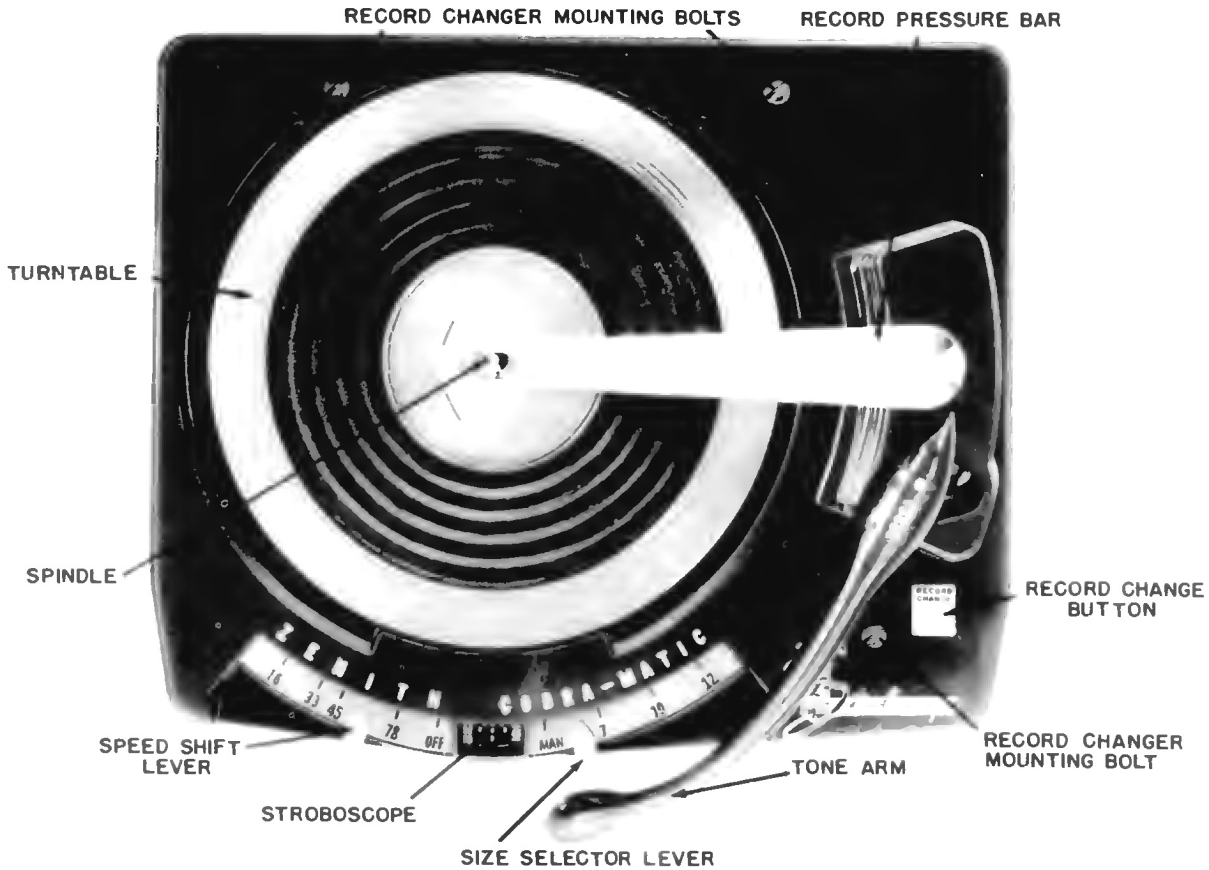
ZENITH RADIO CORPORATION

COBRA-MATIC RECORD CHANGERS

MODELS S-14053, S-14054, S-14056, and S-14057



GENERAL DESCRIPTION

The Zenith Models S-14053, S-14054, S-14056 and S-14057 Record Changers are designed to play standard 78, 45, 33-1/3 and 16-2/3 RPM records of standard commercial dimensions. With few minor exceptions these four changers are alike electrically. The S-14054 is the basic record changer. S-14053 is practically identical to S-14054 except that it has added parts for the stroboscope feature. The S-14057 is very similar to S-14054 except that it is the export version, it has a 50/60 cycle motor and minor electrical changes.

The S-14056 is similar to the S-14053 except that it is the export version, it has a 50/60 cycle motor and minor electrical changes.

The S-14053 deluxe domestic changer as well as the S-14056, a deluxe export changer have an added feature incorporated in their mechanism in that they have a stroboscope built in, this enables the most discriminating user to adjust the record speed to an extremely precise point.

Features of these changers include playing and automatically changing as many as ten 12" or ten 10" records. Ten inch and twelve inch records of the same type cannot be intermixed.

A full stack of 7" 33-1/3 RPM, or a full stack of 7" 45 RPM records (with adapter inserted in the records) can also be played on this changer. These changers do not shut off after the last record, however, all that is required to turn the changer off is to move the speed change lever (24) to OFF position.

Connect this changer only to an outlet supplying 117 volt 60 cycle A.C. unless specified otherwise. Power consumption is 20 watts.

LOADING THE RECORD CHANGER

1. Pull straight up on the record pressure arm until the record pressure arm clears the spindle. Swing the record pressure arm towards the front of the changer until pins in pressure arm shaft (1) drop into locating slot on record pressure arm housing.

2. Changer will automatically play ten 12" either standard or Long Play, ten 10" either standard or Long Play or ten 7" Long Play or Fine Groove records.

NOTE: Standard, Fine Groove and Long Play records cannot be played in the same stack of records. Speed change lever (24) must be re-set for each type of recording.

3. Place records on spindle and lower them to offset shelf. Level records and replace record pressure arm (1) over spindle and lower this until it rests on the top of the record stack.

To play standard 78 RPM recordings:

1. Motor speed control lever (24) must be set to 78 position. This will set the record changer to proper speed position and cause the turntable to rotate.

2. Set-up lever (33) must be moved to the size records being played.

3. Place the changer in cycle by depressing record change switch knob (37). The changer will play the remaining records automatically. The changer will continue to play the last record until speed change lever (24) is moved to OFF position.

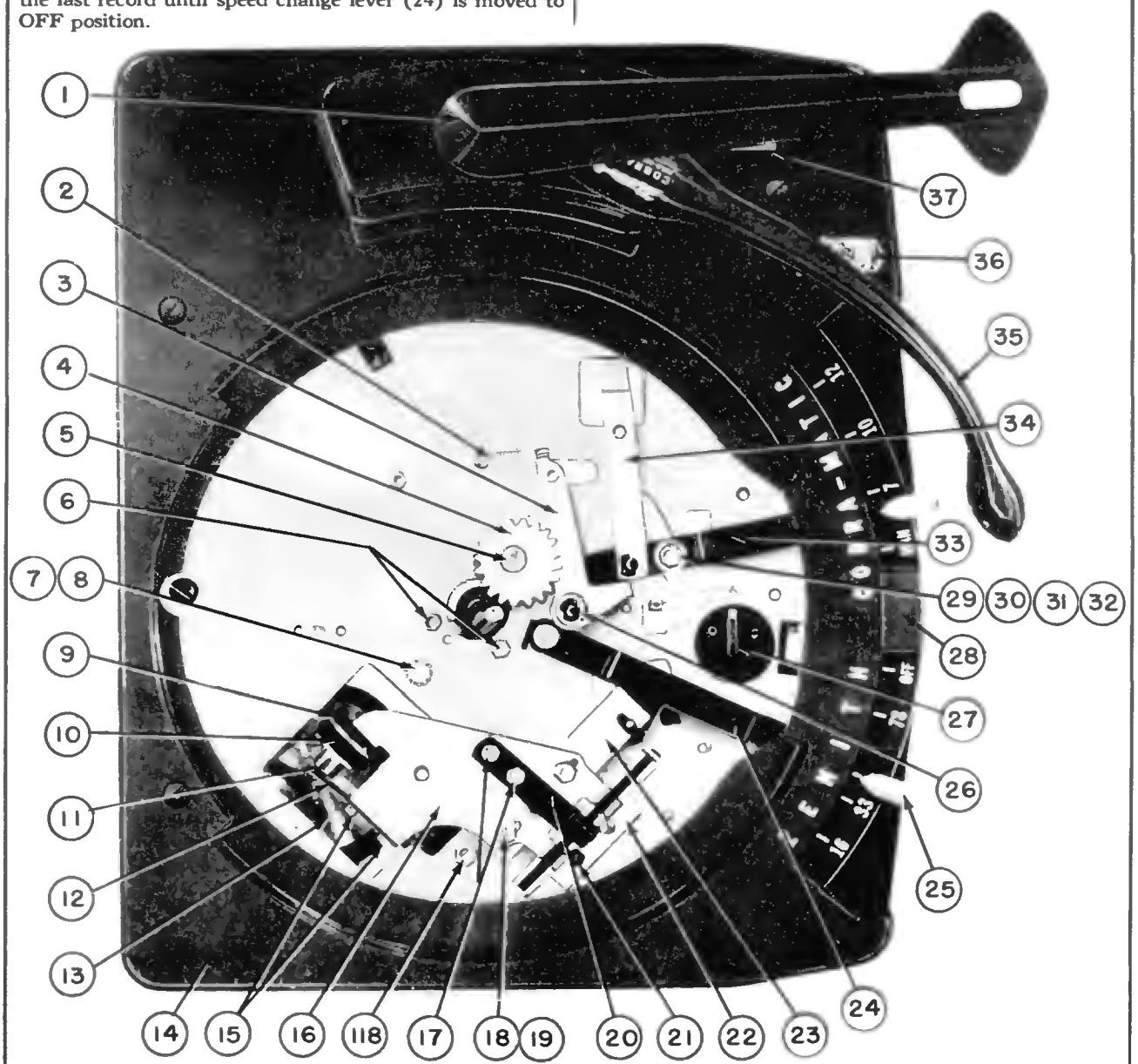
To play 33-1/3 RPM records:

1. Motor speed change lever (24) must be in 33-1/3 position.

2. Set-up lever (33) should then be moved to either 12", 10" or 7" position depending on the size record being played.

To play Fine Groove (45 RPM) records:

1. Speed change lever (24) should be moved to 45 position and set-up lever (33) should be in 7" position. It must be remembered that these records are manufactured with a 1½" spindle hole so it is essential that a record adapter be inserted into each 45 RPM record to be played. This is necessary to reduce the spindle hole to conventional size.



S-14054—Record Changer Top View with Turntable Removed

ZENITH Record Changers
Models S-14053, etc.

REJECTING

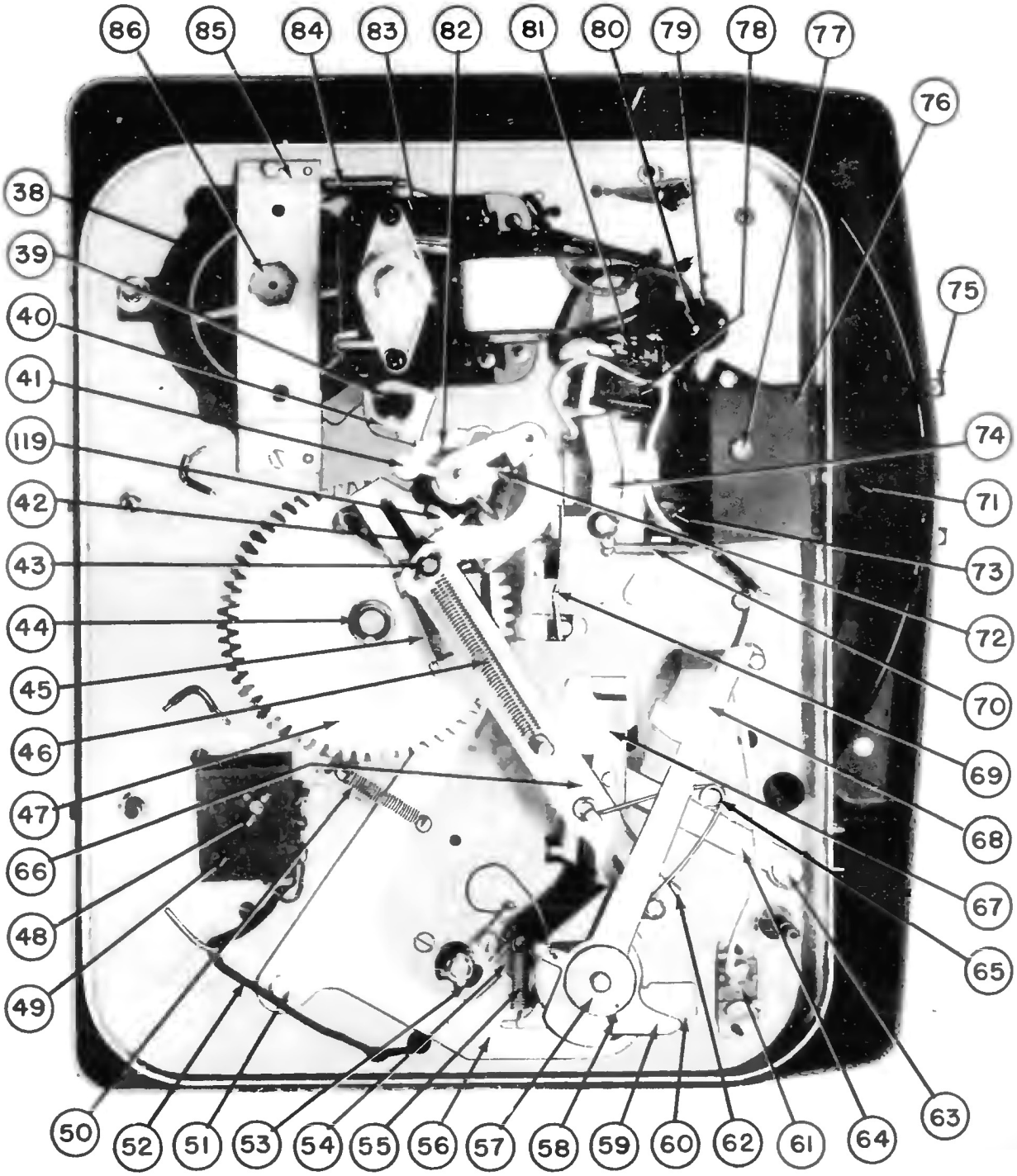
To reject a record anytime, while the changer is operating, depress record change switch button (37) and release. This will automatically cause the record changer to go through cycle and begin playing the next record.

STOPPING

To turn off the record changer all that is required is to move the speed shift lever (24) to OFF position.

UNLOADING

Lift the record pressure arm (1) and swing it to the front until the pin on the shaft drops into the locating groove on record pressure arm shaft housing. Lift stack of records straight up on spindle.



S-14054—Record Changer Bottom View

ZENITH Record Changers Models S-14053 to S-14057

MANUAL OPERATION

To play single records or home recordings, lift up the record pressure arm and turn it toward the front of the changer. Place record on spindle and lower to the spindle shelf. Gently push record towards record pressure arm shaft and lower to turntable. Move speed change lever (24) to proper speed for type of record being played and move set-up lever (33) to manual position. Pick up tone arm and place the needle on the lead-in groove of the record.

DESCRIPTION OF CYCLING

The motor shaft contacts drive wheel assembly (38) and causes it to rotate by friction contact with its rubber surface. Drive wheel assembly (38) drives idler wheel (10). The underside of the turntable is in contact with idler wheel (10) and is driven in this manner. Speed of the turntable is controlled by changing the position of the idler wheel (10) on drive wheel (38). When idler wheel is moved to the center of drive wheel (38) it will rotate more slowly than when moved to the outer edge. In this manner the turntable can be driven at any speed from 10 to 85 RPM. Minor adjustments for proper tonal pitch can be made by simply moving speed change lever (24) back and forth to compensate for turntable speed which may vary due to line voltage changes. When record change button (37) is depressed it energizes solenoid (78) which then attracts trip pawl assembly (74). The same thing occurs when the forward movement of the tone arm causes friction lever and weight assembly (68) to contact the silver plated contact on trip switch assembly (69). When gear segment (119) is released, gear pawl spring (42) causes the gear segment (119) to engage the rotating pinion gear under the turntable thus causing clutch assembly (47) to rotate.

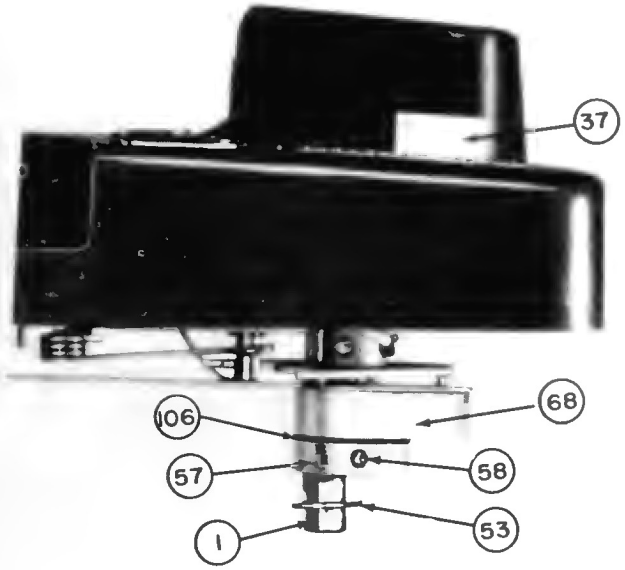
As clutch assembly (47) rotates, tone arm lift lever (56) swings in such a manner that it contacts tone arm lift pin and raises the tone arm. Simultaneously, tone arm link and stud assembly (66) slides towards, and contacts one finger of tone arm lever assembly (59) forcing the tone arm towards the outer edge of the turntable and then on its return swing contacts the other finger of tone arm lever assembly (59) swinging the tone arm back over the records. The position to which it swings the tone arm over the records is determined by the position of record size discriminator (64). There are three steps on the record size discriminator (64) which determines set-down position for 7", 10" and 12" records. The tone arm lift lever (56) returns and releases brake lever assembly (60) which keeps the tone arm from moving erratically during cycle. Simultaneously, ejector lever and link assembly (42) rotates and this in turn causes the spindle shaft to rotate and the ejector cam to push the record off the spindle shelf. Operation of the tone arm set-down adjustment can be observed by raising the tone arm so the adjustment mechanism can be viewed.

VELOCITY TRIP

This changer is provided with what is commonly known as a velocity trip rather than a ratchet and positive trip mechanism. A velocity trip depends for the tripping action on the rate of forward motion of the pickup arm with respect to the turntable rotation. The changer will trip only when the tone arm advances more in one revolution

SPEED INDICATOR ADJUSTMENT
MODELS S-14054 & S-14057

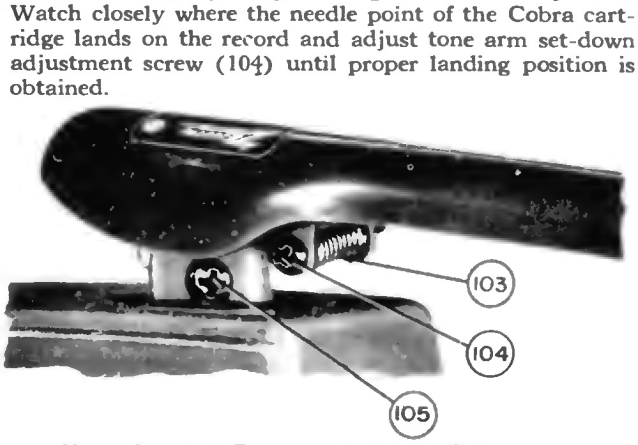
It is possible that the speed of the record changer may not conform to the speed stop on escutcheon (23). Proper adjustments can be made in the following manner. Put a stroboscopic disc on the turntable, adjust speed change lever (24) until the turntable is turning at exactly 78 RPM. Stop the record changer by pulling the AC plug, remove the turntable, loosen the two adjusting screws (18), (19) and move speed change lever (24) so that the point on the control knob indexes exactly at the 78 mark on the escutcheon. Then re-tighten adjusting screws (18), (19) and replace the turntable. The turntable should now rotate at exactly 78 RPM, however, as a precaution, again check with the stroboscope disc. On models equipped with the built in stroboscope disc mechanism, it can be used instead of a disc placed on the turntable.



Tone Arm Friction Lever Detail

SET DOWN ADJUSTMENT

When adjusting the tone arm for proper set-down on the edge of the record, move set-up change lever to 7" position, place a 7" record on the turntable, turn the record changer through cycle by rotating the turntable by hand. Watch closely where the needle point of the Cobra cartridge lands on the record and adjust tone arm set-down adjustment screw (104) until proper landing position is obtained.



Tone Arm Set-Down and Height Adjustments

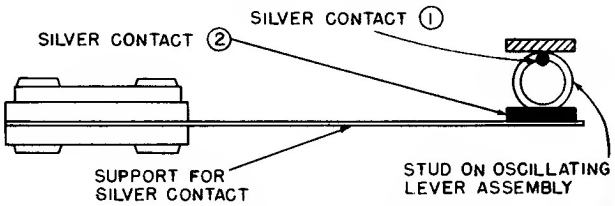
ZENITH Record Changers Models S-14053 to S-14057

TONE ARM HEIGHT ADJUSTMENT

The tone arm height adjustment determines vertical rise of the tone arm. If the tone arm does not rise sufficiently it will not play a full stack of twelve records. On the other hand, if the tone arm raises too high it may hit the records resting on the record shelf. Set the tone arm height adjustment screw (105) so that the needle clears twelve unwarped records on the turntable. The tone arm housing must not hit the under side of the records on the record shelf when the changer is cycled after adjustment.

TRIP CONTACT ASSEMBLY

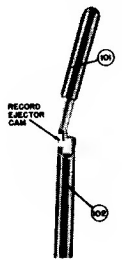
For proper automatic rejecting, silver contact No. 2 on trip switch assembly (69) should be in proper relation to silver contact No. 1 on friction lever (68). The adjustment should be made with the record changer resting on the side nearest to the idler wheel and trip assembly (38). The turntable should be rotated sufficiently to move oscillating lever (3) and stud to its maximum upward travel. The distance between the silver contact No. 1 on the friction lever (68) and silver contact No. 2 on trip switch (69) should be 1/16". If the distance is greater or less than 1/16", the support for the silver contact on trip switch assembly (69) should be bent until this 1/16" gap is attained.



Trip Contact Adjustment

SPINDLE

The spindle on this record changer is composed of five separate parts. Spindle shaft and ejector cam are pressure-fit together and if either breaks, they cannot be replaced since their assembly is a machine operation. The spindle housing is composed of two separate portions which once again are pressure-fit together and require a machine operation for assembly. It is possible that spindle cap (101) may be pulled off spindle assembly (102) and if this does occur, it can easily be replaced by sliding a new spindle cap down over the spindle and then pressing in on the detent portion, which acts as a stop to keep the spindle cap from sliding off. If breakage occurs other than loss of the spindle cap (101), the entire spindle assembly (102) must be replaced.



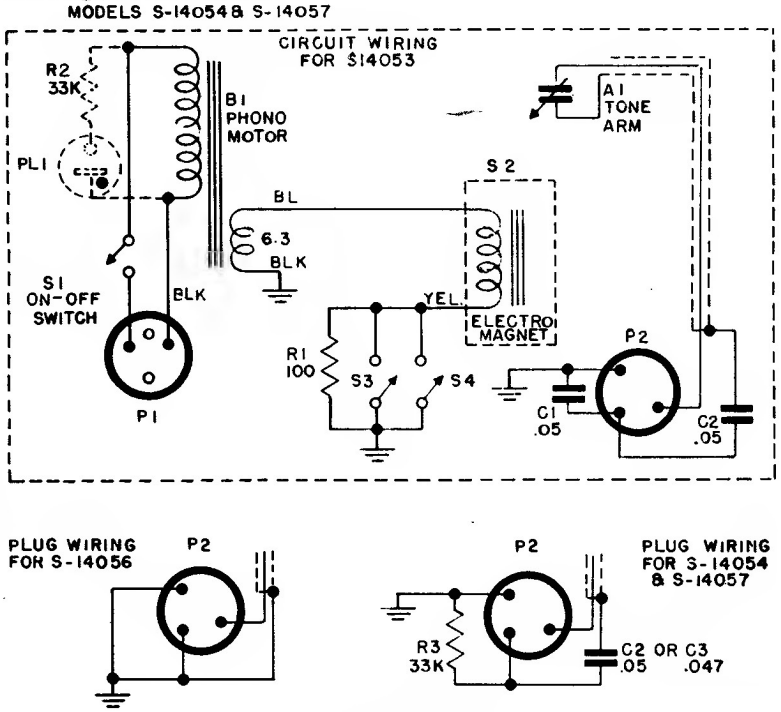
Spindle S-19926

LEVELING THE RECORD CHANGER

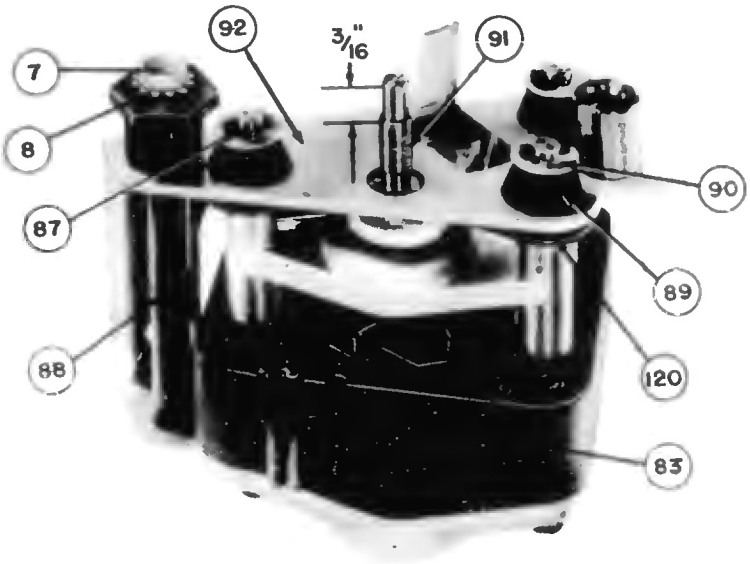
It is essential to have the record changer absolutely level. Use either a torpedo or similar type level on the record changer base plate. Use adequate shims to level the record changer pan or the combination cabinet to achieve perfect level.

DIAG. No.	PART No.	DESCRIPTION	
A1	S-19918	Tone Arm	
B1	141-129	Phono Motor	
B1	141-131	Phono Motor (Exp. 50-60 Cyc.)	
B1	141-132	Phono Motor (Alt. for 141-129)	
C1	22-829	.05 Mfd	200V
C2	22-829	.05 Mfd	200V
C3	22-1775	.047 Mfd	400V
P1	58-213	2 Prong Plug	
P2	58-212	Connector Plug	
PL1	100-160	Neon Lamp - GE No. NE54	
R1	63-1774	100 Ohm	½W
R2	63-1849	33K Ohm	½W
R3	63-1849	33K Ohm	½W
S1	85-527	S.P.S.T. Switch	
S1	85-482	S.P.S.T. Switch	
S2	S-13913	Electro Magnet Assembly	
S3	85-483	Phono Reject Switch	
S4	S-16933	Trip Switch Assembly	

NOTE: R2 & PL1 NOT USED IN MODELS S-14054 & S-14057



Wiring Diagram



MOTOR AND MOUNTING MECHANISM

The motor (83) is shock mounted by the means of rubber grommets (89) and fibre washers (90) to mounting plate and stud assembly (92). The entire motor (83) and motor mounting plate (92) revolve about motor mounting stud (88). The point at which motor mounting stud (88) passes through motor mounting plate should be well lubricated to allow free action of the motor. The motor drive shaft is kept in contact and in constant pressure with drive wheel assembly (38) by the means of motor tension spring (84). This insures the proper friction contact between the motor drive shaft and drive wheel (38). The drive wheel (38) is firmly mounted in drive wheel bracket and bearing assembly and is pivoted on bearings at two points eliminating possible lateral motion. This reduces the possibility of WOWS. When the record changer is in shipment, the entire motor and bracket assembly (92), (83) is fastened to a second point by motor mounting screw (118). This eliminates the possibility of indentations forming in drive wheel (38) as a result of constant pressure and pounding of the motor drive shaft during shipment.

TURNTABLE S-19920

There is little possibility of any damage occurring to the turntable through normal usage. However it is possible that the turntable may be removed and dropped thus damaging the gear so that it will have to be replaced, in this case the entire turntable (100) should be replaced. There is a possibility that the rubber turntable pad (99) may become damaged, if this occurs it can be replaced by removing the defective pad and glueing the new one on the turntable plate.

ZENITH Record Changers Models S-14053 to S-14057

TROUBLE SHOOTING

NEEDLE DOES NOT TRACK ACROSS RECORD PROPERLY

a. Clean foreign material from around needle.
b. Check needle to see if the tip is bent or broken. Replace needle.
c. Hinge bearing binds. Check lateral movement of tone arm. It must move freely without binding.
d. Excessive vibration while playing an LP record. Any vibration cause by (1) unsteady mounting, (2) floor vibration, or (3) passing of heavy vehicles may cause the pickup to glide across the record grooves.

MECHANISM STARTS SLOWLY AND MOTOR GETS HOT

a. Check line voltage and frequency.
b. Check lubrication.
c. Motor windings damaged.
d. Room temperature abnormally low.

MOTOR FAILS TO RUN EVEN WHEN IT IS DISCONNECTED FROM CHANGER AND PROPER VOLTAGE OF FREQUENCY APPLIED DIRECTLY TO THE TWO INPUT LEADS OF THE WINDING

a. Open windings.
b. Damaged or frozen bearings.
c. Lower rear support bracket bent. Remove and straighten bracket — re-center armature.

NEEDLE SETS DOWN PROPERLY ON RECORD BUT SLIDES OVER THE RECORD GROOVES

a. Cabinet tilted.
b. Badly worn or broken needle cartridge.

TONE ARM FALLS OFF RECORD

a. Check tone arm set-down adjustment.
b. Check tone arm pivot bracket.
c. Changer not level.

SQUEAKS OR NOISES DURING PLAYING OF RECORDS

a. Friction between the records on the turntable and the spindle will occasionally cause squeaks. A thin coat of wax applied to the spindle will remedy this condition.
b. Check lubrication.

RECORD IS NOT HEARD ALTHOUGH CHANGER OPERATES

a. See that the receiver is set for Phono.
b. Check receiver audio by listening to radio.
c. Check needle cartridge.
d. Check tone arm housing for broken leads.

RUMBLE, WOW AND MICROPHONICS DURING REPRODUCTION

a. Changer not "floated" properly. Remove packing strip. Loosen mounting bolts.
b. Motor leads pulled too tight preventing motor from "floating" freely.
c. Impression on idler wheel.
d. Check rubber motor shock mounts.
e. Check the motor drive shaft and be certain the plane of the shaft's diameter is parallel to the rubber surface of drive wheel assembly (38).

NEEDLE FAILS TO CLEAR MAXIMUM LOAD OF RECORDS ON THE TURNTABLE

a. Check tone arm height adjustment.

TONE ARM SETS DOWN TOO FAR IN OR OUT ON RECORD

a. Check tone arm set-down adjustment.

TONE ARM SET DOWN VARIES

a. Tone arm pivots loose.

CHANGER CONTINUES TO CYCLE

a. Check the trip switch adjustment.
b. Trip pawl sticks.

CHANGER WILL NOT CYCLE UPON COMPLETION OF RECORD.

a. Be certain that the record has an eccentric center groove.
b. Check velocity trip mechanism.

CHATTER OF TRIP PAWL ASSEMBLY

a. Remove mounting bolt which fastens trip pawl assembly (74) to shoulder stud. Then load shoulder stud with Sta-Put Grease and replace and fasten trip pawl assembly.

ELECTRICAL NOISE WHEN TONE ARM IS MOVED

a. Stud on oscillating lever and stud assembly (3) should be covered with vinylite tubing to prevent contact with friction lever and weight assembly (68).
b. Friction lever (68) at its most outward swing may contact wire guide stud on changer base plate. Cover this stud with vinylite tubing.

FRICTION LEVER (68) FAILS TO MOVE WITH TONE ARM

a. Check felt washer (106) for proper friction surface. If worn, replace.

LUBRICATION

Additional lubrication should not be required for the life of the changer, but in cases of unusual use or high operating temperatures the changer should be lubricated as follows:

All shoulder rivets which hold moving parts, all stud shoulder mounting points on which moving parts operate and all C washers should be lubricated with a few drops of fine instrument oil.

The other moving surfaces should be coated either with Sta-Put Grease or Sta-Put Oil as indicated in the following two illustrations. The purpose of using the extremely fine instrument oil is its ability to penetrate into the moving metal parts.

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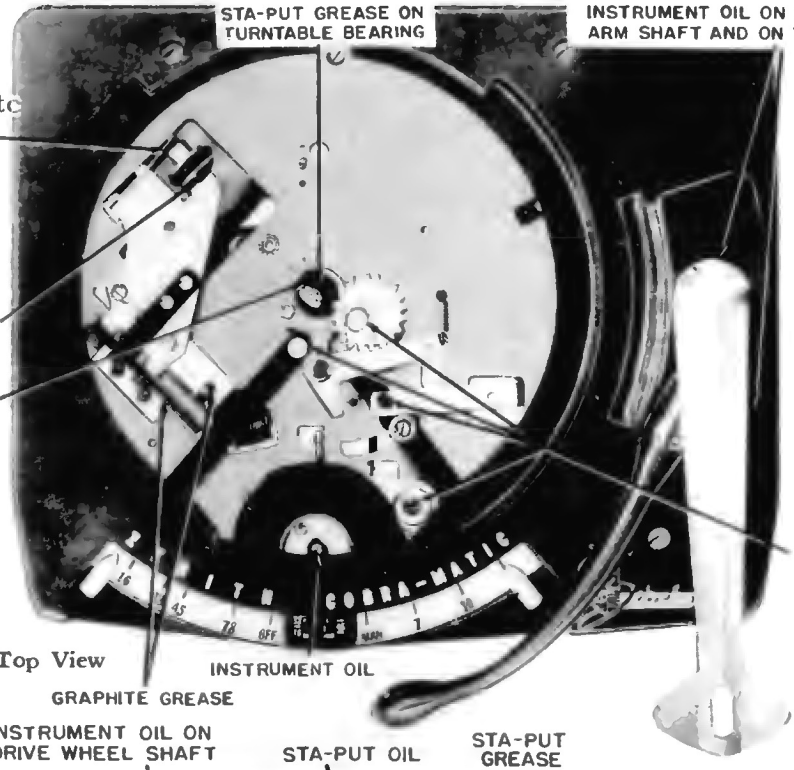
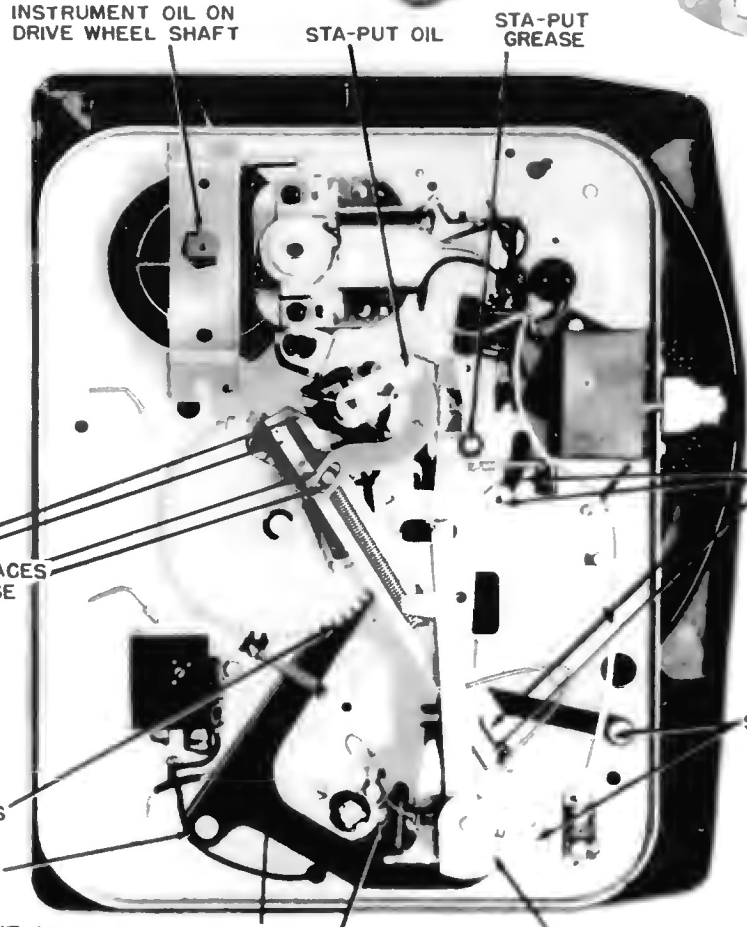


Lubrication Points — Top View



Lubrication Points — Bottom View