

Figure 1

GENERAL INFORMATION

The Elac Model XA-100 Record Changer is designed to play in automatic sequence a stack of records and shut off after playing of the last record.

As many as eight 12", ten 10", or any assortment of 10" and 12" records (providing they are of the same speed and same type of groove) may be intermixed in any order. The stack of records should not exceed 7/8" in height, the limit being indicated by three white marks at the top end of the spindle.

A stack of ten 7", 45 R. P. M. records (with the use of a "45" adaptor spindle which is available as an accessory) will also play and be automatically changed on this machine.

After the last record of a stack has been played the pick-up arm is returned to the rest post and automatically shuts off the changer.

This record changer must not be connected to any other than A. C. supply. It is adapted for 110 or 220 volt A. C. supply and is adjusted to be operated on 110 volts when leaving the factory.

**ELAC (Miracord)
MODEL XA-100**

Distributed in United States by:

Audiogersh Corp.
23 Park Place
New York 7, New York

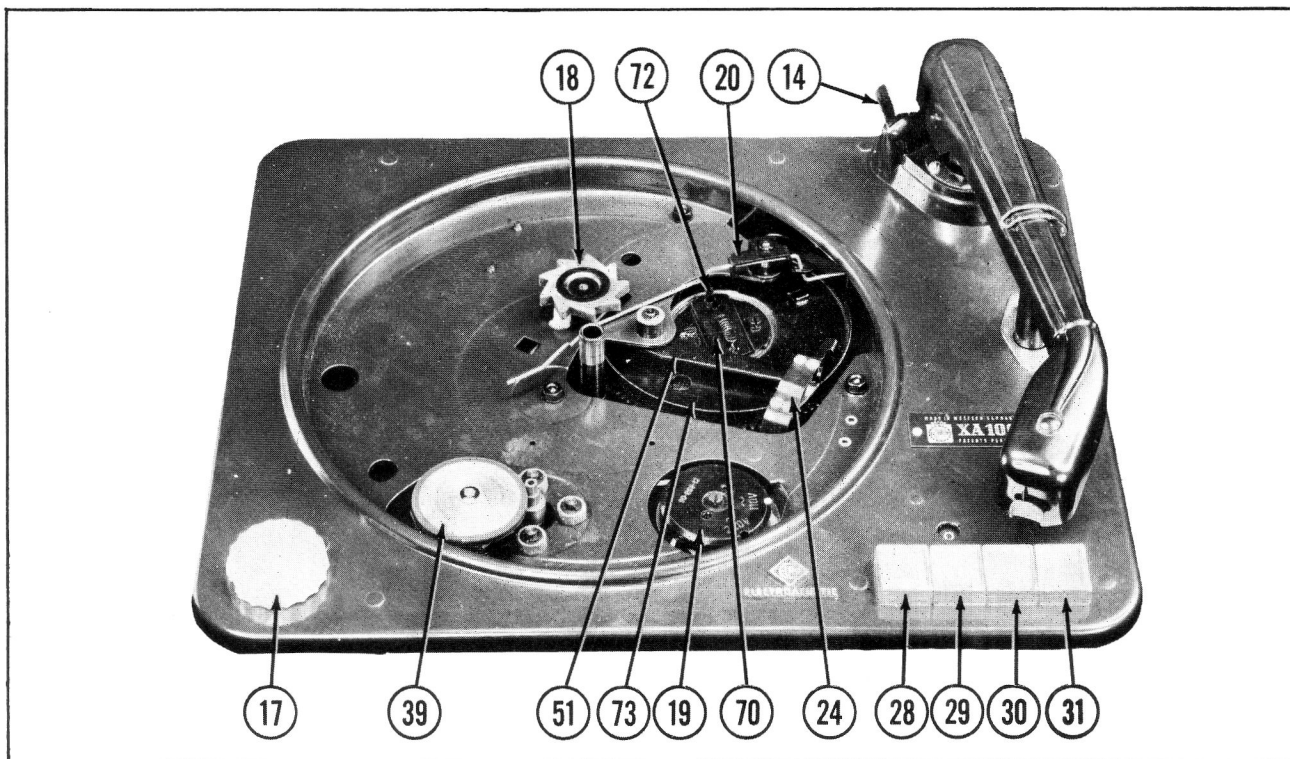


Figure 2

FUNCTIONS OF THE CONTROLS

Start Button: Depressing this button starts the changer into automatic operation. A record may also be rejected at any time by pressing this button.

Filter Button: Depressing this button will help suppress surface noise caused by old records.

Pause Button: Through the use of this button the changer can automatically be set for a time lapse between the changing of each record. The interval position is indicated at a small window directly above the "Pause" button and the figures as shown in the chart below allow settings anywhere from 5 seconds to 5 minutes.

SETTINGS					
R. P. M.	0	1	2	3	4
78	5sec.	35sec.	70sec.	105sec.	140sec.
45	9sec.	60sec.	120sec.	180sec.	240sec.
33 1/3	12sec.	82sec.	164sec.	246sec.	328sec.

Repeat: By using this button the whole or part of any record can be repeated at any time.

Speed Control Knob: The speed control knob determines the turntable speed and automatically sets the mechanism for the 7" or 10" set-down.

Note: When the changer is not in use, the speed control knob should be placed in one of the "0" positions to prevent flat spots from developing on the idler wheel tire.

OPERATING INSTRUCTIONS

Loading-

Place a stack of eight 12" or ten 10" records (or a corresponding mixture of both) or ten 7" records on the spindle and gently lower to the three protruding fingers on the spindle.

Note: When intermixing records, they must be of the same speed and same type of groove.

Starting-

To start the machine, after checking that the stylus and speed controls are in the position corresponding to the type records to be played, press the "Start" button, hold momentarily, and release. The changer will operate automatically until the last record has been played, at which time, the pick-up arm is returned to its rest and the supply to the motor is switched off.

Rejecting-

A record may be rejected at any time by depressing the "Start" button.

Stopping-

The changer may be stopped at any time by gently lifting the pick-up arm and placing it on its rest.

Using Changer As Automatic Record Player-

Instead of the changer spindle, insert the "Single Play Spindle" into the center hole of the turntable and place the record to be played on the turntable. When playing a 12" record, its edge will automatically touch

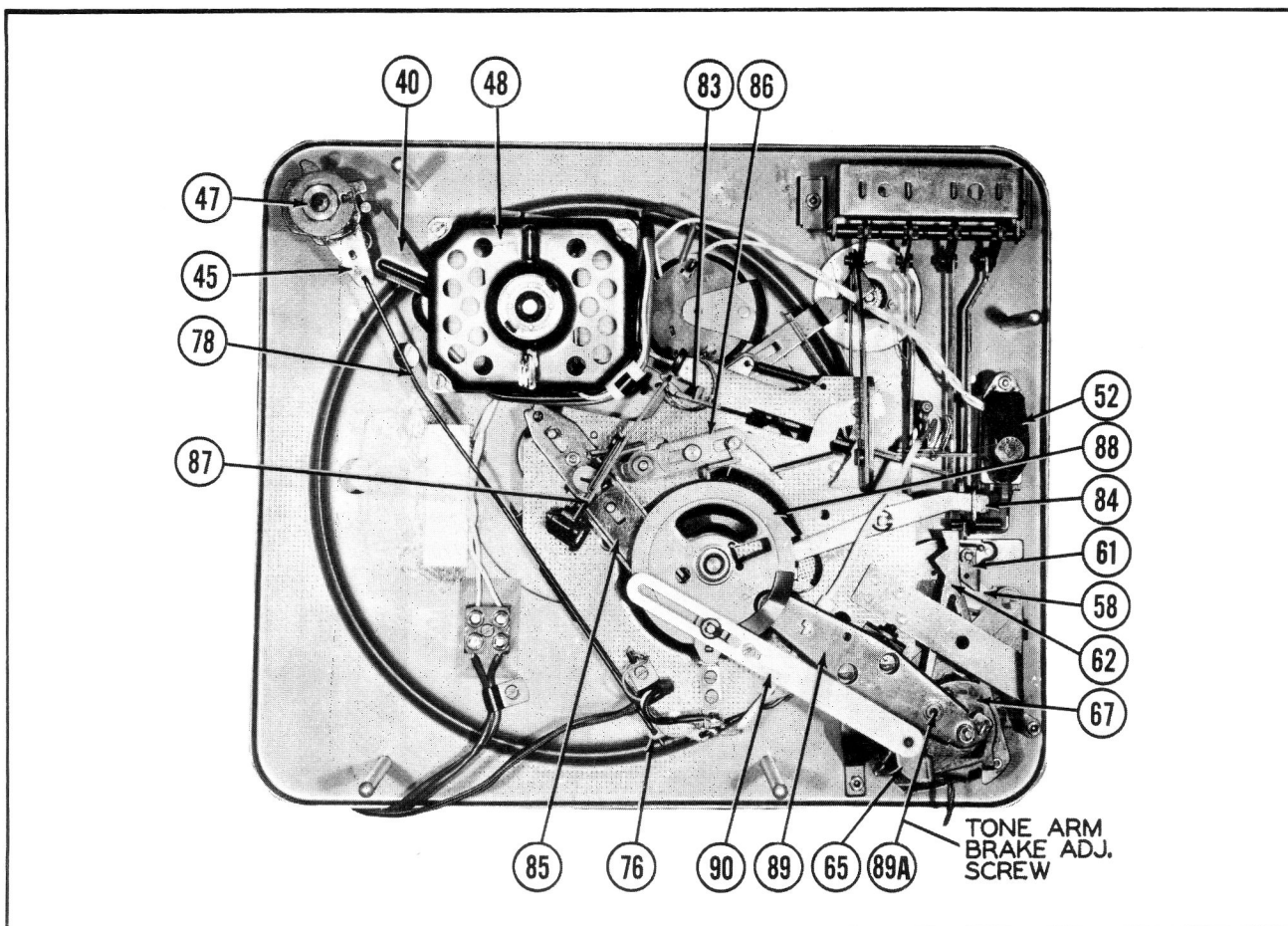


Figure 3

scanning lever (14) which sets the mechanism for the 12" set-down position.

To play a 7" record with a 1 1/2" center hole, place the "Puck" on the "Single Play Spindle" engaging it in the three humps on the rubber turntable mat.

Operate the changer as previously described and when the record has been played the pick-up arm will return to its rest and the instrument will shut off automatically.

Continuous Repetition-

The changer will automatically keep playing the same record if the single play spindle (2) is inserted inversely. The changer is switched off by manually returning the arm to its rest.

CHANGE CYCLE

It is recommended that the change cycle operation be observed while rotating the turntable by hand. The action described below can then be readily followed and the function of each part more easily understood.

Process To Start Record Changing: The process of record changing is initiated via the starting lever (84) which is actuated when the "Start" button is depressed, or by weighted segment (62) when the stylus moves into the trip groove after the record has been played to the finish.

Drive: The changer is driven by a synchronous A. C. motor (48), on the shaft of which a 3-step drive pulley

is mounted. The idler wheel (39) is adjusted to ride on different steps of the drive pulley by the idler pivot lever (40) and the speed change worm (42) when the speed control knob (17) is actuated.

The idler wheel (39) is arranged between the motor drive pulley and turntable rim and is held in firm contact with these parts by idler tension spring (23) to drive the turntable at a constant speed.

To prevent flat spots from developing on the idler wheel (39), when the changer is not in use, it is pulled away from the motor pulley when speed control knob (17) is placed in one of the "o" positions.

Functions Of Cycling Mechanism: Depressing the "Start" button causes the start link (35) to simultaneously actuate line switch (52) and start lever (84). As start lever (84) is actuated it contacts and moves the cycle starting catch (81) so as to move the rubber bumper on the end of catch (81) into contact with the lower driving surface on the turntable hub. The contact between the rubber bumper on cycle starting catch (81) and the turntable hub gives the necessary push for the teeth in cogwheel (80) to engage the teeth in the turntable hub, thus, causing cogwheel (80) and cam disk (88) to rotate. As cam disk (88) starts to rotate the tone arm control lever (89) rides up an incline on the outer edge of the cam disk to raise the tone arm. At this time, an eccentric mounted pin on cam disk (88) engages the tone arm control coupling rod (90), which in turn, actuates the tone arm actuating lever (65) to move the tone arm out away from the turntable.

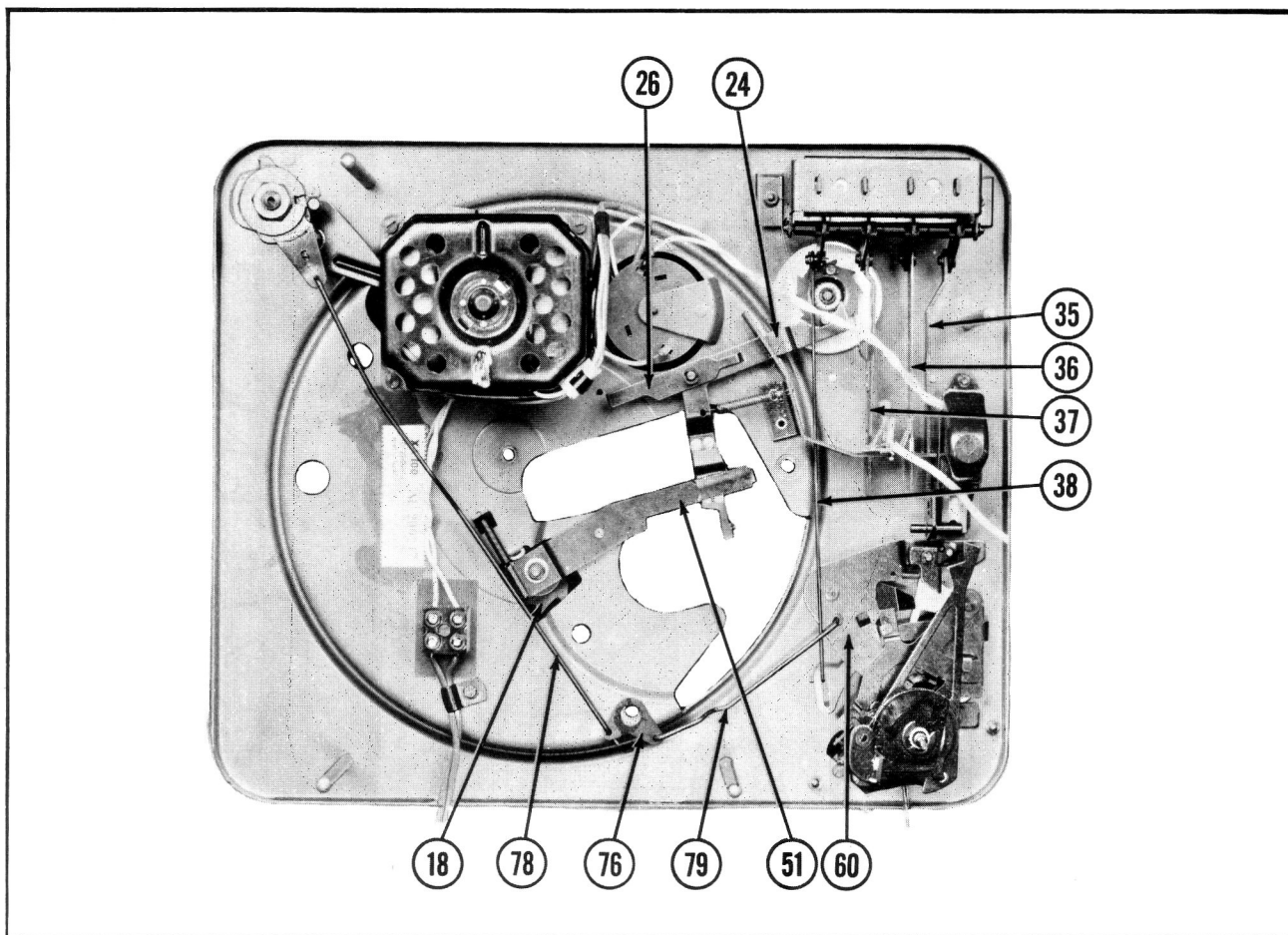


Figure 4

When the tone arm has reached its farthest outward excursion the cam disk (88), by reason of its contour, contacts and moves the spindle actuating lever (85) forward far enough to engage with the bottom end of the record spindle (1). The adjustment screw on the rear of the spindle actuating lever (85) now rides up the inclined cam surface on cam disk (88) and in so doing pivots the front of spindle actuating lever (85) downward to actuate the record spindle (1). This drops the bottom record of a stack, resting on the record spindle, to the turntable.

The tone arm adjusts itself to the size records being changed by the stop dog plate (60) which is provided with two levers. One is the 7" slide plate (57) which controls the 7" and 10" set-down positions and the other is the 12" stop dog (63) which controls the 12" set-down position. 7" slide lever (57) is moved into position for 7" records via a rod system (78 and 79) when the speed control is placed in the 45" position.

Tracer lever (58), which is coupled directly to the tone arm support mechanism and therefore moves in unison with the tone arm, directs the in-movement of the tone arm to one of the three set-down positions.

When 7" records are being changed and the changer is in the 45 R. P. M. speed position, the turned down nose on tracer lever (58) slides up the incline and over the top of 7" slide lever (57). After sliding over the top of the 7" slide lever the turned down nose on tracer lever (58) drops into a square hole in the stop dog plate (60), stopping the inward travel of the tone arm with the stylus positioned directly over the lead-in groove of the 7" record.

When 10" records are being changed and the changer is in the "33" or "78" speed position, the 7" slide lever (57) is pivoted toward the front of the changer. Consequently, the tracer lever (58) fails to make contact with the 7" slide lever (57) as the tone arm moves inward. The turned down nose on tracer lever (58) moves behind the 7" slide lever (57) and comes to rest against the stop dog plate (60). This positions the stylus directly above the lead-in groove of the 10" record.

When a 12" record drops to the turntable it strikes the spring-loaded scanning lever (14), which in turn, pushes the 12" stop dog (63) in front of the turned down nose on the tracer lever (58). As the tone arm moves in toward the record the turned down nose on the tracer lever (58) comes to rest against the 12" stop dog, stopping the inward movement of the tone arm, which positions the stylus directly above the lead-in groove of the 12" record.

At this time, the tone arm control lever (89) rides down the cam surface on the outer edge of cam disk (88) and lowers the tone arm onto the record. This same action raises the tracer lever (58) out of engagement with the set-down stop dog that it is engaged with, permitting the tone arm to ride freely across the record.

Cogwheel (80) and cam disk (88) have now completed their rotation and the "open gap" in the cogwheel teeth faces the pinion gear on the turntable hub, thus completing this phase of the change cycle.

As the stylus moves across the record, the weighted segment (62) moves inward with the tone arm

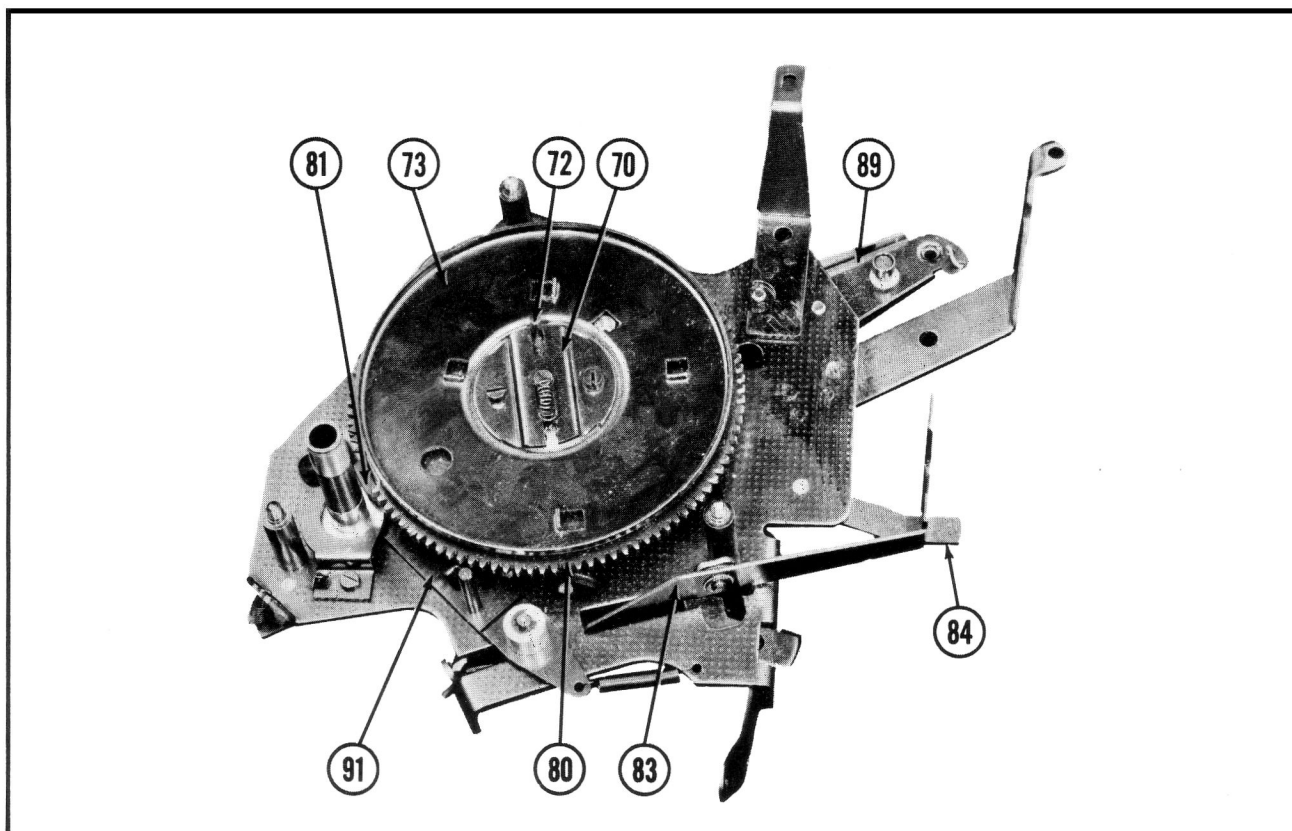


Figure 5

through a friction clutch arrangement. As the tone arm nears the end of a record the weighted segment (62) strikes the cycle starting catch (81) and moves it until the rubber bumper on its end moves to within .016" of the turntable hub. At this time the weighted segment (62) also contacts the recoil lever (20). The pin on the underside of the turntable, located nearest the hub, strikes the recoil lever (20) on each revolution of the turntable and the recoil lever, in turn, strikes and moves the weighted segment (62) back away from the starting catch (81). This action takes place during each revolution of the turntable until the stylus reaches the end of a record, at which time, the stylus enters the lead-out groove and the tone arm accelerates rapidly. This rapid acceleration causes the weighted segment (62) to move far enough and fast enough to push the cycle starting catch (81) and its rubber bumper into contact with the lower driving surface on the turntable hub. The contact between the rubber bumper on cycle starting catch (81) and the turntable hub gives the necessary push for the teeth in cogwheel (80) to engage with the teeth on the turntable hub and thus, start a new change cycle.

Again, the mechanism follows the preceding sequence of cycling and playing the records until the last record of the stack has been played.

Automatic Shut-Off Process: When the last record drops, the three expanding fingers at the top of the record spindle are not restrained by the center hole of a record. This action allows the "wire" at the bottom of the record spindle to be pulled down farther than when records are resting on the spindle. The downward movement of the "wire" on the bottom of the record spindle is transmitted to the ratchet lever (61) by action of the switch-off lever (83) and the shut-off lever (87). When the tone arm swings out, ratchet lever (61) engages with the notch in the front of the tracer lever

(58) and restrains the tone arm from moving in over the turntable. At this time, cam disk (88) completes its revolution and lowers the tone arm onto its rest, which, in turn, disconnects the line switch (52).

Functions Of The Pause Mechanism: Pauses are introduced between records only when the pause mechanism is switched on, (positions 1 to 4). This process is carried out by the tooth segment located on the underside of cogwheel (80). This tooth segment is moved inwards, making a gap in the cogwheel teeth (80), by the pause gap actuating lever (91).

Interval disk (73) has four stop dogs on its top side which stop the disk at a certain angle of arc, depending on the position of pause lever (24), which is actuated by the pause push button. When the "pause gap" is open, stopping the rotation of cogwheel (80), rubber cogwheel (18) is pivoted by the pause drive axle lever (51), which, in turn, is pivoted by slide piece (72). This moves the pause drive ring (49), located on the shaft of rubber cogwheel (18), against the rim of interval disk (73).

During each revolution of the turntable the outermost pin on the underside of the turntable strikes and moves rubber cogwheel (18) which causes interval disk (73) to slowly follow the rotation through action of the pause drive ring (49). The interval disk (73) now strikes a catch bolt on cogwheel (80), turns same, thus bridging the "pause gap" permitting the changer to continue on through its cycle.

Functions Of The Repeat Mechanism: When the "Repeat" button is depressed, spindle actuating lever (85) is blocked by the repeat bar (86) resulting in the record spindle (1) not being actuated when the mechanism goes through its cycle. An instant before cam disk (88)

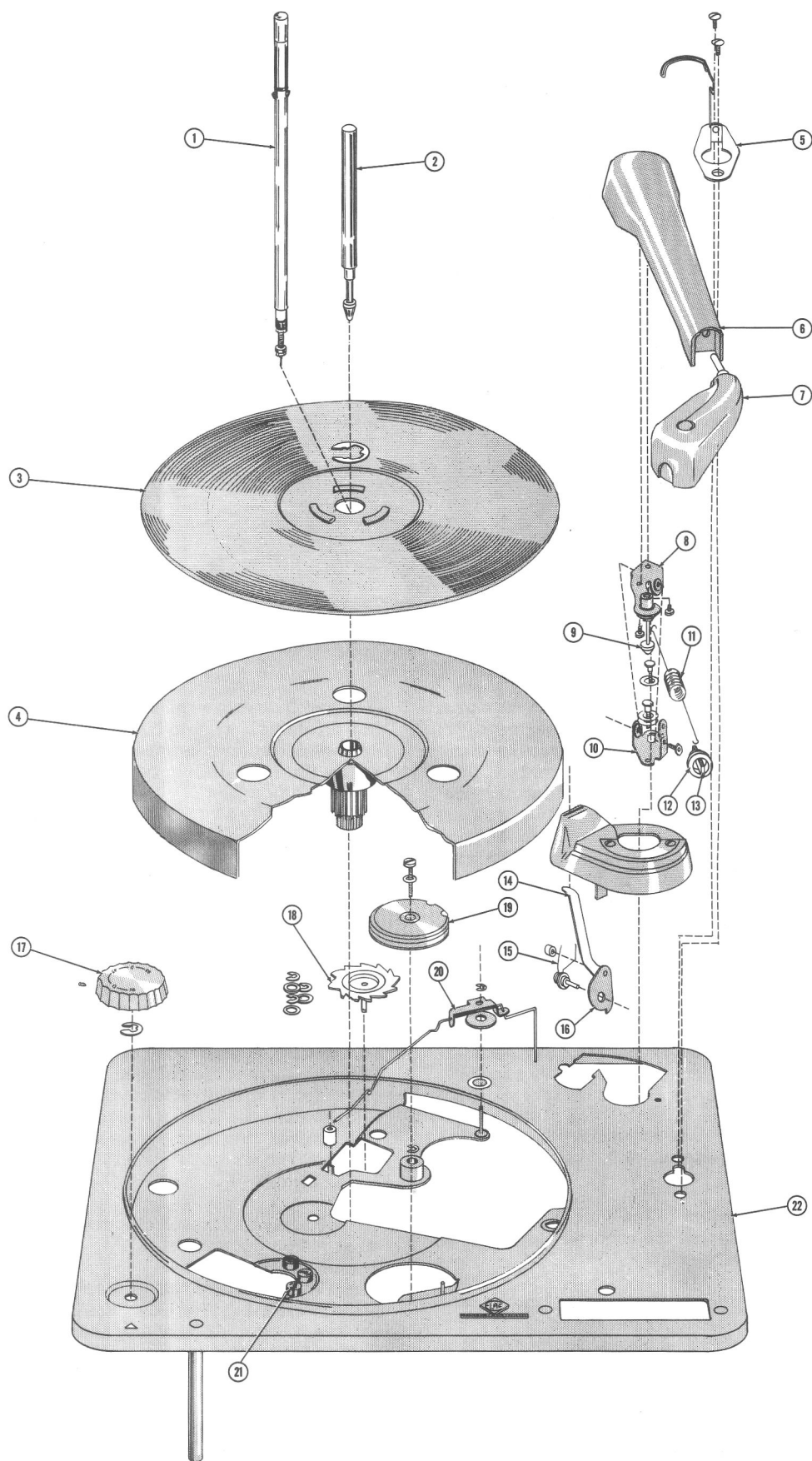


Figure 6A. Exploded View Of Parts Above Baseplate.

**ELAC (Miracord)
MODEL XA-100**

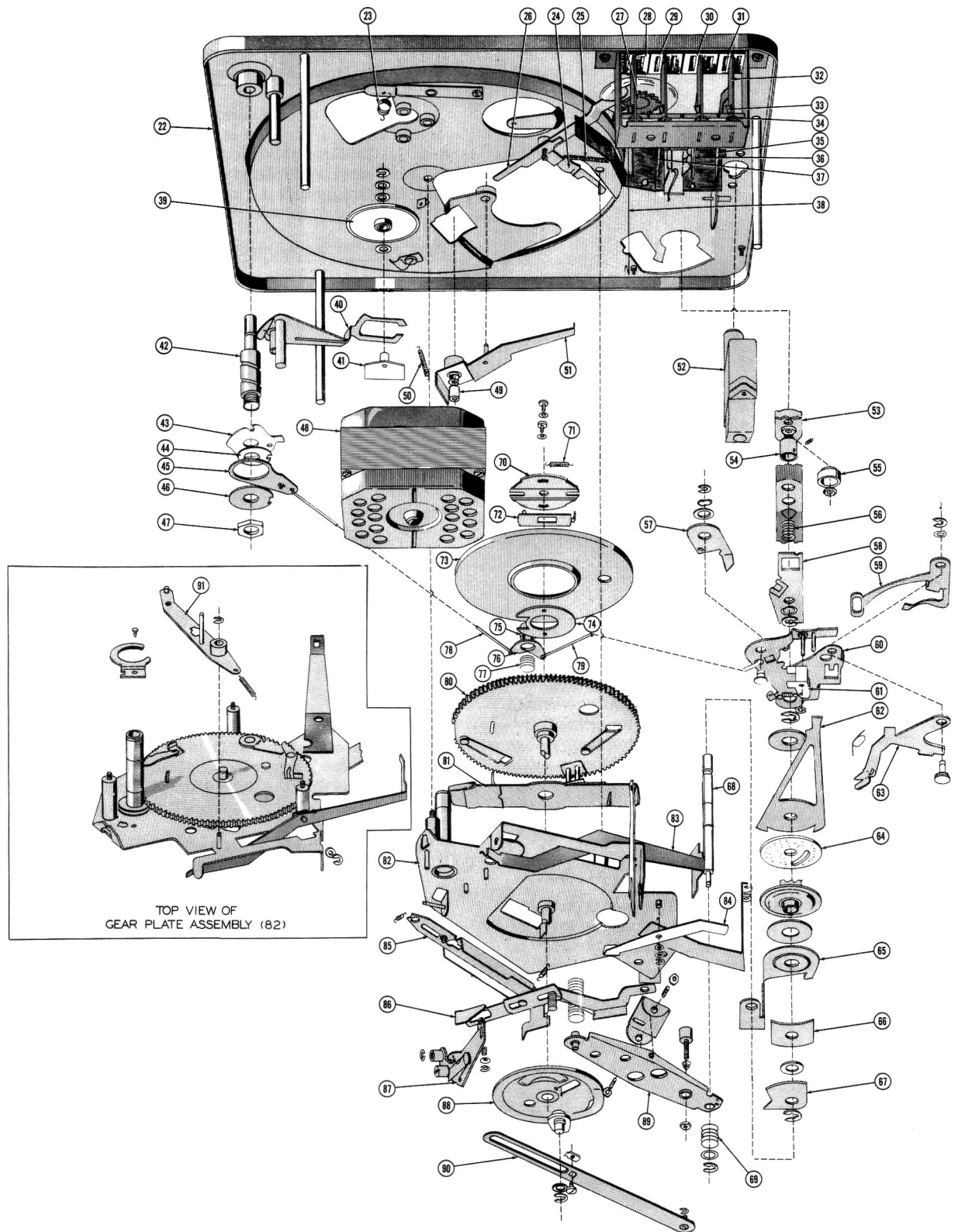


Figure 6B. Exploded View Of Parts Below Baseplate.

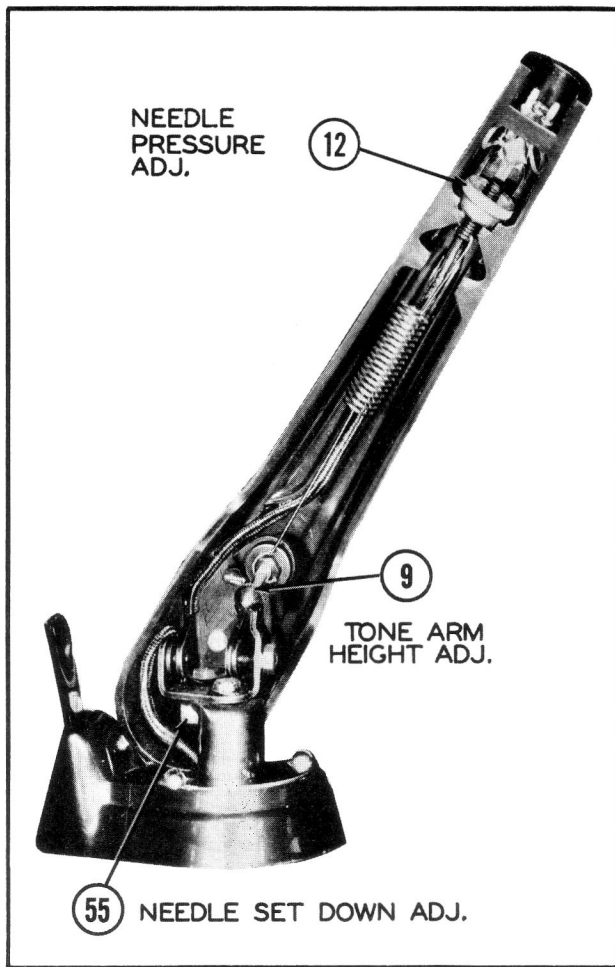


Figure 7

completes its revolution the nose on its outer surface strikes and pushes repeat bar (86) into its normal position. The changer will now continue to change each record in sequence until the "Repeat" button is again depressed.

ADJUSTMENTS

Needle Pressure Adjustment- (Refer To Figure 7)-

The needle pressure depends upon the data for the cartridge used. It is to be measured on the level of the first record at the needle and, in consideration of the mechanism of the changer, must not be less than 6.5 grams.

The needle pressure can be regulated by turning knurled nut (12). Turning nut (12) clockwise will decrease the pressure and turning counterclockwise will increase the needle pressure.

Tone Arm Height Adjustment- (Refer To Figure 7)-

The height to which the tone arm will raise, during change cycle, is adjusted by knurled screw (9).

To adjust, cycle changer by hand until the tone arm has moved in over the turntable and while the arm is at maximum height turn screw (9) until the needle point lies 1" above the rubber turntable mat. After this adjustment is made, check to see if the tone arm lands low enough to play a thin record. If not, lower height slightly.

Needle Set-Down Adjustment- (Refer To Figure 7)-

The tone arm landing point can only be adjusted for all sizes of records in common. It suffices to adjust the landing point for one size record by turning the tone arm accordingly in relation to its support. This is done by turning knurled eccentric screw (55).

Tone Arm Brake Adjustment- (Refer To Figure 3)-

When the tone arm is in playing position, a small gap should be seen between brake segment (67) and brake adjustment screw (89A), to allow the tone arm to move freely across a record. The gap is adjusted by turning brake adjustment screw (89A).

Idler Wheel (39) Height Adjustment-

Place speed control knob (17) in the "o" position and lift off the turntable. Check to see that idler wheel (39) lies horizontal and that its height is correct. The bottom edge of the idler wheel tire must not be sliding on the next step of the motor pulley. The height can be adjusted by loosening hex. nut (47) and turning speed change worm (42). Then tighten hex. nut (47) well and, if necessary, set knob (17) so that its numerals face the triangular mark on the baseplate.

LUBRICATION

Additional lubrication should not be required for a long period of time. If the changer is operated without interruption for long periods of time and the mechanism becomes noisy or if the levers and sliding members become sluggish to respond, lubricate as follows:

With S. A. E. #10 Motor Oil:

1. One drop at the pivot points of all levers which appear to be sluggish in operation.
2. Apply one drop on the top and bottom felt pads of the motor.

With Ball Bearing Grease:

1. Apply a thin coat on the sliding surfaces of sluggish sliding lever members.

CAUTION: Do not allow oil or grease to come in contact with the inside rim of the turntable, the step pulley on the motor, idler wheel tire (39), or pause drive ring (49). Clean these surfaces with a petroleum solvent.

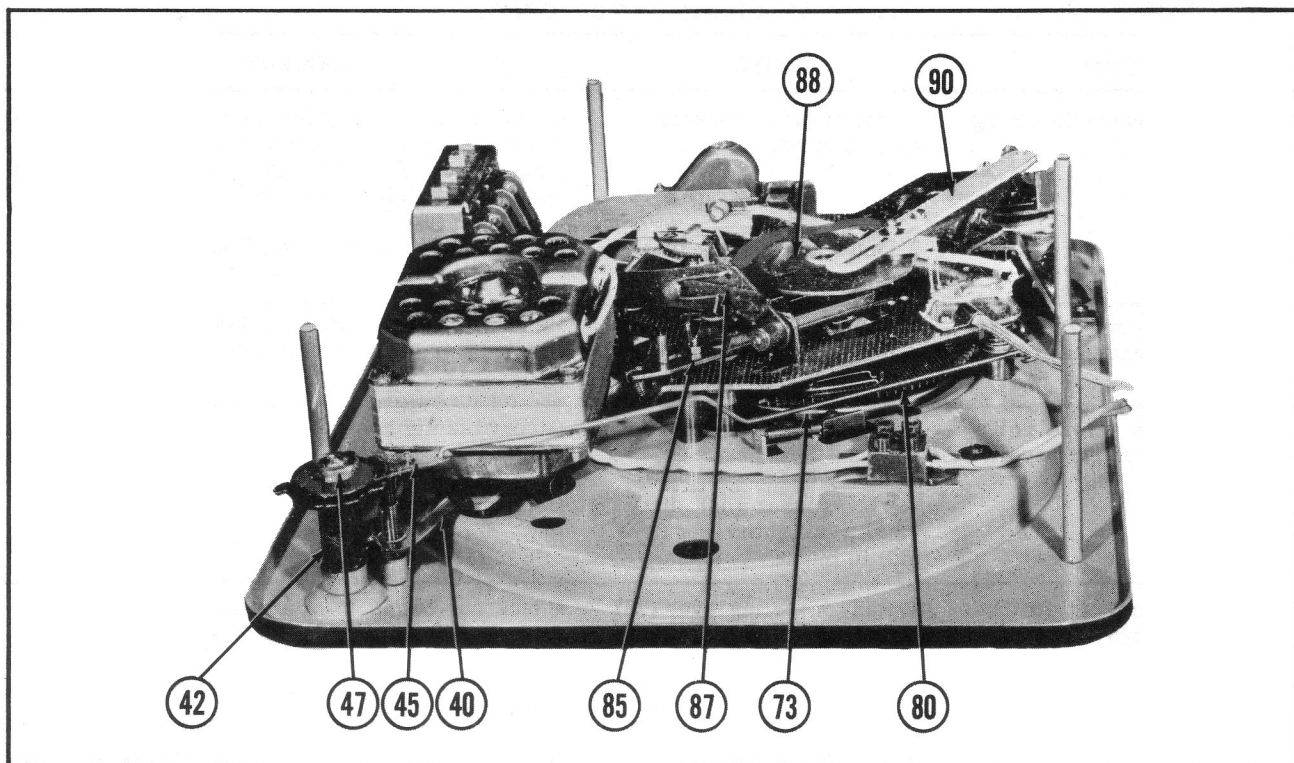


Figure 8

**ELAC (Miracord)
MODEL XA-100**

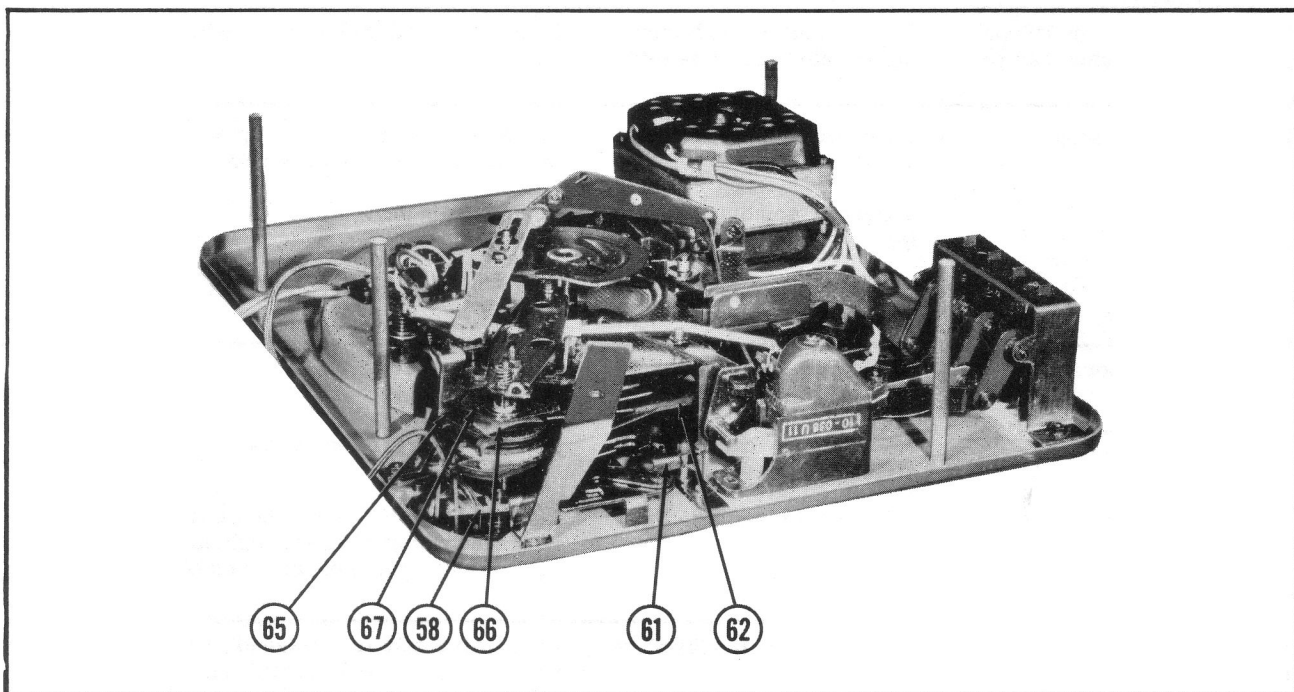


Figure 9

TROUBLE SHOOTING CHART

SYMPTOM	CAUSE	REMEDY
Tone arm lands in wrong place.	1. Controlling elements not free to move.	Check cut-out in wooden mounting base and position of drilled holes with the aid of a template. Lay connecting wires so that they do not come into contact with drive elements.
	2. Dislocated during transport.	See "Tone Arm Set-Down Adjustment".
Changer does not trip when needle reaches end of record.	1. Weighted segment (62) cannot overcome force of recoil lever (20).	Remove turntable and recoil lever (20). Lubricate recoil lever bearing with light oil, (1 drop).
Changer trips before tone arm reaches end of record.	1. Center hole in record too large.	Discard faulty record.
	2. Felt washer (64) dirty, causes weighted segment (62) to bind.	Clean felt washer.
Tone arm lands in 10" position when playing 7" records or lands in 7" position when playing 10" records.	1. Rod connecting lever (76) hangs up on mounting base.	Check cut-out in base and make wider, if necessary.
	2. Rod (78 or 79) bent.	Bend rods so that 7" stop dog (57) is in proper position when 7" records are played.
Tone arm lands in 10" position when playing 12" records.	1. 12" stop dog (63) binding on stop dog plate (60).	Clean 12" stop dog (63) or, if necessary, replace.
Record does not stop.	1. Record spindle stroke too small.	Adjust screw on rear of spindle actuating lever (85) to lengthen spindle stroke.
	2. Record spindle jamming.	Replace spindle.
	3. Repeat bar (86) jamming.	Clean foreign matter from bar (86) and oil pivot points.
Reproduction poor.	1. Records slipping, warped.	Discard records.
	2. Pick-up cartridge or stylus defective.	Replace cartridge or stylus.
	3. Turntable binding.	Remove turntable, clean hub and shaft, lubricate inside of turntable hub with light machine oil. Keep the outside surface of the turntable hub free from oil.
Rumbling noise when turntable revolves.	1. Idler wheel tire (39) dirty or dented.	Remove turntable and clean idler wheel tire, motor pulley, and inside of turntable rim with a petroleum solvent.
Changer does not shut off after last record has been played.	1. Wire on bottom of record spindle does not actuate levers (83) and (87).	Adjust eccentric screw on end of shut-off lever (87) so that wire on bottom of record spindle actuates levers (83) and (87).
	2. Protruding wire at bottom of record spindle broken.	Replace record spindle.
	3. Line switch (52) defective.	Replace line switch.
Changer shuts off before all records have dropped from record spindle.	1. Eccentric screw on end of shut-off lever (87) improperly adjusted.	Adjust eccentric screw on end of shut-off lever (87) so that levers (83) and (87) are actuated, by wire on bottom of record spindle, only when the last record of a stack drops from the turntable.

TROUBLE CHART - Con't.

SYMPTOM	CAUSE	REMEDY
Turntable does not revolve when "Start" button is depressed.	1. No current at motor.	Check that current is reaching A. C. leads of changer.
	2. Line switch (52) defective.	Replace line switch.
	3. Motor defective.	Remove the turntable and allow motor to operate without load. If current is reaching motor and motor shaft does not rotate, the motor is defective. Repair or replace.
		Check all wiring and soldered terminals in the changer.

PARTS LIST

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
1	10-024B	Record Spindle	47		Hex. Nut
2	10-028	Single Play Spindle	48	10-036-A	Motor
	10-033	45 R. P. M. Record Adaptor	49	10-027-40	Pause Drive Ring
	10-025C	45 R. P. M. Record Spindle	50	10-012-40	Tension Spring
3	10-027-100	Rubber Turntable Mat	51	10-038U5	Pause Drive Axle Lever
4	10-038U50	Turntable, Complete	52	10-038U11	Line Switch, Complete
5	10-038U12	Wire Holder for Pick-up Arm	53	10-038U7	Tone Arm Support
6	10-102A	Pick-up Arm	54	10-038-55	Setting Ring
7	10-101A	Plug-in Head	55	10-038-23	Knurled Set-Down Adj. Nut
8	10-038-78	Tone Arm Mtg. Bracket Bridge	56	1-02301-144	Compression Spring
9	10-027-189	Tone Arm Height Adj. Screw	57	10-027-211	7" Slide Lever
10	10-038U8	Tone Arm Mtg. Bracket	58	10-027U47	Tracer Lever
11	10-038-26	Needle Pressure Spring	59	10-027-207	Repeat Lever
12	10-038-29	Needle Pressure Adj. Nut	60	10-027U44	Stop Dog Plate, Complete
13	10-038-28	Headless Screw	61	10-027-213	Ratchet Lever
14	10-027U18	Scanning Lever, Complete with Housing	62	10-027U22	Weighted Segment
15	10-027-82	Helical Twist Spring	63	10-027-210	12" Stop Dog
16	10-027-84	Leveling Piece	64	10-016-14	Felt Washer
17	10-027-21	Speed Control Knob	65	10-027-92	Tone Arm Actuating Lever
18	10-027U6	Rubber Cogwheel	66	10-027-93	Spring Washer
19	90-068A	Voltage Selector	67	10-027-72	Brake Segment
20		Recoil Lever Assembly	68	10-038-16	Tone Arm Support Rod
21	10-038-51	Motor Mtg. Grommet	69	10-025-22	Compression Spring
22	10-038U1	Baseplate, Complete	70	10-027-141	Guide Disk
23	10-016-36	Idler Wheel Tension Spring	71	10-038-72	Slide Piece Tension Spring
24	10-038U4	Pause Lever	72	10-027U33	Slide Piece
25	10-038-73	Tension Spring	73	10-027-135	Interval Disk
26		Pause Actuating Lever	74	10-027-125	Triazetatfolie
27	10-027U3	Ratchet Wheel & Scale	75	10-027-221	Spacer
28	10-027U8	Repeat Button	76	10-027-220	Rod Connecting Lever
29	10-027U9	Pause Button	77	10-027-236	Compression Spring
30	10-027U10	Filter Button	78	10-027-223	Rod
31	10-027U11	Start Button	79	10-027U57	7" Set-Down Rod
32		Push Button Shaft	80	*	Cogwheel
33		Start Actuating Link	81	*	Cycle Starting Catch
34		Push Button Return Spring	82	*	Gear Plate
35		Start Link	83	10-027-265	Switch-Off Lever
36		Filter Actuating Link	84	10-038-14	Start Lever
37		Pause Actuating Link	85	10-027U35	Spindle Actuating Lever
38		Pause Rod	86	10-027U38	Repeat Bar, Complete
39	10-016U8	Idler Wheel, Complete	87	10-027U64	Shut-Off Lever
40	10-038U3	Idler Pivot Lever	88	*	Cam Disk
41		Idler Wheel Mtg. Plate	89	10-027U39	Tone Arm Control Lever
42	10-027-20	Speed Change Worm	90	10-027U41	Tone Arm Coupling Rod
43	10-027-23	Speed Change Cam	91	10-038-10	Pause Gap Actuating Lever
44	10-027-237	Washer			* Not Individually Replaceable.
45	10-027-220	7" Set Down Actuating Lever			Must Be Replaced With The
46	10-027-22	Notched Plate			Complete Gear Plate Assembly
					Part #10-038U13.

ELAC (Miracord)
MODEL XA-100