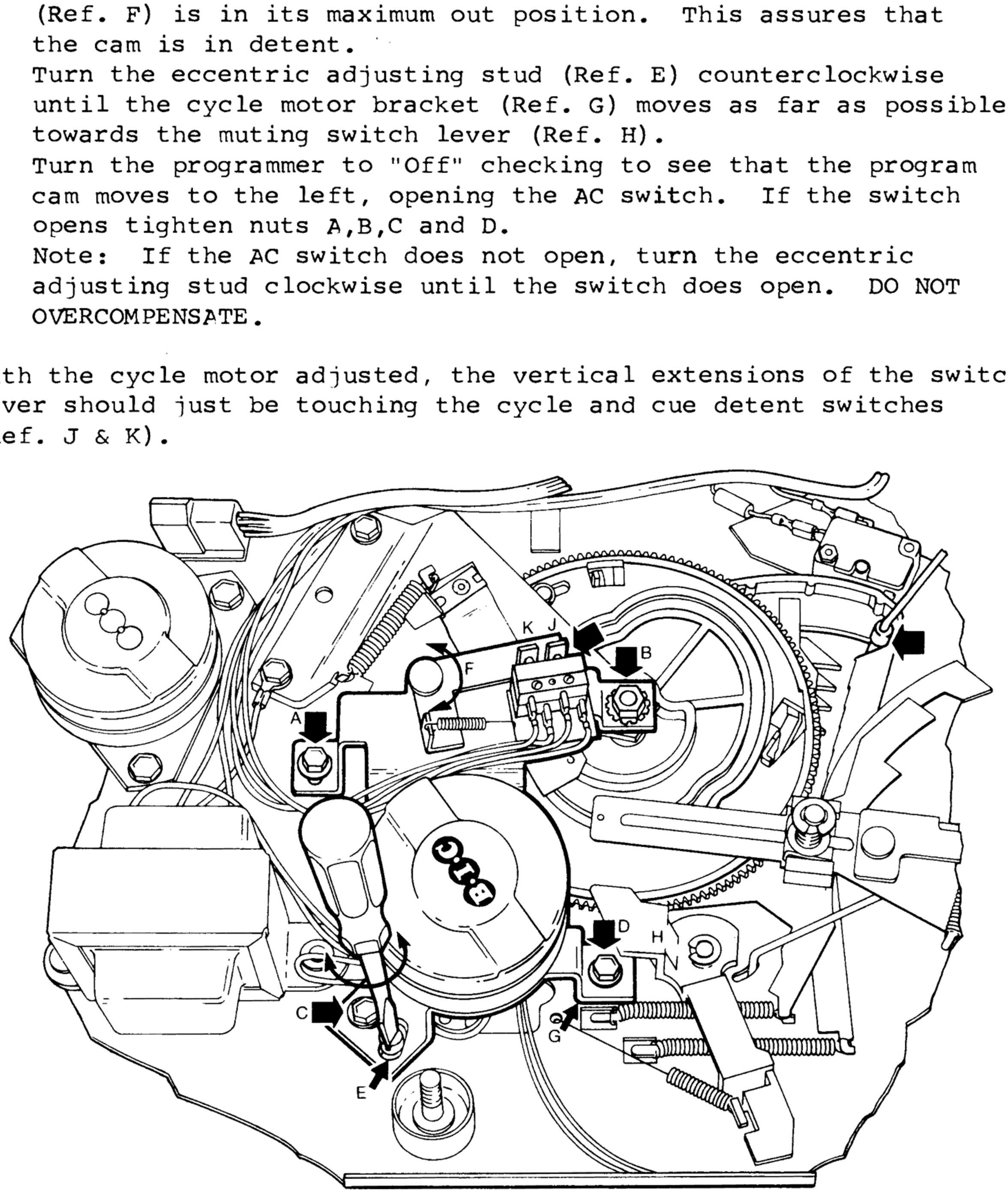


3. Cycle Motor

Before proceeding with the adjustment make sure the unit has shut off automatically and is not in cycle. Also disconnect from the AC supply.

1. Switch programmer to manual position.
2. Loosen nuts A,B,C and D (See diagram below).
3. A notch exists in the outer track of the cam gear. A pin attached to the switch lever engages this notch to provide detent. Manually rotate one of the larger gears back and forth on the underside of the cycle motor until switch lever (Ref. F) is in its maximum out position. This assures that the cam is in detent.
4. Turn the eccentric adjusting stud (Ref. E) counterclockwise until the cycle motor bracket (Ref. G) moves as far as possible towards the muting switch lever (Ref. H).
5. Turn the programmer to "Off" checking to see that the program cam moves to the left, opening the AC switch. If the switch opens tighten nuts A,B,C and D.
   Note: If the AC switch does not open, turn the eccentric adjusting stud clockwise until the switch does open. DO NOT OVERCOMPENSATE.

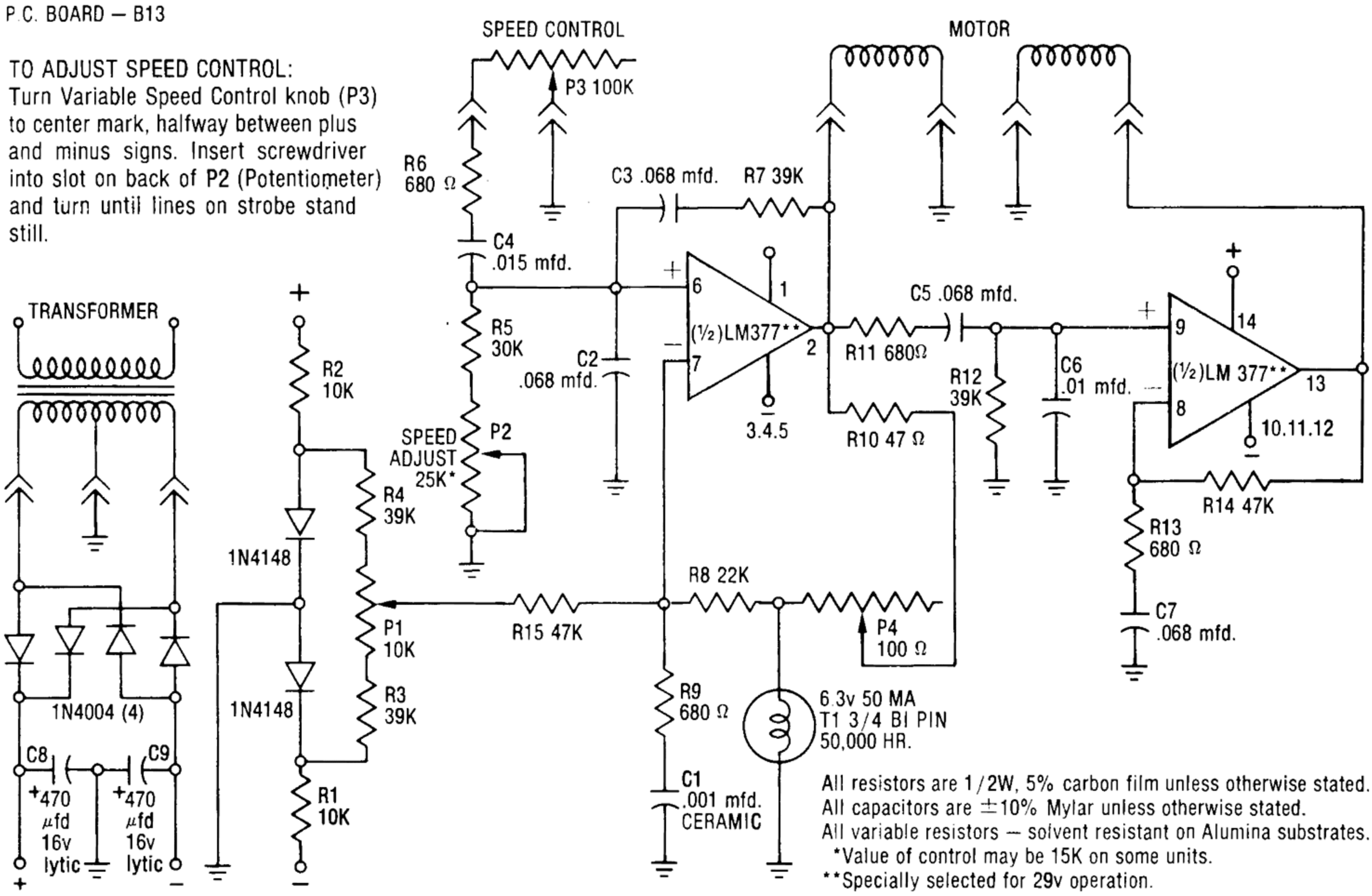
With the cycle motor adjusted, the vertical extensions of the switch lever should just be touching the cycle and cue detent switches (Ref. J & K).



Schematic—Model 1000 Motor Supply

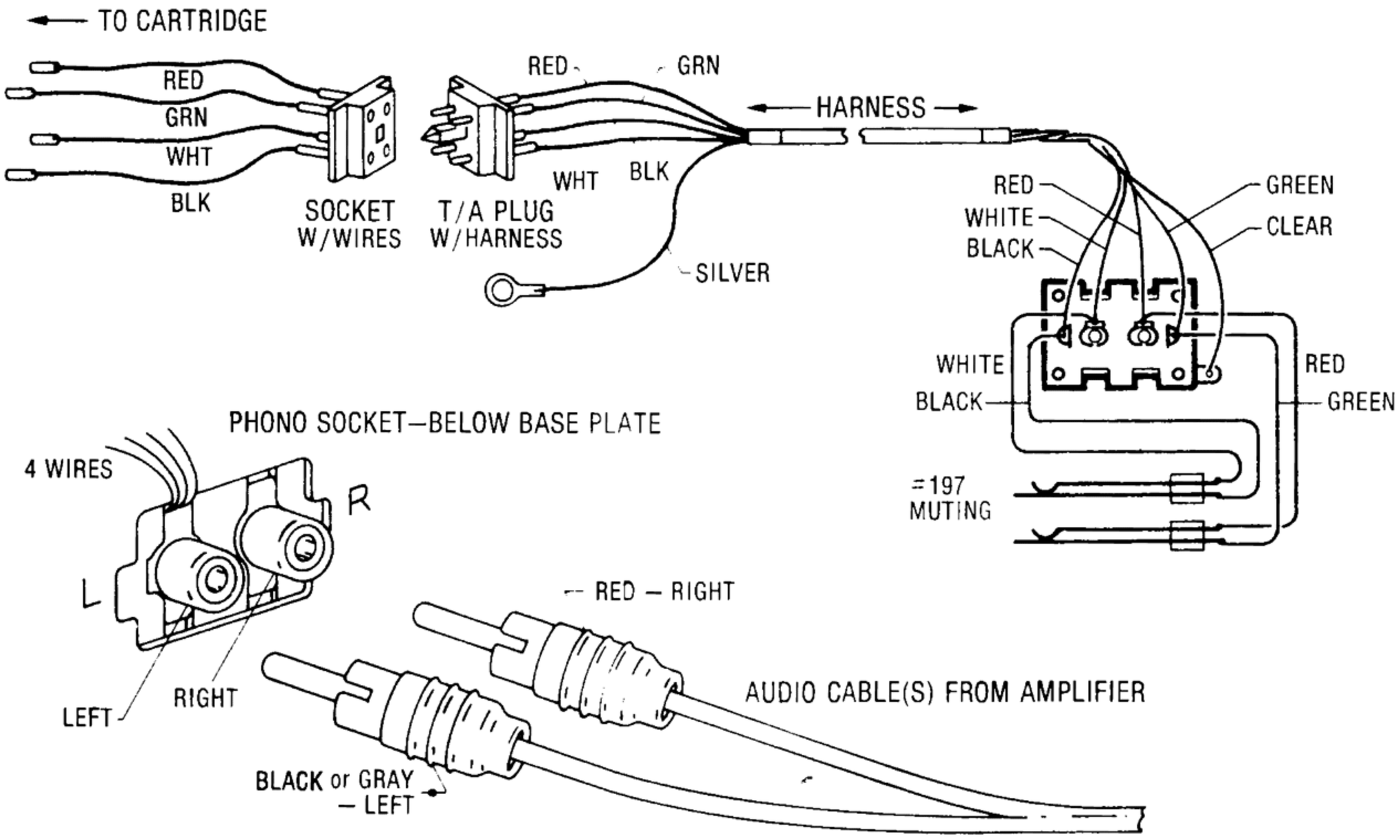
P.C. BOARD — B13

TO ADJUST SPEED CONTROL:
Turn Variable Speed Control knob (P3) to center mark, halfway between plus and minus signs. Insert screwdriver into slot on back of P2 (Potentiometer) and turn until lines on strobe stand still.

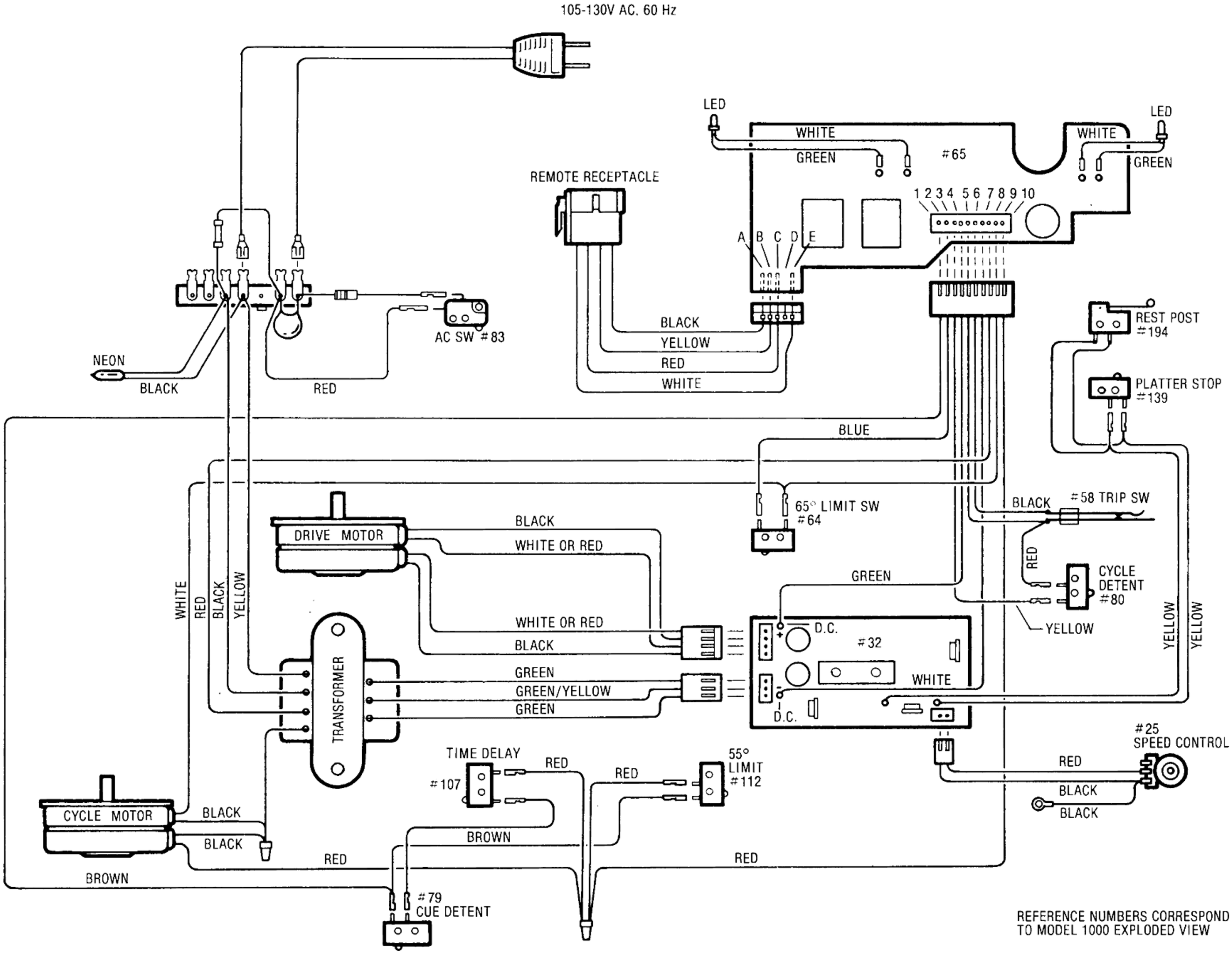


All resistors are 1/2W, 5% carbon film unless otherwise stated.
All capacitors are ±10% Mylar unless otherwise stated.
All variable resistors — solvent resistant on Alumina substrates.
*Value of control may be 15K on some units.
**Specially selected for 29v operation.

Tone Arm Wiring Model 1000

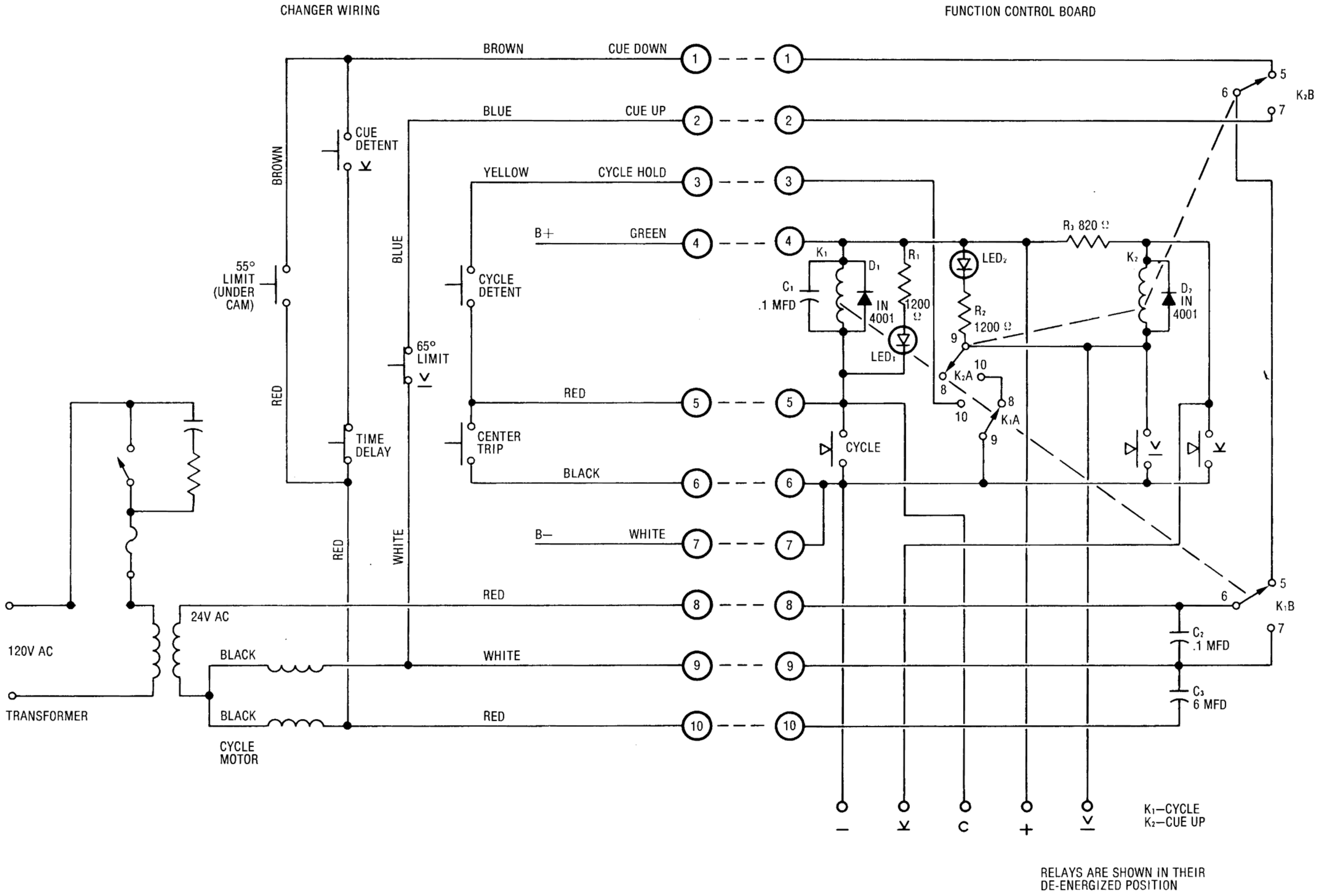


Wiring Diag. —Model 1000



REFERENCE NUMBERS CORRESPOND TO MODEL 1000 EXPLODED VIEW

Schematic—Model 1000



Lubrication

All of the points of pivot and bearing surfaces have been lubricated at the factory and very seldom, if ever, require lubrication.

We have shown below the points of lubrication and the recommended lubricants. There are a few matters that are extremely important and we highly recommend that you carefully follow the procedures listed below:

1. Before applying lubrication, clean off as much of the old lubricant as you can with a clean, lint-free cloth saturated in a solvent such as alcohol.
2. Apply lubrication *sparingly;* excessive lubrication will accumulate dust, congeal, and cause problems at a later date.
3. Use lubricants only as recommended.
4. When lubricating any part on top of the unit plate, take special care not to contaminate the drive surfaces which consist of motor pulley, inner rim of the turntable and belt.

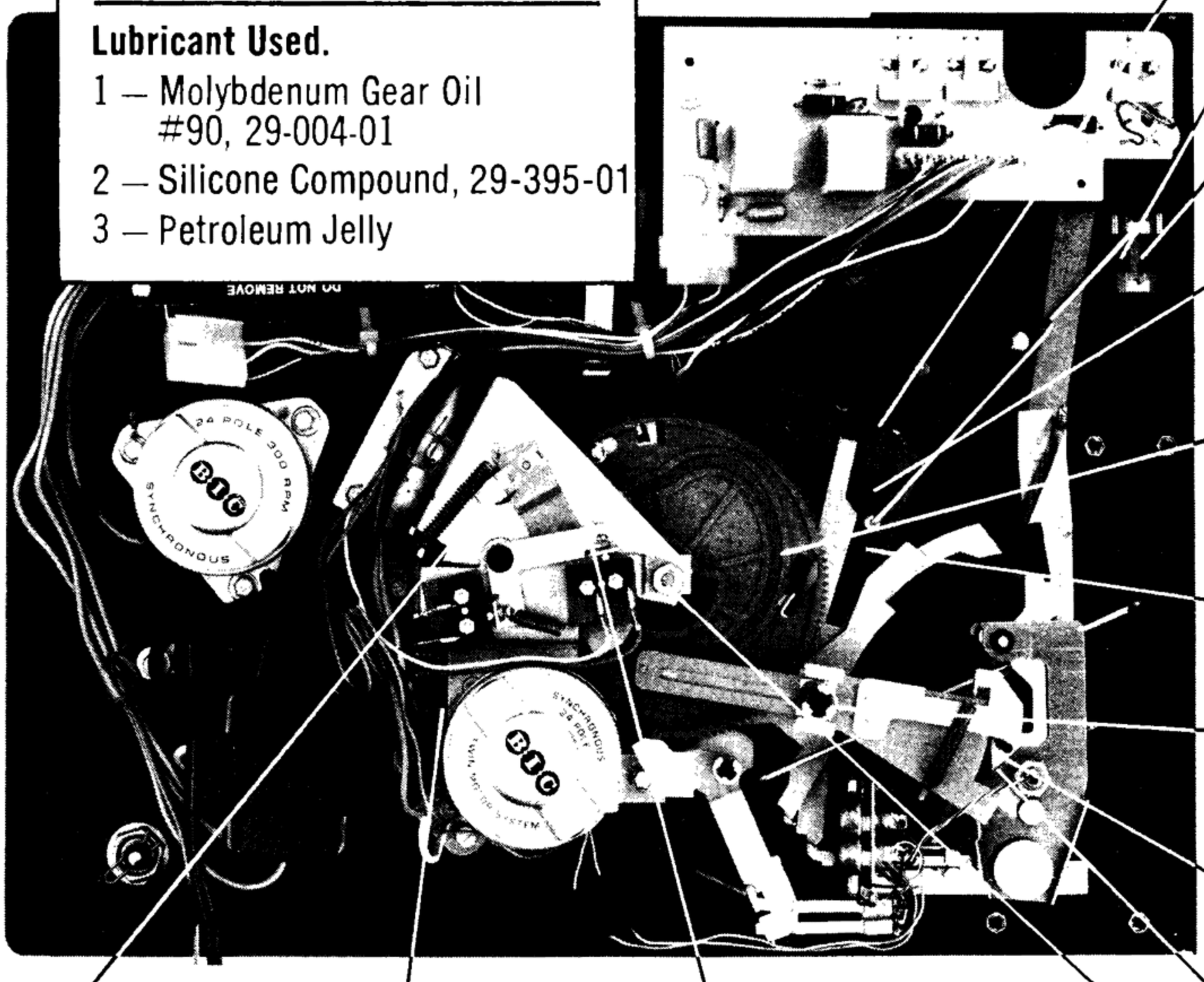
If this happens, immediately remove the belt and replace with a new one and clean the lubrication from the motor pulley and turntable rim with a lint-free clean cloth saturated in rubbing alcohol. Repeat this several times and allow to thoroughly evaporate for several hours before installing the new belt.

LUBRICATE *ONLY* THE POINTS MENTIONED BELOW.

Refer to Model 1000 Parts List for Reference Numbers

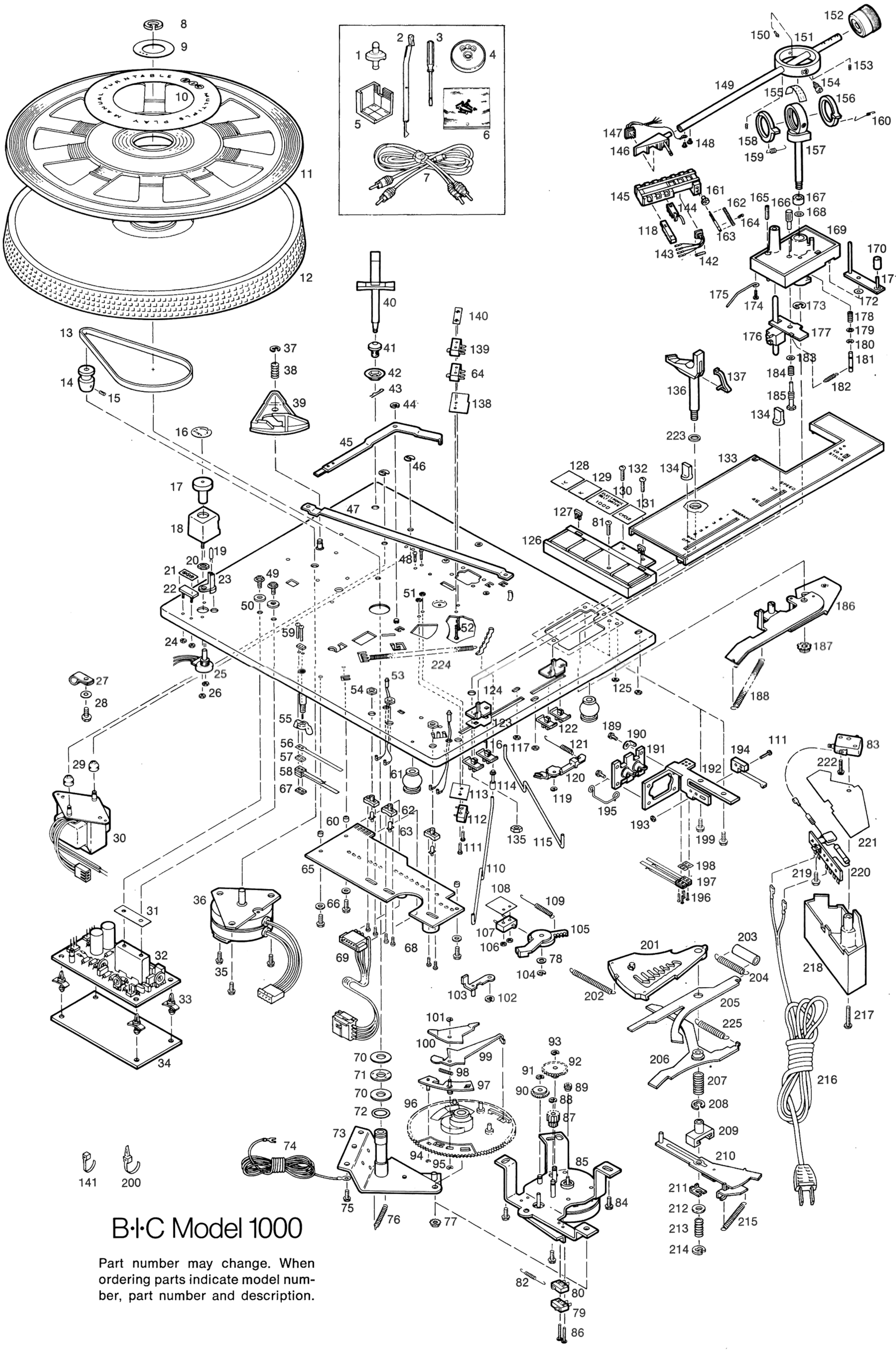
Lubricant Used.

1 — Molybdenum Gear Oil #90, 29-004-01
2 — Silicone Compound, 29-395-01
3 — Petroleum Jelly



3 — Program plate #201 — three corners riding on unit plate
3 — Mylar strip
3 — Along edges of Slot for program rod
3 — Teeth in unit plate for program rod — top and bottom
3 — Cam Gear #96 — inside groove and three studs on bottom
3 — Shaft of Program extension #114
3 — Shaft for #201, 205, 206 & 209, Bushing on #206 — lever top and bottom
3 — Black Nylon shaft on #186 P/U arm lever
2 — Lifting pin #176 (hidden)

1 — T/T Bore, #73 T/T Bearings, #71
2—Time delay lever #105 (hidden)
3 — Lever — spindle Housing both pivot areas #73
3 — Pivot shaft for Cam Gear #96



B·I·C Model 1000

Part number may change. When ordering parts indicate model number, part number and description.

Official Parts List | Model 1000

REF. NO.	PART NO.	DESCRIPTION
1	39-015-01	Manual spindle
2	10-038-01	Automatic Spindle
3	27-003-01	Screwdriver
4	37-539-01	45 rpm manual adaptor
5	37-344-01	Setting gauge
6	10-010-07	Cart. mtg. hdwr.
7	17-113-02	Audio cable
8	37-143-01	T/T retaining clip
9	38-385-02	T/T mat insert
10	38-029-01	Trim disc
11	10-228-01	T/T mat w/inserts
12	10-244-01	Turntable
13	37-130-01	Belt
14	39-602-01	60 Hz. pulley
15	20-422-01	Set screw
16	38-100-01	Trim—Pitch control
17	37-057-01	Pitch control knob
18	37-058-01	Strobe housing
19	10-242-01	Neon light
20	21-378-01	Hex nut
21	38-079-01	Logo
22	37-126-01	Logo base
23	37-114-01	Neon support
24	21-282-01	Palnut (2)
25	10-229-01	Speed control & lead assy
26	21-282-01	Palnut (2)
27	12-409-01	AC clamp
28	20-290-01	Screw w/washer
29	37-002-01	Grommet (2)
30	10-103-05	Transformer
31	38-428-01	Mica insulator
32	12-046-01	Drive motor control board
33	12-313-01	Stand off (4)
34	12-413-01	Cover (P. C. Board)
35	20-181-01	Screw (3)
36	10-211-03	Motor
37	23-180-01	"C" clip
38	40-302-01	Compression spring
39	37-134-01	Speed cam
40	10-223-01	Record support assy
41	39-043-01	Base—record support
42	21-004-01	Palnut
43	40-007-01	Detent spring
44	23-180-01	"C" clip
45	10-247-01	Trip lever
46	23-002-01	"G" clip (2)
47	38-138-01	Lever—speed cam
48	20-027-01	Screw (2)
49	20-181-01	Screw (2)
50	22-427-01	Washer (2)
51	21-011-01	Twin nut
52	20-535-01	Screw (2)
53	10-245-01	Led w/wires (2)
54	21-007-01	Nut (3)
55	21-200-02	Wing nut (2)
56	28-088-01	Insulator
57	38-110-01	Pressure plate
58	12-039-01	Trip switch
59	20-027-01	Screw (2)
60	37-144-02	Spacer (3)
61	37-540-01	Isolation mount (4)
62	37-098-01	Holder (3)
63	37-056-01	Switch button (3)
64	12-036-01	Switch—65° limit
65	10-238-01	Function control board
66	20-290-01	Screw w/washer (3)
67	21-011-01	Twin nut
68	20-535-01	Screw (6)
69	10-259-01	Remote control connector assy
70	27-011-01	Bearing washer (2)
71	27-010-01	Bearing retainer
72	37-113-02	"O" ring
73	10-012-01	T/T spindle housing assy
74	10-106-01	Ground lead
75	20-181-01	Screw (2)
76	40-294-01	Spring
77	21-178-01	Nut w/lock washer
78	38-073-01	Bowed washer
79	12-037-01	Switch—cue detent
80	12-038-01	Switch—cycle detent
81	20-268-01	Screw
82	40-026-01	Spring
83	12-289-01	AC switch
84	20-181-01	Nut (3)
85	10-260-01	Cycle motor & switch assy Includes 78-80, 82, 84-93
86	20-027-01	Screw (2)
87	37-094-01	Gear
88	23-005-01	"C" clip
89	37-095-01	Gear
90	37-039-01	Gear
91	23-005-01	"C" clip
92	37-040-01	Gear
93	23-005-01	"C" clip
94	23-005-01	"C" clip
95	23-004-01	"C" clip
96	10-234-01	Cam gear assy
97	10-236-01	Trip relief
98	40-008-01	Spring
99	10-235-01	Trip clutch plate
100	37-096-01	Trip pawl
101	23-239-01	"C" clip
102	23-005-01	"C" clip
103	10-246-01	Switch lever
104	23-005-01	"C" clip
105	37-097-01	Delay lever
106	21-008-01	Nut (2)
107	12-036-01	Time delay switch
108	28-075-01	Insulator
109	40-019-01	Spring—delay lever
110	41-226-01	Program rod
111	20-027-01	Screw (2)
112	12-060-01	Switch—55° limit
113	28-075-01	Insulator
114	37-512-01	Extension—program rod
115	41-227-01	Speed/size rod
116	37-559-01	Slide fastener
117	21-282-01	Palnut
118	37-034-01	Auto Man selector
119	23-005-01	"C" clip
120	37-115-01	Muting lever
121	40-023-01	Spring—muting lever
122	37-225-01	Slide fastener
123	10-169-01	Slide dampener—program
124	38-213-01	Slider (2)
125	21-282-01	Palnut (2)
126	10-243-01	Function control escutcheon
127	37-122-01	Lens (2)
128	38-074-01	Insert—Cue up
129	38-075-01	Insert—Cue down
130	38-076-01	Insert—Model
131	38-077-01	Insert—Cycle
132	20-029-01	Screw (2)
133	10-230-01	Program control escutcheon
134	37-406-01	Control knob (2)
135	21-001-01	Nut
136	10-152-01	Pickup rest
137	37-355-01	Lock
138	28-075-01	Insulator
139	12-038-01	Switch—platter stop
140	21-011-01	Twin nut
141	12-013-01	Wire tie
142	41-438-01	Pin—socket retainer
143	10-032-01	Connector block
144	10-220-01	Cart. mtg. bkt. w/finger lift
145	10-218-01	Cartridge shell assy
146	10-031-02	Coupler w/harness
147	10-053-01	Harness w/plug
148	20-268-01	Screw 4-40x7/32 (2)
149	36-164-02	Tonearm tube
	10-028-02	Tonearm complete—includes Nos. 146-159 except 152
150	39-165-01	Fixed pivot pin
151	39-163-03	Ring—Tonearm tube
152	10-026-01	Counter balance weight
153	20-003-01	Screw #2-56x1/32 (2)
154	10-066-01	Pivot pin assy
155	28-526-01	Label—pivot ring
156	37-117-01	Ring—skate force
157	10-029-01	Pivot ring & bearing assy—includes Nos. 151, 154-158
158	37-152-01	Ring—stylus force
159	40-216-01	Spring—stylus force
160	40-182-01	Spring—skate force
161	39-381-02	Lock nut
162	40-010-01	Spring
163	39-045-01	Head adjusting stud
164	23-006-01	"C" clip
165	20-263-01	P/U height adjusting screw
166	37-387-02	Knob—cue rate
167	27-366-01	Bearing
168	22-542-02	Washer—as required
169	10-058-02	Tonearm base
170	37-431-01	Knob—stylus mode
171	10-042-01	Bracket—anti-skate
172	38-279-01	Washer
173	23-525-01	"C" clip
174	20-268-01	Screw
175	41-003-01	Lock wire—p/u hgt. screw
176	10-062-01	Lift pin assy
177	38-563-01	Rocker plate
178	40-257-01	Spring—brake rod
179	22-343-01	Washer
180	23-543-01	"C" clip
181	39-139-01	Brake rod
182	40-493-01	Spring—brake bias
183	22-003-01	Washer—rocker plate (2)
184	40-258-01	Spring—rocker plate
185	39-369-01	Screw—rocker plate
186	10-063-01	P/U arm lever
187	21-426-01	Keps nut
188	40-179-01	Spring—P/U arm lever
189	20-181-01	Screw (2)
190	12-346-01	Ground lug
191	12-230-01	Phono socket
	10-248-01	Phono socket & bracket includes 189-198—wired
192	38-036-01	Bracket
193	21-008-01	Nut
194	12-040-01	Switch—rest post
195	41-009-01	Support—T/A wire
196	20-027-01	Screw #2-56x3/8
197	12-039-01	Muting switch (2)
198	21-011-01	Twin nut
199	20-181-01	Screw (2)
200	12-058-01	Wire tie (2)
201	37-214-01	Program cam
202	40-003-01	Spring
203	17-567-02	Sleeve
204	40-564-01	Spring
205	38-211-01	Stop lever
206	10-027-01	Size selector lever
207	40-283-01	Spring
208	23-292-01	"C" clip
209	37-265-01	Drive plate bracket
210	10-039-01	Drive plate assy
211	38-541-01	Bias plate
212	22-560-01	Fibre washer
213	40-155-01	Spring
214	23-292-01	"C" clip
215	40-371-01	Spring—drive plate
216	10-163-01	AC cord
217	20-293-01	Screw—switch shroud
218	37-237-01	Switch shroud
219	20-181-01	Screw
220	10-162-05	Terminal strip assy comp. includes
	12-510-01	Fuse—¼ amp slo-blow
	14-001-01	Capacitor .047 MF 400V
	92-100-10	Resistor(cc) 10Ω ½w
221	28-255-02	Switch insulator
222	20-187-01	Screw—AC switch
223	22-015-01	Washer
224	40-298-01	Spring
225	40-286-01	Spring

Service Notes

BRITISH INDUSTRIES COMPANY, Westbury, NY 11590 | A division of Avnet, Inc.

4/77/1

B I C MULTIPLE PLAY MANUAL TURNTABLES

SERVICE BULLETIN

SUBJECT: MODEL 1000 - CUE DOWN "TIME DELAY"

FROM: B·I·C TURNTABLE SERVICE DEPARTMENT

The Model 1000 employs a cue down "time delay" for the following reason:

When four or more records have been played automatically, the tonearm, when cue'd up, will be close to the top record. This will decrease the time between activating cue down and stylus set down. Therefore, it is possible the platter will still be accelerating to nominal speed after the stylus has set down. To prevent this, the cue down function is "time delayed".

Those individuals who use their turntable exclusively as a single play automatic may find the delay inconvenient. It is possible to defeat the delay device; to do so, proceed as follows:

1. Remove the turntable from the base so that you can work beneath the unit.

2. Note that there are two (2) switches mounted upon the bracket that supports the main cam drive motor (motor closest to phono socket). The cue detent switch has a brown and black wire connected to it. Disconnect the brown wire by grasping the connector with a small pair of pliers.

3. The other end of this wire is connected to the "time delay switch" directly beneath the main cam drive motor. This end must also be disconnected.

4. The red wire connected to the delay switch must be disconnected and installed in place of the brown wire that was removed in Step No. 2.

5. We recommend you retain the short length of brown wire in the event you decide to reactivate the delay device at a later date.

NOTE: This wiring harness has been changed and in some instances it may be necessary to lengthen the red wire mentioned in Step No. 4.

5/6/77

BRITISH INDUSTRIES COMPANY | WESTBURY, NEW YORK 11590 | TELEPHONE (516) 334-7450 | DIVISION OF AVNET, INC.

CABLE BRITINDCO WERY TWX: 510-222-2219

BIC MULTIPLE PLAY MANUAL TURNTABLES

SERVICE BULLETIN

SUBJECT: MODEL 1000 ELECTRONICS
SYMPTOM: CONTINUES TO CYCLE
CAUSE: TRIP SWITCH LEVER NOT RESETTING

DESCRIPTION OF NORMAL OPERATION

At the beginning of a center trip cycle, the trip switch lever is impulsed to the right, closing the trip switch. The main cam rotates, impulsing the trip switch lever tab that extends into the main cam. This resets the lever opening the trip switch. If this reset does not occur the turntable will continue to cycle and the lever must be adjusted.

NOTE: When testing do not operate unit vertically.

TO ADJUST

Remove the platter and belt. Refer to the diagram and note the tab on the trip switch lever that extends into the main cam. With the unit off, bend the tab that extends into the main cam very slightly towards the center of the main cam. Reset the lever to the left (refer to diagram) and turn the unit on. Manually move the trip switch lever to the right. The turntable will now automatically cycle.

If during cam rotation the lever is not reset and the symptom persists, repeat the adjustment.

TO TEST

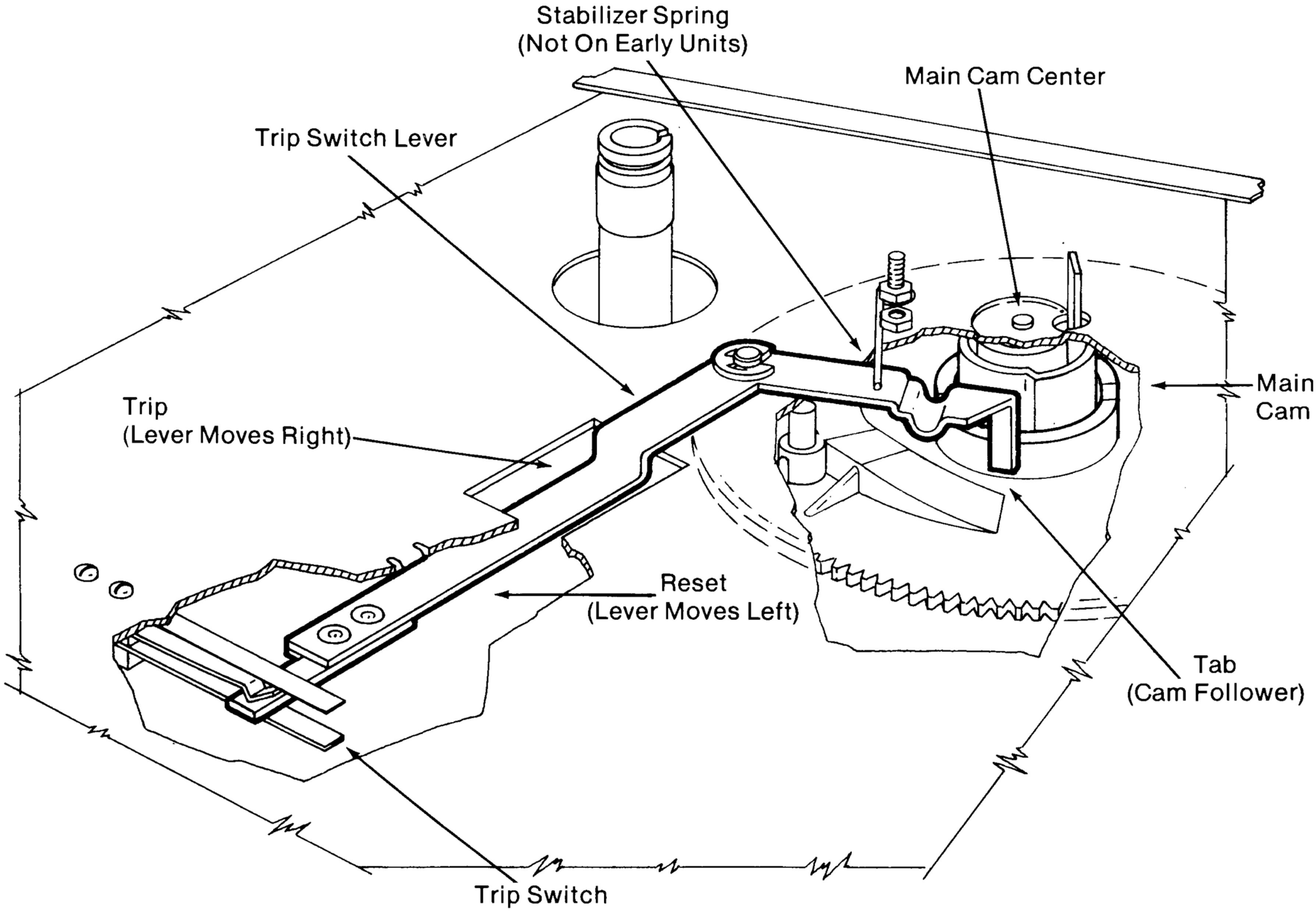
If the problem appears to be corrected, replace the platter and drive belt. Using a record album (that conforms to standards), test for end of record trip.

If this fails, the tab on the trip switch lever has been bent too far and must be bent slightly back, away from the center of the main cam. Repeat above.

This lever has been modified on current production to eliminate the condition described.

Diagram Attached 5/6/77

BRITISH INDUSTRIES COMPANY | WESTBURY, NEW YORK 11590 | TELEPHONE (516) 334-7450 | DIVISION OF AVNET, INC.
CABLE: BRITINDCO WERY | TWX: 510-222-2219


Stabilizer Spring
(Not On Early Units)
Main Cam Center
Trip Switch Lever
Main
Cam
Trip
(Lever Moves Right)
Reset
(Lever Moves Left)
Tab
(Cam Follower)
Trip Switch