

AMP PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | RATING | REPLACEMENT DATA | | | ITEM No. | RATING | REPLACEMENT DATA | | |
|----------|----------|------------------|------------------|---------|----------|------------|------------------|------------------|---------|
| | | IRC PART No. | WORKMAN PART No. | REMARKS | | | IRC PART No. | WORKMAN PART No. | REMARKS |
| R4 | 100K | | | | R24 | 100K | | | |
| R5 | 470Ω | | | | R25 | 4700Ω | | | |
| R6 | 4300Ω 5% | | | | R26 | 100K | | | |
| R7 | 150K | | | | R27 | 100K | | | |
| R8 | 150K | | | | R28 | 10meg | | | |
| R9 | 220K | | | | R29 | 360K | | | |
| R10 | 1meg 1W | | | | R30 | 100K | | | |
| R11 | 2200Ω | | | | R31 | 68Ω | | | |
| R12 | 270K | | | | R32 | 330K | | | |
| R13 | 56K | | | | R33 | 1000Ω | | | |
| R14 | 1meg | | | | R34 | 1meg | | | |
| R15 | 3.3meg | | | | R35 | 22K | | | |
| R16 | 10meg | | | | R36 | 470Ω 1W 5% | | | |
| R17 | 220K | | | | R37 | 560Ω | | | |
| R18 | 22meg | | | | R38 | 100K | | | |
| R19 | 270K | | | | R39 | 100K | | | |
| R20 | 820K | | | | R40 | 18K | | | |
| R21 | 220K | | | | R41 | 470K | | | |
| R22 | 10meg | | | | R42 | 2200Ω | | | |
| R23 | 3.3meg | | | | R43 | 18K | | | (12K) * |

* Alternate.

COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA | | | | | NOTES |
|----------|-----------|------------------|----------------|-----------------|------------------|------------------|-------|
| | | NORELCO PART No. | Merit PART No. | Miller PART No. | Stancor PART No. | Workman PART No. | |
| L1 | Choke | WT56188 | | | | | |
| L2 | Bias Osc. | WT56190 | | | | | |

TRANSFORMER (POWER)

| ITEM No. | RATING | | | REPLACEMENT DATA | | | | | NOTES |
|----------|-------------|----------------|---------------|------------------|----------------|------------------|---------------------|----------------|-------|
| | PRI. | SEC. 1 | SEC. 2 | NORELCO PART No. | Merit PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T1 | 117V @ .74A | 480VCT @ .042A | 6.3VCT @ 2.1A | WT51094 | | | | | |

TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | NOTES |
|----------|-----------------|------|------------------|----------------|------------------|---------------------|----------------|-------|
| | PRI. | SEC. | NORELCO PART No. | Merit PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| T2 | 6500Ω Tap @ 10% | 3-4Ω | WT51096 | | | | | |

SPEAKER

| ITEM No. | TYPE | | | REPLACEMENT DATA | | NOTES |
|----------|------|-------|------------|------------------|---------------|--------------------------|
| | SIZE | FIELD | V. C. IMP. | NORELCO PART No. | QUAM PART No. | |
| SP1 | 4" | PM | 3-4Ω | AD1400W * | 4A1 | * Alt. Part #940/AD1400W |

FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|----------|------------|--------|------------------|--------|---------------------|--------|---------------|--------|
| | | | NORELCO PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M1 | Rose Metal | | | | | | | |

MISCELLANEOUS

| ITEM No. | PART NAME | NORELCO PART No. | NOTES |
|----------|-----------|------------------|--|
| M2 | Head | WT85539 | Record-Playback |
| M3 | Head | WT85701 | Erase |
| M4 | Switch | PW30610 | Play/Record-PA (Spring Loaded, 2 Position Slide Type) |
| M5 | Switch | WT88781 | Play/Record (Spring Loaded, 2 Position Slide Type) |
| M6 | Switch | WT88872 | Play-Record/PA-Stop (Spring Loaded, 2 Position Slide Type) |
| M7 | Switch | WT88787 | Track Selector (Spring Loaded, 2 Position Slide Type) |
| M8 | Switch | WT26201 | Super-Impose (Spring Leaf Type) |

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

| NAME | PART NO. | DESCRIPTION |
|-------------|----------|--|
| Knob | WT83268 | Volume |
| Knob | WT26154 | Tone |
| Knob | WT91452 | Track Selector |
| Push Button | WT83249 | Record (Red) |
| Push Button | WT26163 | Rewind, Pause, Record-Play, Fast Forward |
| Push Button | WT26164 | Stop |
| Case | WT85609 | |

FOLDER 12
SET 602

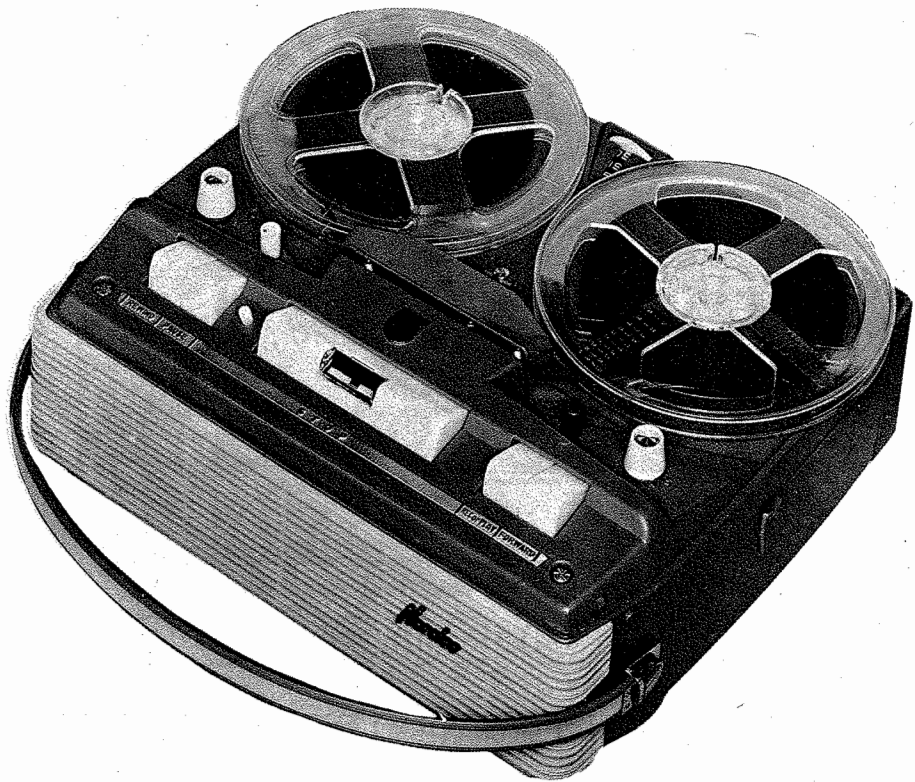
PHOTOFACT® Folder

with CIRCUITRACE®



NORELCO
MODELS EL3541/54B

NORELCO
MODELS EL3541/54B



GENERAL INFORMATION

The Norelco Model EL-3541 is a single-speed tape recorder and can play back both monaural and stereophonic recordings.

Recordings can be made from a microphone, radio, phonograph, tuner or TV set. An external amplifier and speaker may be connected to the recorder to play back stereo recordings.

This model has a tape speed of 3 3/4 ips. Recording time will be as follows:

| Tape Length | Time |
|-------------|---------|
| 1200 ft. | 2 hours |
| 1800 ft. | 3 hours |
| 2400 ft. | 4 hours |

Operate the recorder on 60 cycles, 110-115 or 220-240 volts AC only.

Supplied By:

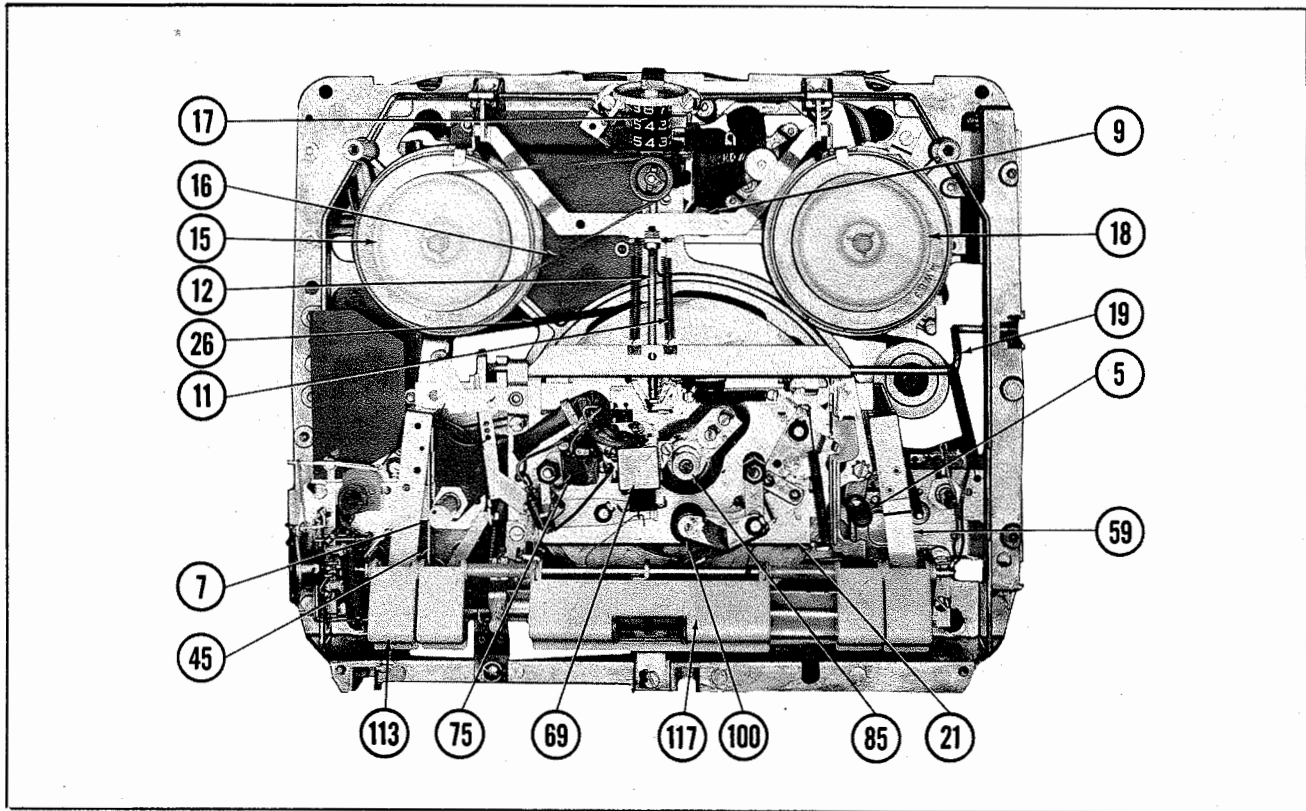
North American Philips Company, Inc.
High Fidelity Products Division
230 Duffy Avenue
Hicksville, L. I., New York

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana



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TOP VIEW OF MECHANISM (SEE PAGE 4 ALSO)

FUNCTION OF CONTROLS, PUSH BUTTONS AND JACKS

Power On-Off, Volume Control

Turns power on or off for the entire unit. Determines recording level when recording from radio or phono. Controls volume on playback.

Tone Control

Controls bass and treble response on playback. It does not function during record.

Microphone Volume Control

Controls level when recording from microphone.

Stop

Applies brake to both spindles and returns all pushbuttons to Neutral.

Record

Moves play-record switch into record position.

Rewind

Returns tape rapidly to supply reel. Engages wind-rewind pulley, while disengaging take-up pulley, thus turning supply spindle.

Forward

Moves tape rapidly forward in play and record functions. Engages take-up pulley while disengaging wind-rewind pulley, thus turning take-up spindle.

Play

Starts tape moving for playback (or recording, if Record button is depressed simultaneously). Brings pressure roller and pressure pad into position against capstan and record head.

Trick

Depress this button and recordings can be made on previously recorded tape with no erasure.

External Speaker

Used for connecting external speaker for playback.

Headphones

Plug headphones into this jack to monitor during record.

Output

An external amplifier may be plugged into this jack for playback.

Microphone Low Level

Plug microphone into this jack for microphone recordings.

Radio-Phono

A high level input used when recording from radio, phonograph, tuner, etc., by means of a patch cord.

AMP PARTS LIST AND DESCRIPTIONS

WIRING DATA

| | |
|--|--|
| General-use Unshielded Hook-up Wire | Use BELDEN No. 8530 (Solid) Available in 12 Colors |
| Power Cord | Use BELDEN No. 17106 (Plastic) or 17126 (Rubber) - 6 Ft. 17109 (Plastic) or 17129 (Rubber) - 9 Ft. |
| Power Cord (Interlock Type) | Use BELDEN No. 8874 (Rubber) or 8895 (Plastic) |
| Low-Loss Shielded Lead (Interconnecting) | Use BELDEN No. 8401 or 8421 |
| Phono Pick-up Arm Cable | Use BELDEN No. 8430 (Two Conductor-Unshielded) 842B (Two Conductor-Shielded) 841B (Three Conductor-Shielded) |

TUBES

| • AMPEREX • | | | • GENERAL ELECTRIC • | | | • RCA • | | | • RAYTHEON • | | | • SYLVANIA • | | |
|-------------|---------------------------------|-------|----------------------|----------|---------------------------|---------|--|--|--------------|--|--|--------------|--|--|
| ITEM No. | USE | TYPE | | ITEM No. | USE | TYPE | | | | | | | | |
| V1 | Preamplifier | EF86 | | V4 | Recording Level Indicator | EM84 | | | | | | | | |
| V2 | Radio-Phono Preamp. - AF Amp. | ECC83 | | V5 | Rectifier | EZ80 | | | | | | | | |
| V3 | AF Amp. -Output Bias Oscillator | ECL82 | | | | | | | | | | | | |

POWER RECTIFIERS & SIGNAL DIODES

| ITEM No. | CURRENT RATING (Measured) | ORIGINAL Part or Type No. | RECTIFIERS | | DIODES | | NOTES |
|----------|---------------------------|---------------------------|--------------|-------------------------|-------------------|--|----------------------------|
| | | | RCA PART No. | SARKES TARZIAN PART No. | RAYTHEON PART No. | | |
| X1 | | OA85 | | | 1N126A | | Record Indicator Rectifier |

ELECTROLYTIC CAPACITORS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | |
|----------|--------|-------|------------------|------------------|---------------------------|---------------------------|------------------|------------------|------------------|
| | CAP. | VOLT. | NORELCO PART No. | AEROVOX PART No. | CORNELL DUBILIER PART No. | GENERAL ELECTRIC PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. |
| C1A | .50 | 350 | AC5483 ① | AFH2-40 | B0320 | | | | TVL2630 |
| C1B | .32 | 350 | | PRSI660 | BR30-350 | | | | TVAI510 |
| C2 | .64 | 25 | 909/C64 | PRSI490 | NLW75-25 | MTI-20 | TT25X50 | | TE-1210 |
| C3 | .64 | 25 | 909/C64 | PRSI490 | NLW75-25 | MTI-20 | TT25X50 | | TE-1210 |
| C4 | .25 | 25 | 909/C25 | PTT82 | NLW25-25 | MTI-11 | TT25X25 | MLV25-25 | TE-1207 |

① Part #A6027 used in some versions.

FIXED CAPACITORS

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | | |
|----------|----------------|----------|------------------|--------------------|---------------------------|-----------------|------------------|------------------|--|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL DUBILIER PART No. | ELMENCOPART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C5 | .1 400V 10% | | V84C4P1-10% | | PM4P1 | 4DP-3-104 | GEM-1001 | 4TM-P10 | |
| C6 | .022 400V 10% | | V84C4S22-10% | | PM4S22 | 4DP-2-223 | GEM-16122 | 4TM-S22 | |
| C7 | .068 125V | | P288N-068 | | CUB4S68 | 4DP-3-683 | GEM-4168 | 4TM-S68 | |
| C8 | .027 400V 10% | | P684CM-027 | | DPMS6S27 | 6DP-3-273 | GEM-1613 | 6PS-S27 | |
| C9 | .015 125V | | P288N-015 | DD-153 | CUB6S15 | 4DP-1-153 | GEM-4115 | 4TM-S15 | |
| C10 | .0033 400V 10% | | V84C4D33-10% | | PM6D33 | 6DP-1-332 | GEM-16233 | 6TM-D33 | |
| C11 | 220 N750 5% | | | TCN-220 | C10T22U | | CN7-322 | 10TCU-T22 | |
| C12 | .027 400V 10% | | P684CM-027 | | DPMS6S27 | 6DP-3-273 | GEM-1613 | 6PS-S27 | |
| C13 | .0082 400V 10% | | P684CM-0082 | | DPMS6D82 | 6DP-2-622 | GEM-16282 | 6PS-D82 | |
| C14 | .0022 | | SI 2200 | D6-222 | BYA10D22 | CCD-222 | B-222 | 5HK-D22 | |
| C15 | .015 125V | | P288N-015 | DD-153 | CUB6S15 | 4DP-1-153 | GEM-4115 | 4TM-S15 | |
| C16 | .1 400V 10% | | V84C4P1-10% | | PM4P1 | 4DP-3-104 | GEM-1001 | 4TM-P10 | |
| C17 | .01 400V 10% | | V84C4SI-10% | | PM4SI | 4DP-1-103 | GEM-1611 | 4TM-S10 | |
| C18 | 30 (Nominal) | #908/30E | | | | | | | |
| C19 | 30 (Nominal) | #908/30E | | | | | | | |
| C20 | 220 N750 | | N750-SI 220 | TCN-220 | C10T22U | CCTN-220 | CN7-322 | 10TCU-T22 | |
| C21 | .082 125V 10% | | | | DPMS6S82 | 6DP-4-823 | | 6PS-S82 | |
| C22 | 330 N750 | | N750-SI 330 | TCN-330 | C10T33U | | CN7-333 | 10TCU-T33 | |
| C23 | 330 N750 | | N750-SI 330 | TCN-330 | C10T33U | | CN7-333 | 10TCU-T33 | |
| C24 | .027 125V | | P684CM-027 | | DPMS6S27 | 6DP-3-273 | GEM-1613 | 6PS-S27 | |
| C25 | .015 125V | | P288N-015 | DD-153 | CUB6S15 | 4DP-1-153 | GEM-4115 | 4TM-S15 | |
| C26 | .22 125V | | P288N-22 | | CUB2P22 | 4DP-5-224 | GEM-2022 | 2TM-P22 | |

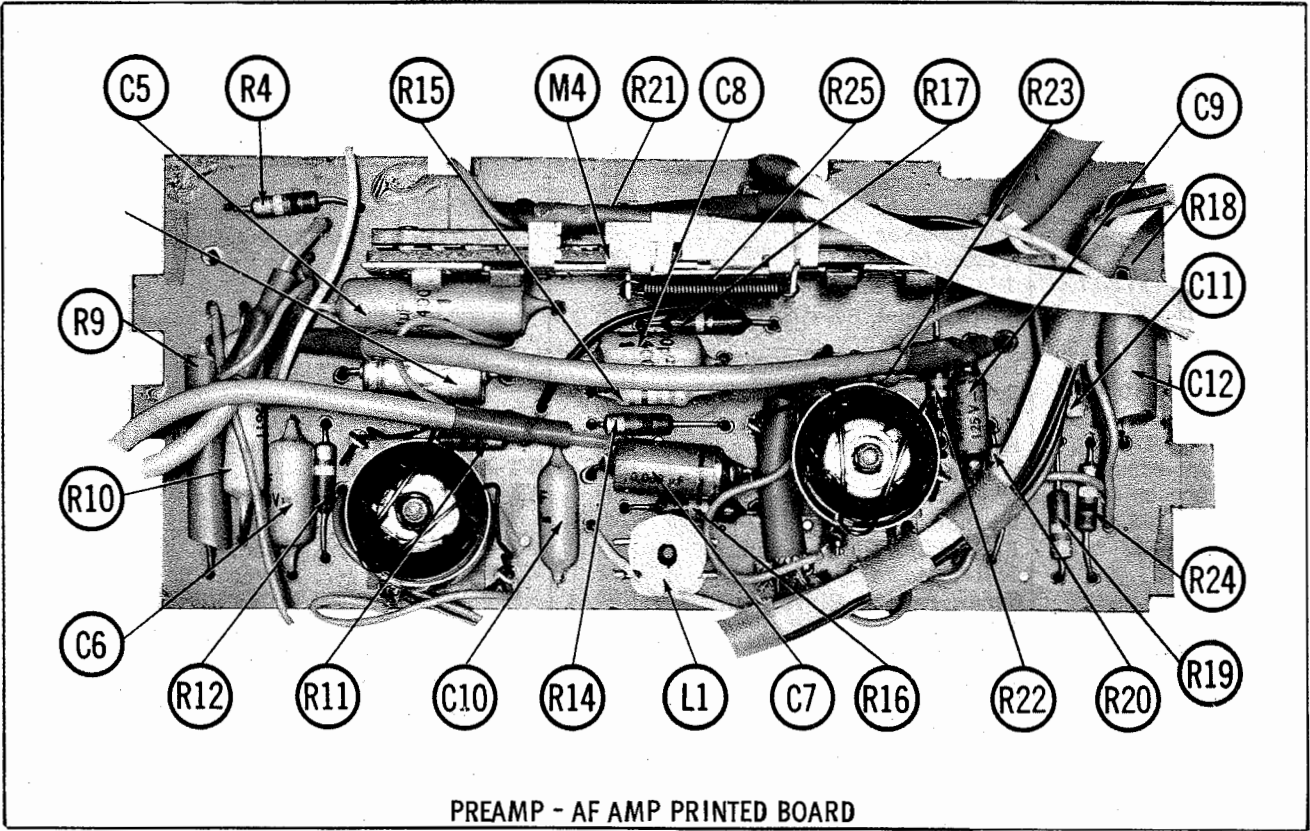
Norelco Part Number

CONTROLS

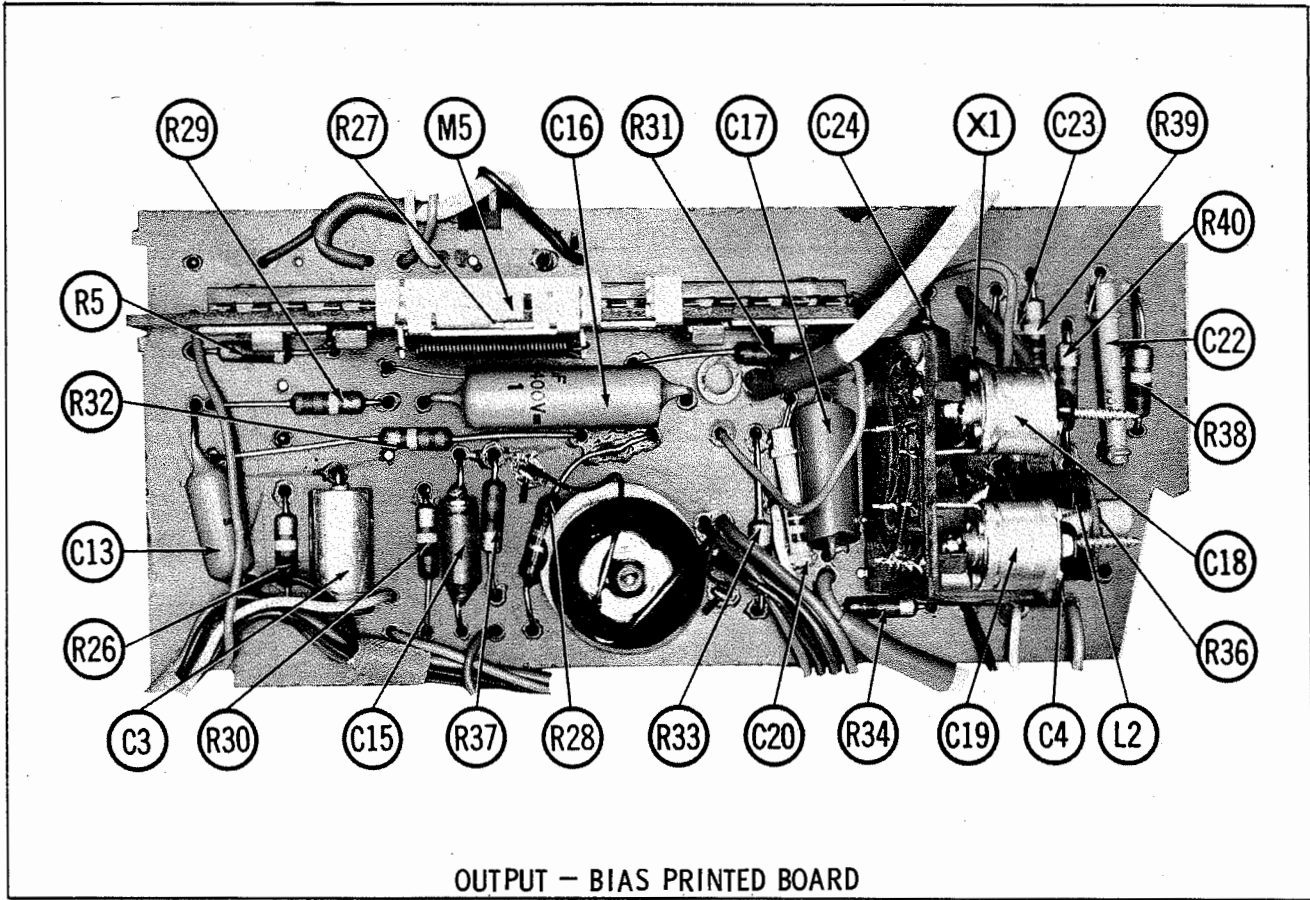
All wattages 1/2 watt, or less, unless otherwise listed.

| ITEM No. | USE | RESISTANCE | REPLACEMENT DATA | | | | |
|----------|--------------------|------------|------------------|------------------------|--------------------|------------------------------------|---------------------------|
| | | | NORELCO PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | CTS-IRC PART No. | MALLORY PART No. |
| R1 | Mic. Volume | 200K | 91L/GL200K | | | | U42, or (UA154A, SL3500) |
| R2 | Play-Record Volume | 200K | 4890000/DL200K | | | | RU25A, SL38, US41, SL3500 |
| R3 | On-Off Tone | 500K | | B-60, or (AB-60, AK-7) | A47-500K-Z/FS-3 | Q13-133, or (BU1, CF25, SSI, DC1)* | U48, or (UA55A, SF-1000) |

* "SNAPTROL"



PREAMP - AF AMP PRINTED BOARD



OUTPUT - BIAS PRINTED BOARD

Threading the Tape

1. Place reel of tape on left spindle; empty reel on right spindle.
2. Thread tape in slot with shiny side toward the front of recorder.
3. Insert loose end of tape into one of the slots in the empty reel and turn reel counterclockwise to take up slack in the tape.

To Make a Recording

1. Plug microphone into the Low Level input jack.
2. Turn on the power by rotating On-Off Volume control clockwise until a click is heard. Allow sufficient time for the tubes to warm up.
3. Depress the Record button and adjust the microphone level control while observing the Record level indicator. The light beams should fall within the red area of the indicator on the loudest passage.

- NOTE: The pushbuttons should be depressed firmly for proper operation. Each time the recorder is changed from one function to another, the Stop button must be depressed. If the Pause button is used, it is not necessary to depress the Stop button.
4. Hold the Record button down and depress the Play button until both are locked in the down position.
 5. Hold the microphone approximately eight inches from the mouth when recording voice. Place the microphone two or three feet in front of the loudspeaker when recording from a radio, phonograph, or TV set.
 6. Depress the Pause button to interrupt a recording briefly. The recorder will continue to record when the Pause button is again depressed and released.

Four-Track Recording

- Four individual monophonic recordings can be made on the same tape. To do this, proceed as follows:
1. Place the Track Selector switch in the 1-4 position.
 2. Thread the tape as described under "Threading the Tape".
 3. Make a recording in this position. Track #1 will now be recorded.
 4. Turn the tape over and make another recording. Track #4 will now be recorded.
 5. Place the Track Selector in the 2-3 position. Repeat Steps 3 and 4. All four tracks will now be recorded.

To Record from a Radio, Phonograph, Tuner, or TV Receiver

Connect a patch cord from the speaker terminals of receiver being used to the High Level jack of the recorder. Proceed as outlined in Steps 2 thru 6 under "To Make a Recording".

To Wind or Rewind Tape

1. Depress the Wind button and the tape will transfer rapidly from the supply reel to take-up reel.
2. Depress the Rewind button and the tape will transfer rapidly from take-up reel to supply reel.
3. Depress the Stop button to stop the tape.

To Play Monaural Recordings

1. Thread the tape.
2. Depress the Play button and adjust Volume and Tone controls.

To Play Stereophonic Tapes

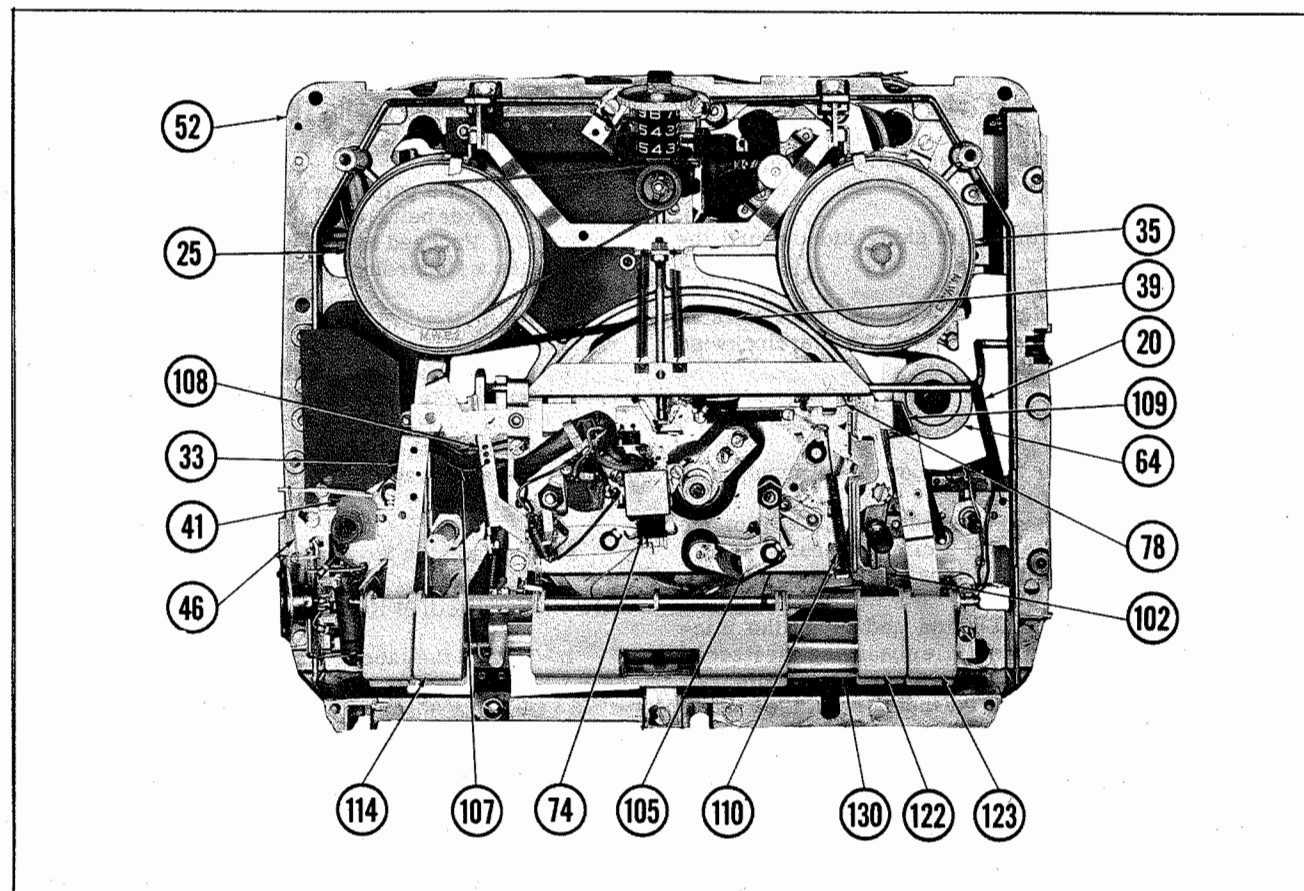
1. Thread the tape.
2. Connect an external amplifier to the Stereo output jack.
3. Connect speaker system to the external amplifier output.
4. Depress the Play button. Adjust Volume control on recorder and external amplifier until a balance is maintained between the two channels.

To Edit and Splice Tape

- NOTE: Since one track cannot be edited and spliced without affecting the other track, recordings to be edited should be limited to one track only.
1. Tape can be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements, etc., can be inserted between selections. Unused tape can be spliced for reuse.
 2. For best results, cut the tape at a slight diagonal and butt the ends together. Fasten them on the glossy side with splicing tape. Trim off any excess width.

To Use as a Public Address System

1. Plug the microphone into the Microphone jack.
2. Press the Public Address switch (located on right side of recorder) until a click is heard.
3. Advance the Microphone Volume control (on extreme right) to the desired level. Do not point the speaker toward the microphone as feedback will result, causing a howl in the speaker output.



TOP VIEW OF MECHANISM (SEE PAGE 2 ALSO)

DISASSEMBLY

1. Remove cabinet top cover.
2. Remove 3 push-on type control knobs.
3. Remove 1 screw from head cover and remove cover.
4. Remove 4 screws from bottom of case and remove bottom cover.
5. Remove 4 screws from top of cabinet and 2 screws from handle. The cabinet may now be removed from the recorder assembly.

ADJUSTMENT

To Align Erase Head

1. Remove head cover (1).
2. Place a tape on the supply spindle and thread as described under "Threading the Tape".
3. Rotate the three mounting screws (73) so that the top of the head gap lines up with the top of the tape.

To Align Record-Playback Head

1. Remove head cover (1).
2. Thread a prerecorded alignment tape on recorder as described under "Threading the Tape".

CLEANING

Pressure roller (100), capstan (85), and recording head (69) should be cleaned occasionally of dirt and foreign matter with a soft cloth moistened with alcohol.

LUBRICATION

The recorder does not require lubrication under normal use. When disassembled for repair, wipe all bearings and sliding levers with a clean soft cloth and apply a thin coat of oil to their surfaces.

MECHANICAL PARTS LIST (CONT')

| Ref. No. | Part No. | Description | Ref. No. | Part No. | Description |
|----------|-----------|--------------------------------------|----------|-----------|----------------------------------|
| 51 | WT-001-97 | Screw | 92 | | Tape Guide |
| 52 | | Plate, Mounting | 93 | | Screw |
| 53 | | Screw | 94 | WT-730-62 | Spring, Pressure |
| 54 | | Lockwasher | 95 | PW-306-73 | Bracket, Quick Stop |
| 55 | | Plate, Mounting | 96 | | Nut |
| 56 | WT-277-17 | Plate, Bearing | 97 | | Washer |
| 57 | | Shock Mount, Bearing Plate | 98 | | Sleeving |
| 58 | WT-265-28 | Bearing | 99 | | Washer |
| 59 | | Rod, Take-Up Actuating | 100 | WT-881-66 | Pressure Roller |
| 60 | WT-740-85 | Spring, Tension | 101 | | Washer |
| 61 | | Cap, Idler Shaft | 102 | WT-943-15 | Bracket, Connecting |
| 62 | 984-4 | Ring, Retaining | 103 | | Ring, Retaining |
| 63 | A9-868-95 | Washer | 104 | WT-646-12 | Shaft |
| 64 | WT-881-87 | Idler Wheel | 105 | A9-869-49 | Lever, Pressure Roller |
| 65 | A9-868-95 | Washer | 106 | | Ring, Retaining |
| 66 | WT-882-26 | Plate, Idler Wheel Bearing | 107 | WT-765-45 | Spring, Profile |
| 67 | | Plate, Mounting | 108 | WT-045-85 | Lever, Switch |
| 68 | | Screw, Record-Playback Head Mounting | 109 | | Lever, Brake Release |
| 69 | WT-855-39 | Head, Record-Playback | 110 | | Spring, Tension |
| 70 | | Plate, Head Mounting | 111 | | Spring, Tension |
| 71 | WT-730-47 | Spring, Pressure | 112 | | Screw |
| 72 | | Assembly, Pressure Pad | 113 | | Button, Fast Rewind |
| 73 | | Screw, Erase Head Mounting | 114 | | Button, Pause |
| 74 | WT-856-04 | Hum Shield and Pad Assembly | 115 | | Assembly, Fast Rewind Actuating |
| 75 | WT-857-01 | Erase Head | 116 | | Assembly, Pause Actuating |
| 76 | WT-730-47 | Spring, Pressure | 117 | | Bar, Stop |
| 77 | | Tie Down, Cable | 118 | | Spacer |
| 78 | WT-035-76 | Bracket, Locking | 119 | | Assembly, Stop Actuating |
| 79 | WT-740-86 | Spring, Tension | 120 | | Spring, Stop Bar Return |
| 80 | WT-924-52 | Nut | 121 | | Spacer |
| 81 | WT-458-02 | Tape Rest | 122 | | Button, Play-Record |
| 82 | | Tape Guide | 123 | | Button, Fast Forward |
| 83 | | Screw | 124 | | Assembly, Fast Forward Actuating |
| 84 | | Washer | 125 | | Assembly, Play-Record Actuating |
| 85 | | Capstan | 126 | | Shield, Lever Indicator |
| 86 | | Set-Screw | 127 | | Bracket, Indicator Retaining |
| 87 | PW-307-21 | Plate, Bearing | 128 | | Ring, Retaining |
| 88 | | Mount, Bearing Plate | 129 | | Bracket, Mounting |
| 89 | WT-265-28 | Bearing | 130 | | Bracket, Locking |
| 90 | WT-924-52 | Nut | 131 | | Bracket, Mounting |
| 91 | WT-458-02 | Tape Rest | 132 | | Assembly Rod, Pushbutton |

NORELCO
MODELS EL3541/54B

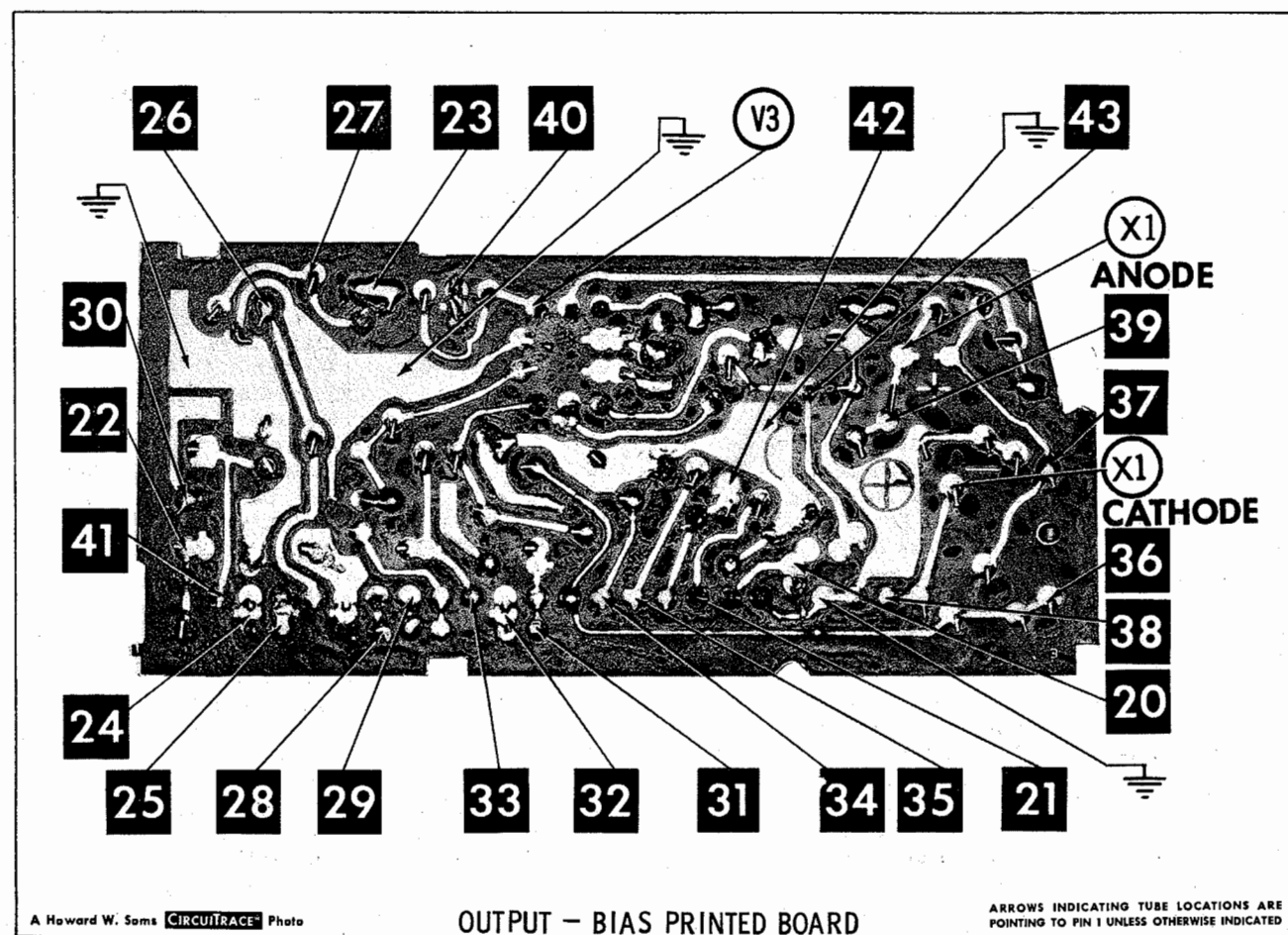
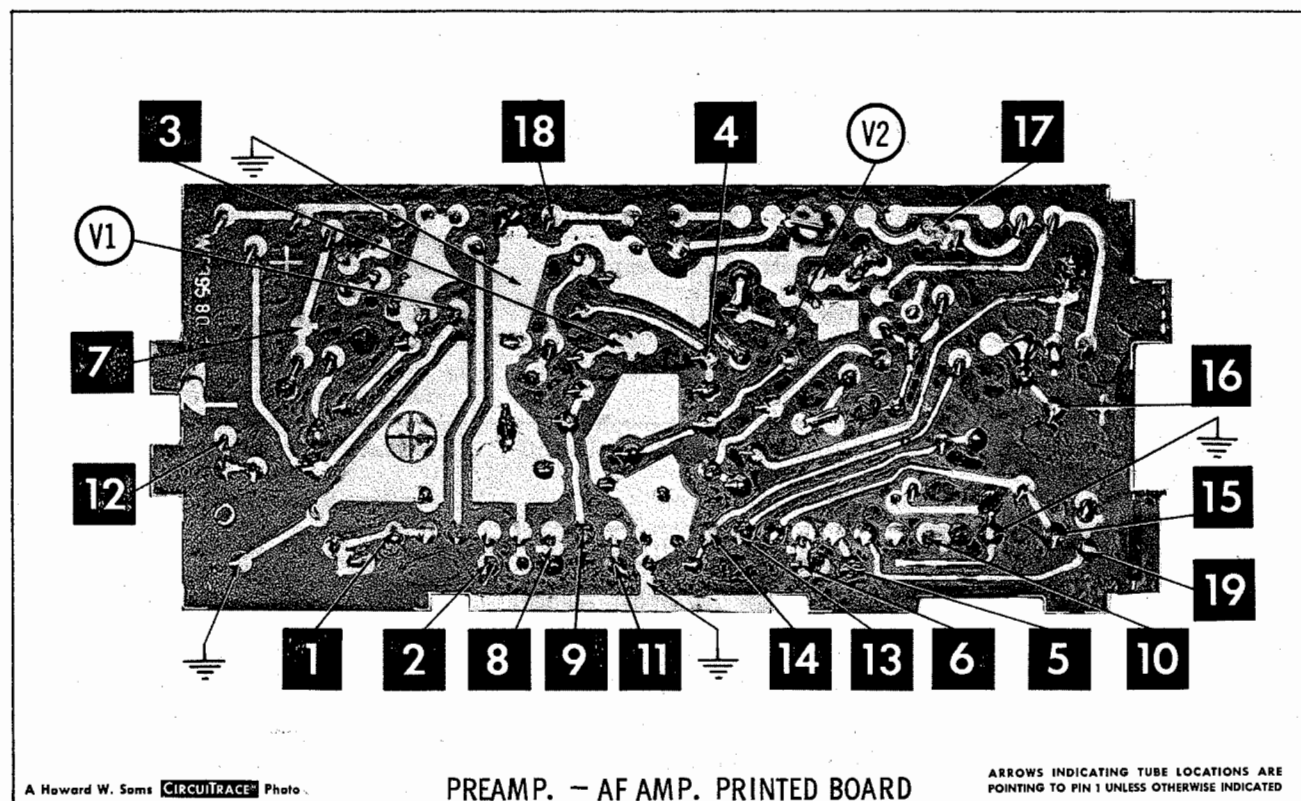
FOLDER 12

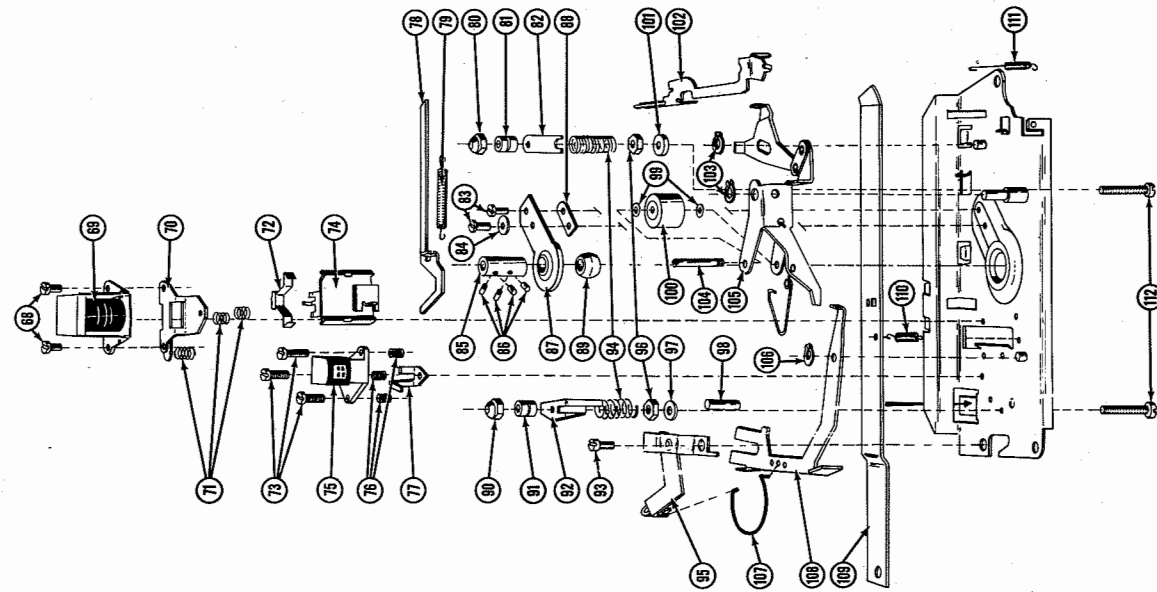
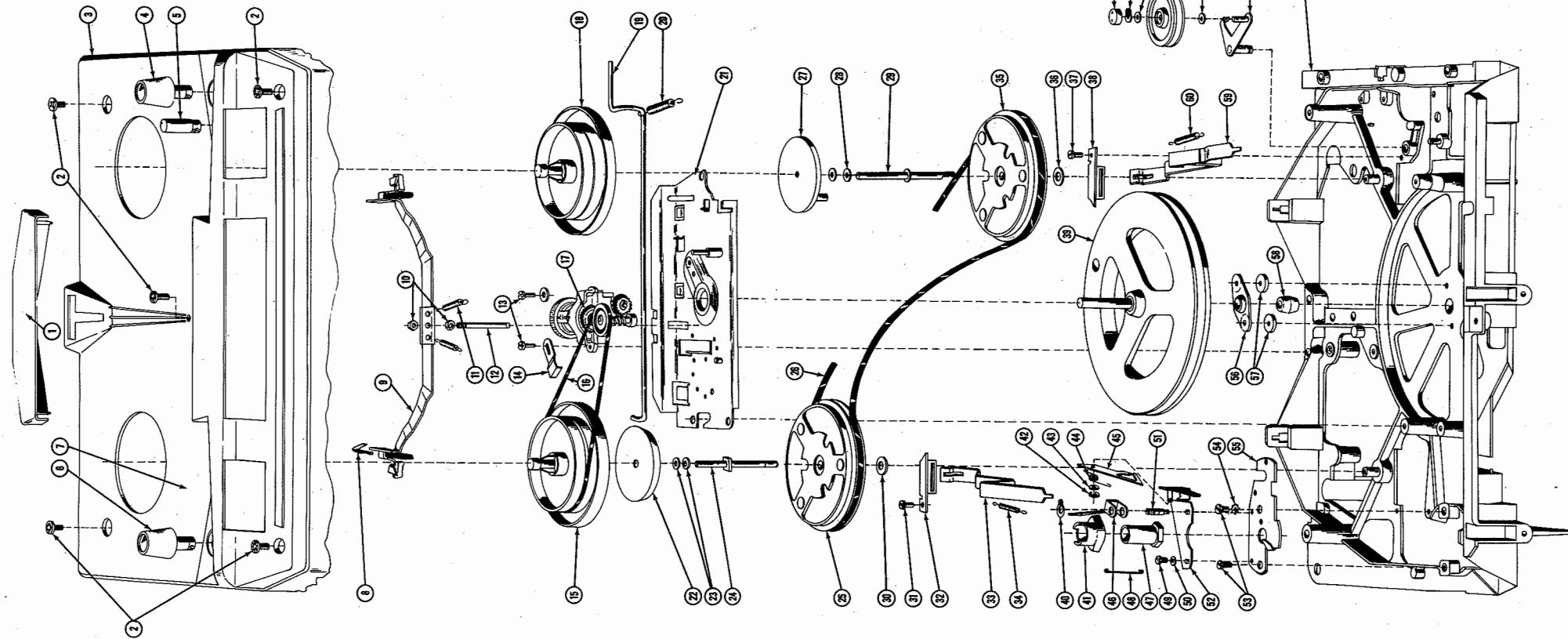
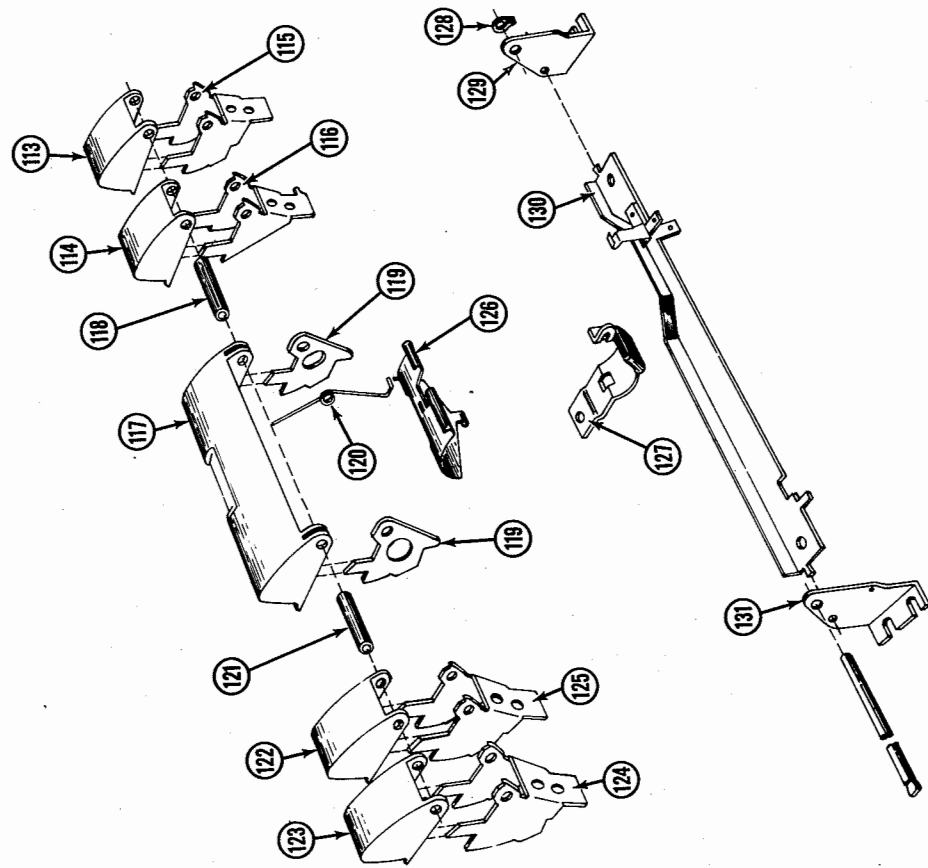
TROUBLE CHART

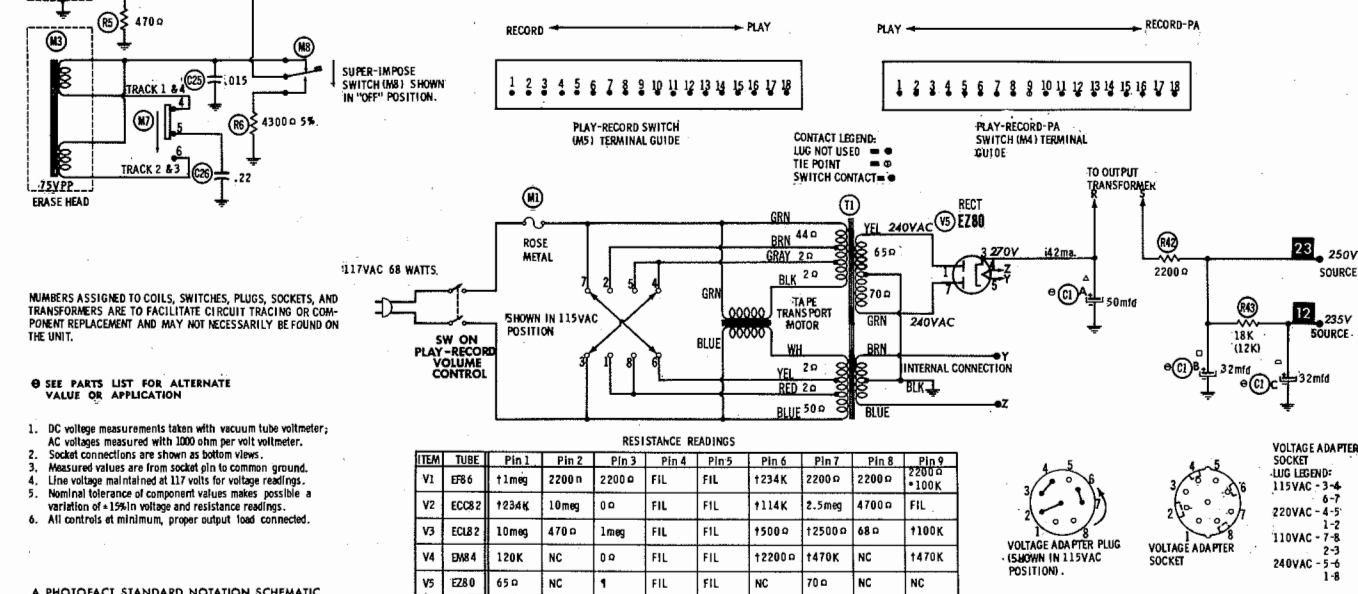
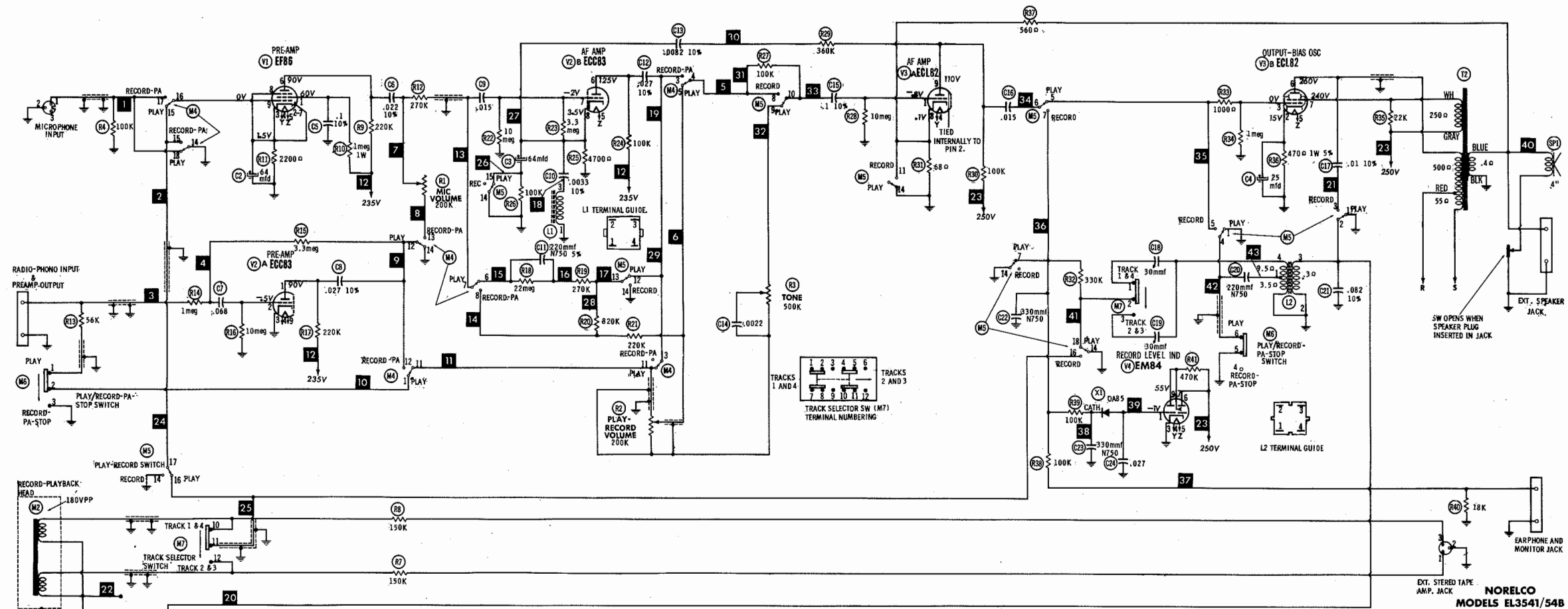
| SYMPTOM | CAUSE | REMEDY |
|--|--|---|
| Take-up reel does not turn in Play or Record position. | 1. Take-up idler spring (60) off or broken. 2. Take-up clutch assembly slipping. | 1. Replace take-up idler spring(60). 2. Reposition clutch assembly on shaft. |
| Take-up reel does not turn in Fast Forward position. | 1. Drive belt slipping on pulleys. 2. Idler spring (60) off or broken. | 1. Moisten cloth in alcohol and clean pulleys. 2. Replace idler spring (60). |
| Supply reel does not turn in Rewind position. | 1. Oil on idler pulley (64) or main drive pulleys. | 1. Moisten cloth in alcohol. Clean idler pulley and drive pulleys. |
| Reels do not stop when Stop button is depressed. | 1. Brake actuating spring (11) off or broken. 2. Brake lining worn. | 1. Replace brake actuating spring (11). 2. Replace brake lining. |
| Counter mechanism does not operate. | 1. Defective counter (17). 2. Counter belt (16) off or broken. | 1. Check gear teeth in counter for damage. Replace if necessary. 2. Replace counter belt (16). |
| Wow or flutter. | 1. Improper pressure between capstan (85) and pressure roller (100). 2. Pressure roller (100) worn. 3. Counter (17) binding. 4. Dirty pressure pad (74). 5. Pressure roller (100) binding on shaft or damaged. | 1. Bend or replace pressure roller tension spring for proper tension. 2. Replace pressure roller (100). 3. Check for dirt or chips in gears. Clean and lubricate. 4. Saturate pad with alcohol. Brush surface of pad in direction of normal tape travel. 5. Remove pressure roller (100) and clean bearing with pipe cleaner dampened with alcohol. Clean roller stud (104); if scarred, polish with crocus cloth. Apply a light coating of nonmelting grease to the stud before reassembling. If damaged, replace. |

MECHANICAL PARTS LIST

| Ref. No. | Part No. | Description | Ref. No. | Part No. | Description |
|----------|-----------|----------------------------|----------|-----------|--------------------------|
| 1 | | Cover, Head | 26 | WT-496-04 | Belt, Main Drive |
| 2 | | Screw | 27 | | Clutch Disc |
| 3 | | Dress Plate | 28 | A9-868-66 | Washer |
| 4 | | Knob, Volume Control | 29 | | Driveshaft, Take-Up |
| 5 | | Button, Record | 30 | A9-868-66 | Washer |
| 6 | | Knob, Volume Control | 31 | | Screw |
| 7 | | Knob, Treble Control | 32 | | Plate, Rewind Actuating |
| 8 | | Spring, Brake Guide | 33 | | Rod, Rewind Actuating |
| 9 | PW-307-40 | Bracket, Brake Assembly | 34 | WT-740-85 | Spring, Tension |
| 10 | | Nut, Brake Adjust | 35 | WT-882-24 | Pulley, Take-Up |
| 11 | WT-740-89 | Spring, Brake Tension | 36 | A9-868-65 | Washer |
| 12 | | Rod, Brake | 37 | | Screw |
| 13 | | Screw, Retaining | 38 | | Plate, Take-Up Actuating |
| 14 | | Bracket, Belt Brush | 39 | WT-886-94 | Flywheel |
| 15 | WT-961-50 | Spindle, Supply | 40 | | Ring, Retaining |
| 16 | WT-496-08 | Belt, Counter Drive | 41 | WT-937-53 | Cam, Switching |
| 17 | PW-306-00 | Assembly, Counter | 42 | | Ring, Retaining |
| 18 | WT-961-53 | Spindle, Take-Up | 43 | | Washer |
| 19 | | Rod, Foot Switch Actuating | 44 | WT-765-56 | Spring, Torsion |
| 20 | WT-740-90 | Spring, Tension | 45 | WT-306-98 | Bar, Pause Locking |
| 21 | | Bracket, Head Assembly | 46 | | Rod, Switch Actuating |
| 22 | WT-477-97 | Clutch Disc | 47 | WT-598-33 | Nut, Nylon |
| 23 | A9-868-66 | Washer | 48 | | Rod, Connecting |
| 24 | | Driveshaft, Supply Pulley | 49 | | Screw |
| 25 | WT-882-24 | Pulley, Supply | 50 | | Washer |



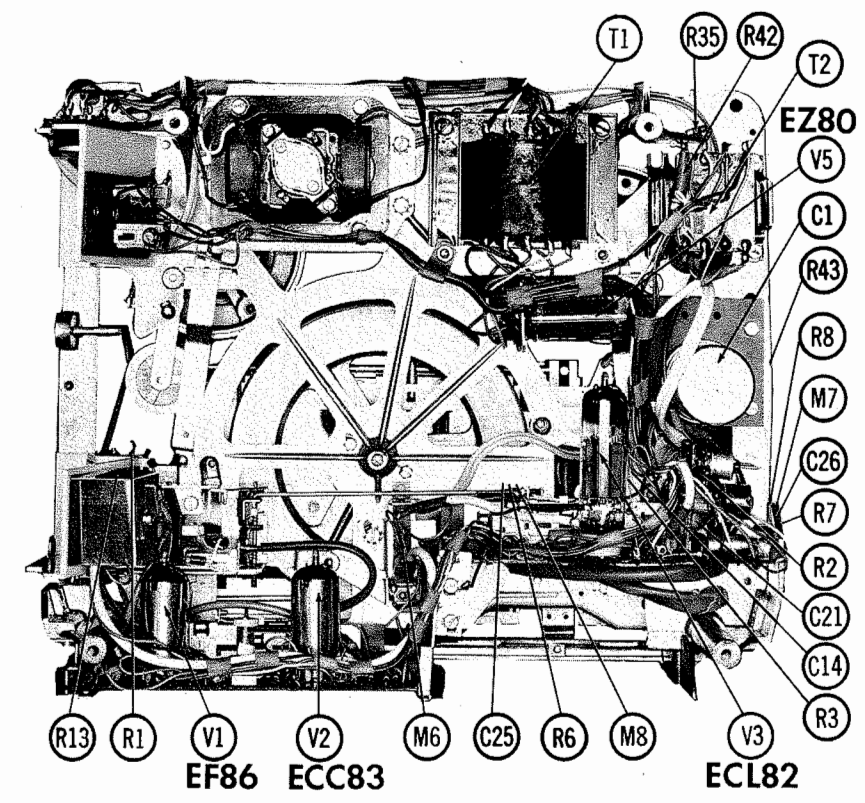




- NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
- SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
- DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
 - Socket connections are shown as bottom views.
 - Measured values are from socket pin to common ground.
 - Line voltage maintained at 117 volts for voltage readings.
 - Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
 - All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITTRACE
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ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
MEASURED IN "RECORD" POSITION.
1 MEASURED FROM PIN 3 OF V5.
THIS READING WILL VARY DEPENDING ON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
NC NO CONNECTION.



BOTTOM VIEW OF MECHANISM