



# PHOTOFACT<sup>®</sup> with

# CIRCUITRACE<sup>®</sup>

These units are four-track mono/stereo recorders having three speeds: 1 7/8, 3 3/4 and 7 1/2 ips.

Model 850 is a tape deck only and requires external amplifier/speaker systems. Models 860 and 865 are self-contained except for speakers.

Line Input jacks are provided on all three models for connecting sound sources other than microphone. Line Out jacks are provided on all three models for connecting external amplifiers. External Speaker jacks are provided on Models 860 and 865.

A 110-120 volt, 60-cycle AC power source is required.

TRADE NAME : Ampex Models 850 (Deck Only)  
860 (Portable)  
865 (Table)

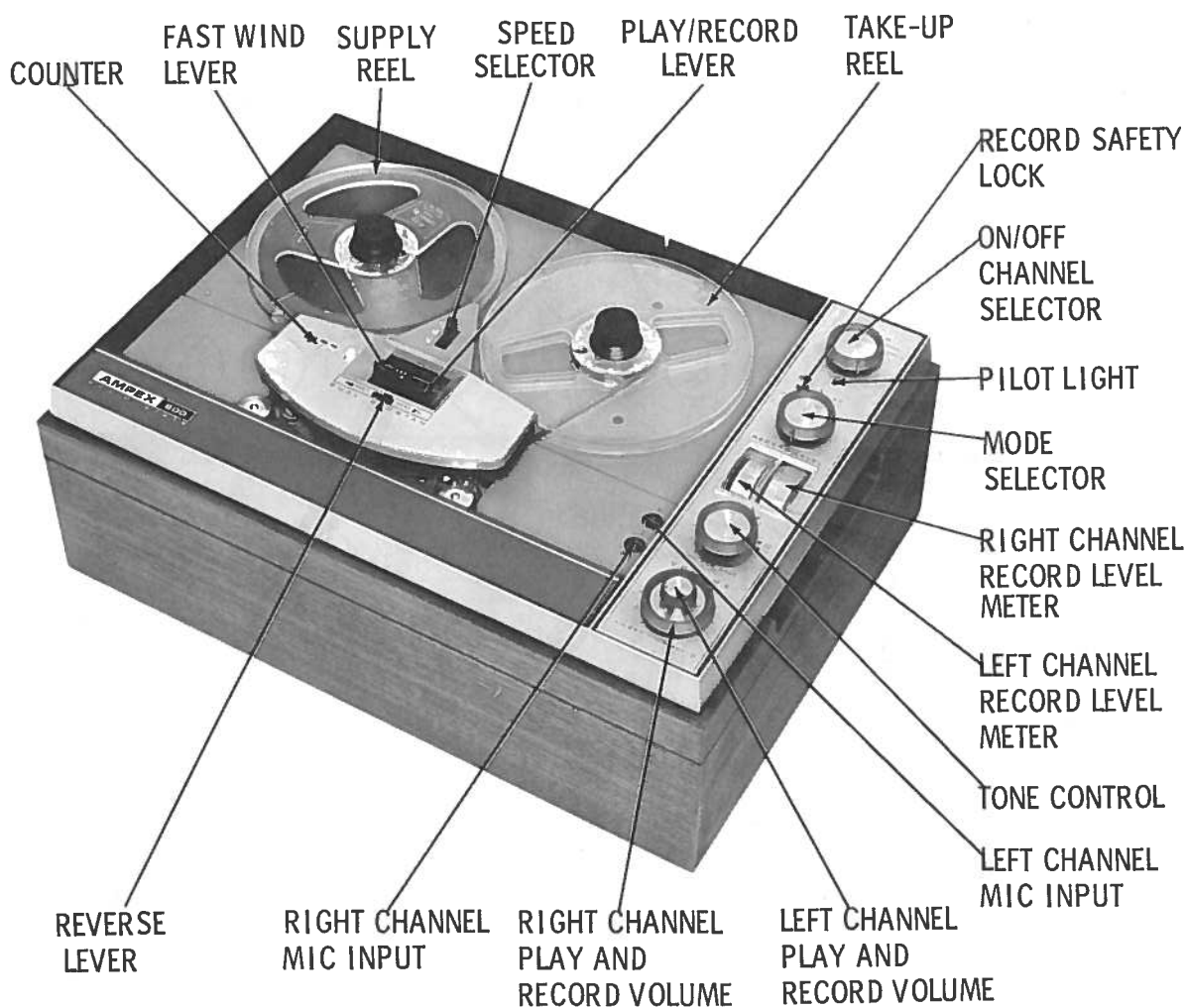
SUPPLIER : For Current Address, see Master Index

TYPE SET : 3-Speed, 4-Track Mono/Stereo Recorder

POWER SUPPLY : 110 — 120 Volts AC, 60 Cycles

RATING : 10 Watts, .15 Amp. @ 117VAC (Less Motor)

AMPEX MODELS 850, 860, 865



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

## FUNCTION OF SPECIFIC CONTROLS, JACKS & INDICATORS

### Reverse Lever

Selects the direction of fast wind but must be in the left-to-right position when recording or playing. Do not attempt to reverse direction while tape is moving.

### Fast Wind

Moves the tape rapidly in the direction indicated by the Reverse Lever.

## OPERATING INSTRUCTIONS

**Note:** Connect amplifier/speaker systems to Model 850 and speakers to Models 860 and 865.

### Four-Track Monaural Record

1. Thread the tape, select the speed, turn the Channel Selector to Mono 1, the Mode Selector to Record, and the Reverse Lever to the right. Connect the recording source.
2. Adjust the appropriate volume control so the recording level indicator fluctuates within the white area.
3. To record, simultaneously press the Record Interlock and push the Play/Record Lever forward.
4. After track 1 is recorded, reverse the reels and repeat steps 1, 2 and 3.
5. After track 4 is recorded, reverse the reels and repeat steps 1, 2 and 3 except in step 1 turn the Channel Selector to Mono 2.
6. After track 3 is recorded, reverse the reels and repeat steps 1, 2 and 3 except in step 1 turn the Channel Selector to Mono 2.

### Stereo Record

1. Repeat steps 1, 2 and 3 of "Four-Track Monaural

Recording" except in step 1 turn the Channel Selector to Stereo.

2. After tracks 1 and 3 are recorded, reverse the reels and repeat step 1.

### Four-Track Monaural Play

1. Thread the tape, select the speed, turn the Channel Selector to Mono 1, the Mode Selector to Play, and the Reverse Lever to the right.
2. Push the Play/Record Lever forward and adjust the volume and tone controls as desired.
3. After track 1 is played, reverse the reels and repeat steps 1 and 2.
4. After track 4 is played, reverse the reels and repeat steps 1 and 2 except in step 1 turn the Channel Selector to Mono 2.
5. After track 3 is played, reverse the reels and repeat steps 1 and 2 except in step 1 turn the Channel Selector to Mono 2.

### Stereo Play

1. Repeat steps 1 and 2 of "Four-Track Monaural Play" except turn the Channel Selector to Stereo.
2. After tracks 1 and 3 are played, reverse the reels and repeat step 1.

## DISASSEMBLY

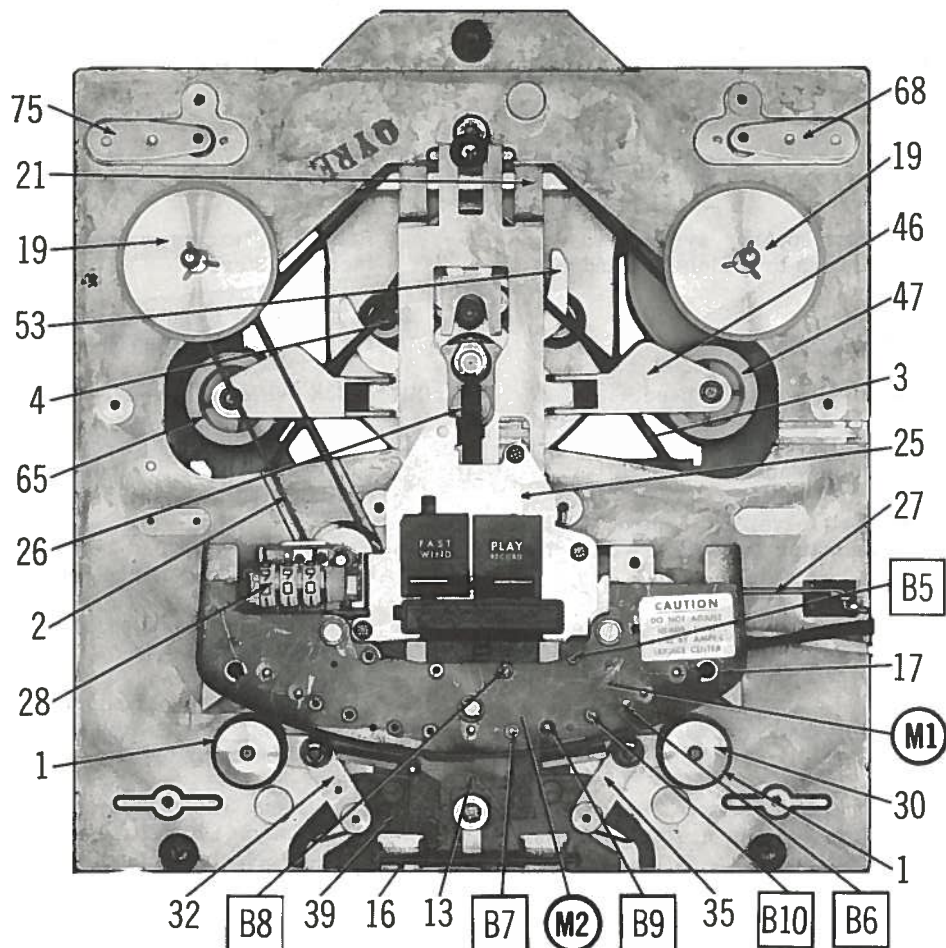
1. Lift off plastic head cover.
2. Remove front plastic deck cover by prying front up.
3. Remove four Phillips and four Allen screws holding the deck cover.
4. Remove four Phillips screws holding the tape deck amplifier assembly to the cabinet.
5. Remove four hex head metal screws (2 at each end) and one Phillips screw and nut holding the amplifier shield.
6. Remove five knobs.
7. Remove two Phillips screws holding the amplifier escutcheon.
8. Remove three screws holding the head assembly.
9. Remove two Phillips screws holding the right amplifier chassis.
10. Remove two Phillips screws holding the left amplifier chassis.

## CLEANING

## LUBRICATING

## HEAD DEMAGNETIZING

Refer to "General Servicing Information" on page 4.



## SEQUENCE OF OPERATION

### Fast Wind

Pushing the Fast Wind button forward pushes Wind Slide (21) forward, releasing Brake Roller Arm (71) and Wind Lever (46).

With Reverse Lever to the right, the motor reversing switch is positioned so the motor will run clockwise when viewed from the rear, causing the torque applied to Wind Belt (3) to pivot Wind Lever (46) so Pulley Clutch (47) will contact Brake Drum (43) and move the tape from left to right.

With Reverse Lever to the left, the motor reversing switch is positioned so the motor will run counterclockwise when viewed from the rear, causing the torque applied to Wind Belt (3) to pivot Wind Lever (46) so Pulley Clutch (65) will contact Brake Drum (43) and move the tape from right to left.

### Play-Record

Pushing the Record/Play button forward not only

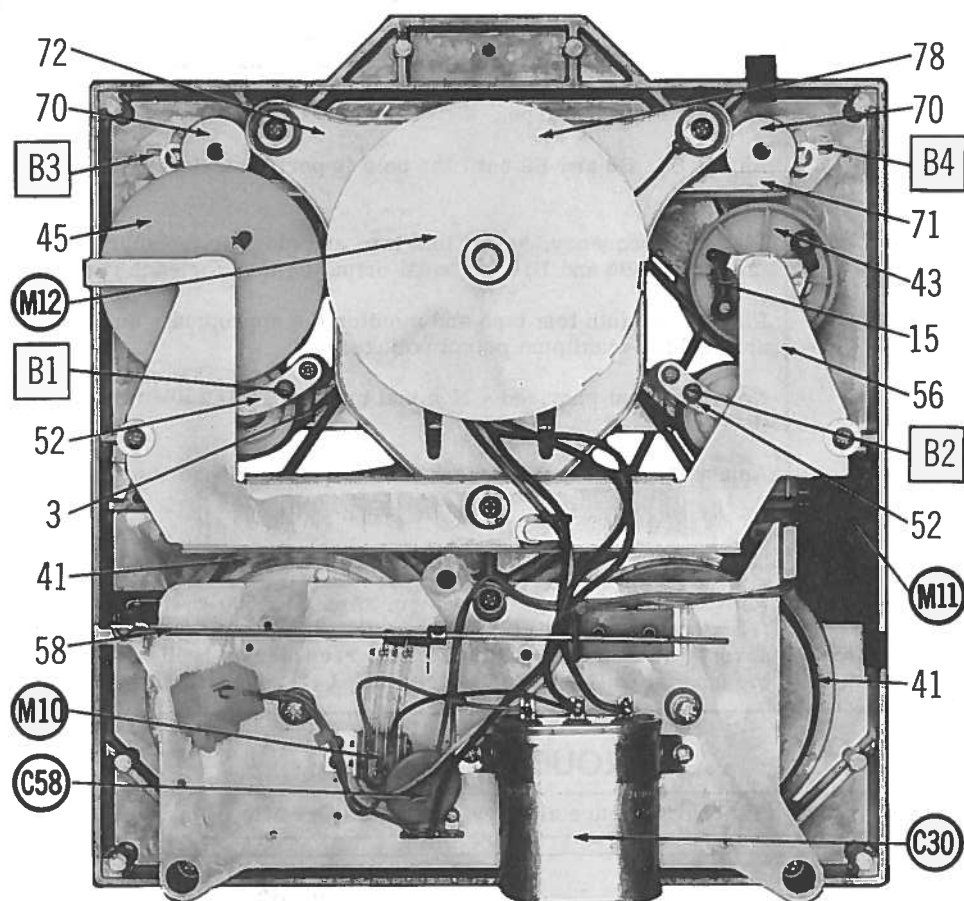
pulls Play Slide (39) forward, engaging Capstan Idler (1) with the capstans but also pushes Wind Slide (21) forward, releasing Brake Roller Arm (71) and Wind Lever (46).

A lance on Play Slide (39) forces Take-up Lever Rod (64) down which pivots Take-up Lever (56) up, forcing Play Pulley (45) up so Play Clutch Tire (49) will contact Play Pulley (45) to keep the tape taut.

### Speed Selector

When the Speed Selector is moved from a fast to a slower speed, Lower Belt Lifter (55) forces Flywheel Belt (4) onto the appropriate diameter of Motor Pulley (77) which drives Flywheel (41).

When the Speed Selector is moved from a slow to a faster speed, Upper Belt Lifter (53) forces Flywheel Belt (4) onto the appropriate diameter of Motor Pulley (77) which drives Flywheel (41).



## ADJUSTMENTS

**IMPORTANT:** Before making any adjustments, refer to "General Servicing Information" on page 4.

1. All voltage measurements are made at a tape speed of 7 1/2 ips with an audio VTVM having a flat response to 100KC.
2. All torque measurements are made at a tape speed of 7 1/2 ips with a spring scale applied to a point on an empty tape reel 2 inches from reel center.
3. All pressure measurements are made by using a spring scale to determine that point at which pressure is just removed.

| ADJUST                      | REMARKS   |
|-----------------------------|---|
| Play Take-up Torque         | Adjust B1 for 1 ounce.  |
| Fast Forward Take-up Torque | No adjustment provided. Nominal value 10 ounces.  |
| Rewind Torque               | Adjust B2 for 10 ounces.  |
| Supply Reel Drag            | Adjust B3 for 1 ounce, measured in Forward position.                                      |
| Take-up Reel Drag           | Adjust B4 for 1/2 ounce, measured in Rewind.  |
| Pressure Roller Pressure    | No adjustment provided. Nominal value 2 pounds.   |
| Brake Shoe Torque           | No adjustment provided. Nominal value 1 1/2 ounces, measured at point of contact in Stop. |

## ADJUSTMENTS (Continued)

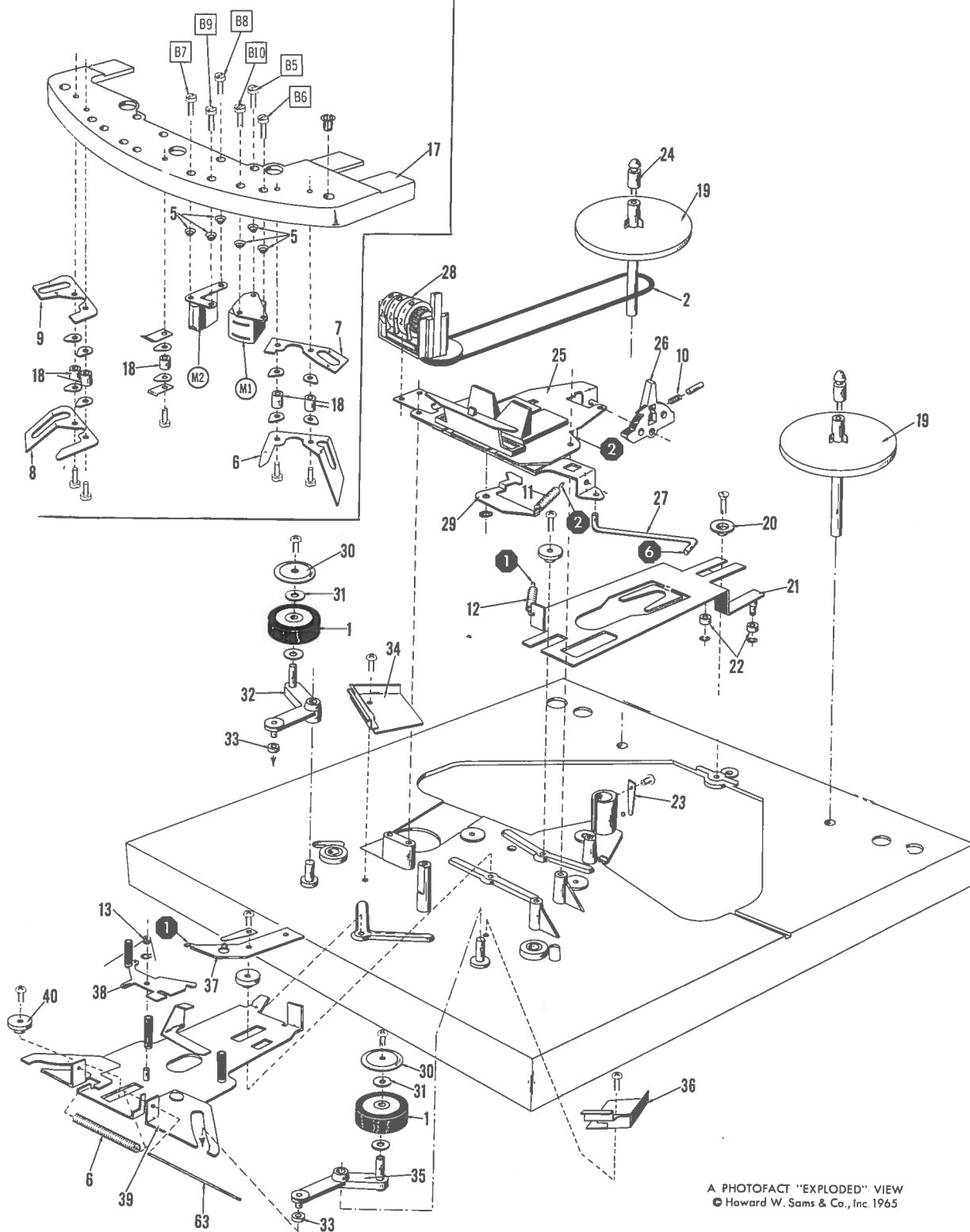
| ADJUST                             | REMARKS  |
|------------------------------------|--|
| Erase Head Height                  | Adjust B7, B8 and B9 until top of upper pole piece is even with top edge of a properly threaded tape.  |
| Erase Head Azimuth                 | Adjust B7, B8 and B9 until the pole is perpendicular to the lateral tape motion.   |
| Record/ Play Head Height           | Play a 2-frequency, height test tape and monitor the appropriate output. Adjust B5, B6 and B10 for equal output voltage for each frequency.  |
| Record/ Play Head Azimuth          | Play an azimuth test tape and monitor the appropriate output. Adjust B5, B6 and B10 for maximum output voltage.  |
| Erase Current                      | No adjustment provided. Nominal current 11ma (50V rms) in each section of the erase head.  |
| Record Bias                        | Adjust R4 (R6) for 20V rms (.6ma) across the record head.  |
| Bias Oscillator                    | No adjustment provided. Nominal frequency is 70KC.   |
| Record Level Indicator Calibration | Remove the oscillator transistor. Apply a 1000-cycle signal to the channel 1 (2) mic input and adjust the channel 1 (2) volume for 20V rms, measured across the upper (lower) half of the record/play head. Adjust R3 (R5) for the normal peak level on the channel 1 (2) level indicator. |

## TROUBLE CHART

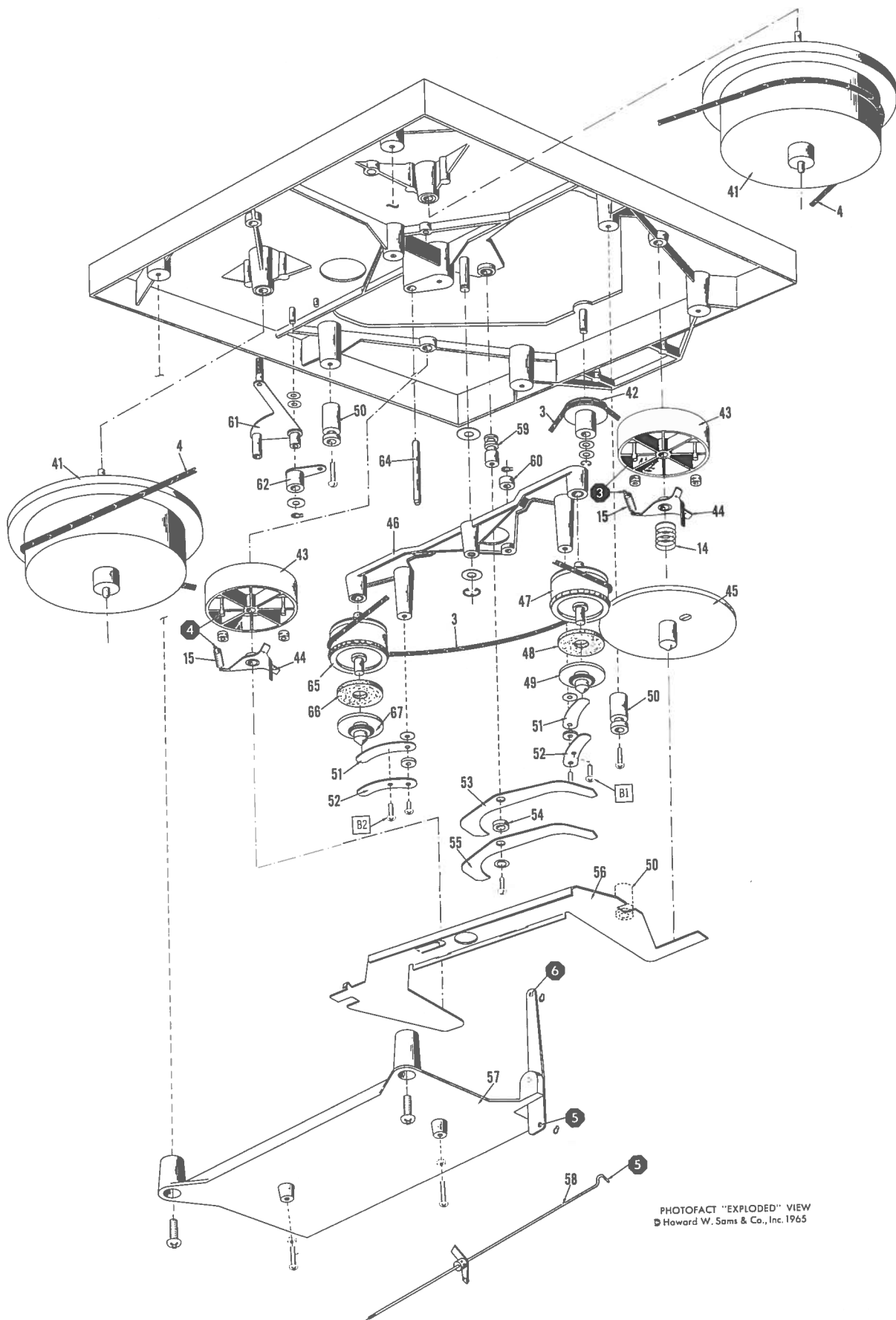
**IMPORTANT :** Before consulting this chart be sure all servicing procedures listed on page 4 have been followed.

| SYMPTOM   | REMARKS   |
|---|---|
| Take-up reel revolves erratically, or not at all in Play or Record                  | <ol style="list-style-type: none"> <li>1. Flywheel Belt (4) broken or worn.</li> <li>2. Wind Belt (3) broken or worn.</li> <li>3. Pressure Roller (1) dirty or worn.</li> <li>4. B1 or B2 misadjusted.</li> </ol> |
| Take-up reel does not revolve in Fast Forward.                                      | <ol style="list-style-type: none"> <li>1. Wind Belt (3) broken.</li> <li>2. Rubber tire on Play Clutch (47) or Wind Clutch (65) worn or broken.</li> </ol>  |
| Take-up reel revolves rapidly in Play or Record.                                    | <ol style="list-style-type: none"> <li>1. Pressure Rollers (1) dirty or worn.</li> </ol>  |
| Supply reel does not revolve in Rewind.   | <ol style="list-style-type: none"> <li>1. Wind Belt (3) broken.</li> <li>2. Rubber tire on Play Clutch (47) or Wind Clutch (65) worn or broken.</li> </ol>  |
| Supply reel spills tape in forward positions.                                       | <ol style="list-style-type: none"> <li>1. B3 or B4 misadjusted.</li> </ol>  |
| Take-up reel spills tape in Rewind.   | <ol style="list-style-type: none"> <li>1. B3 or B4 misadjusted.</li> </ol>  |
| Reels do not stop immediately when Function button is returned to neutral position. | <ol style="list-style-type: none"> <li>1. B3 or B4 misadjusted.</li> </ol>  |
| Capstan does not rotate in Play or Record.  | <ol style="list-style-type: none"> <li>1. Flywheel Belt (4) broken.</li> </ol>  |
| Wow or Flutter.   | <ol style="list-style-type: none"> <li>1. Pressure Rollers (1) dirty or worn.</li> <li>2. Flywheel Belt (4) dirty or worn.</li> <li>3. Wind Belt (3) dirty or worn.</li> </ol>                                    |

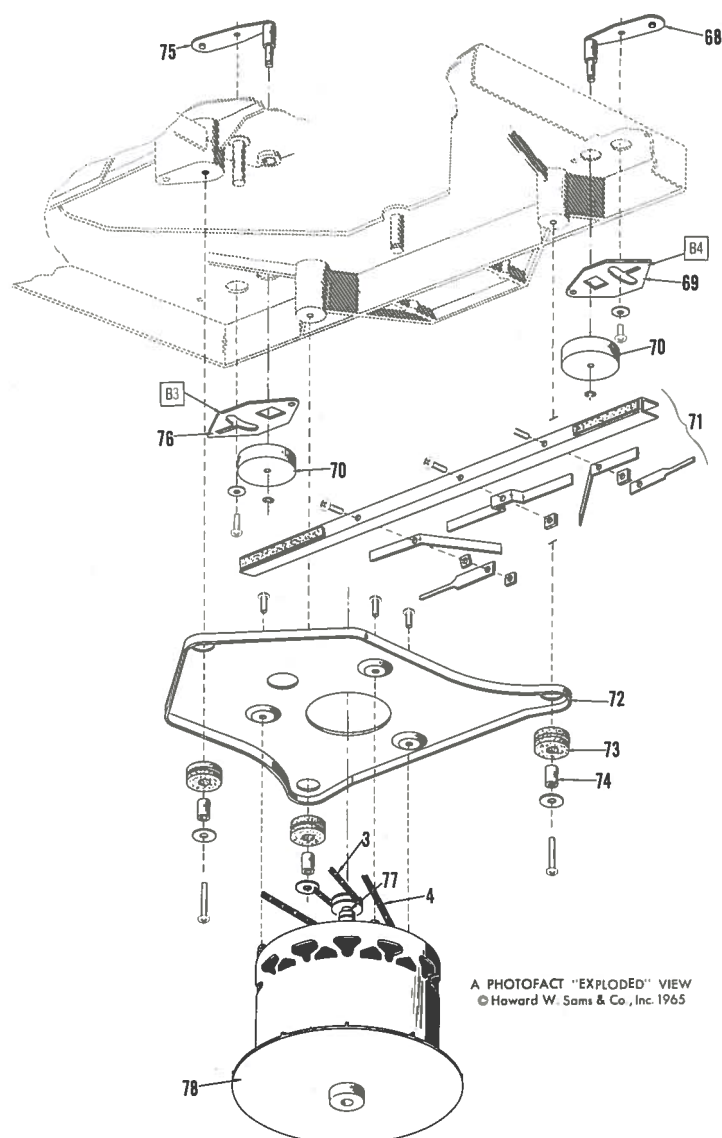
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## **TROUBLE CHART (Continued)**

**IMPORTANT:** Before consulting this chart be sure all servicing procedures listed on page 4 have been followed.

| SYMPTOM  | REMARKS   |
|--|---|
| Prerecorded tapes are weak or distorted.             | 1. Record/Play Head (M1) misaligned or dirty.   |
| Tapes recorded on the machine are weak or distorted. | 1. Insufficient Record Bias.<br>2. Bias Oscillator inoperative.<br>3. Insufficient erase. |
| Sound is weak or distorted.                          | 1. Record/Play Head (M1) misaligned or dirty or defective.                                |
| Erase weak or inoperative.                           | 1. Insufficient erase current.<br>2. Erase Head (M2) misaligned or defective.             |



## MECHANICAL PARTS LIST

| Ref. No. | Part No. | Description               | Ref. No. | Part No. | Description                |
|----------|----------|---------------------------|----------|----------|----------------------------|
| 1        |          | Capstan Idlers (2)        | 40       |          | Play Slide Spacer          |
| 2        |          | Counter Belt              | 41       |          | Flywheel (2)               |
| 3        |          | Wind Belt                 | 42       |          | Pulley                     |
| 4        |          | Flywheel Belt             | 43       |          | Brake Drum                 |
| 5        |          | Head Stack Springs        | 44       |          | Brake Lever                |
| 6        |          | Lower Right Tape Guide    | 45       |          | Play Pulley                |
| 7        |          | Upper Right Tape Guide    | 46       |          | Wind Lever                 |
| 8        |          | Lower Left Tape Guide     | 47       |          | Play Clutch                |
| 9        |          | Upper Left Tape Guide     | 48       |          | Play Clutch Washer         |
| 10       |          | Speed Shift Index Spring  | 49       |          | Play Clutch Tire           |
| 11       |          | Wind Knob Hold Spring     | 50       |          | Spacer                     |
| 12       |          | Wind Slide Spring         | 51       |          | Play Pulley Tension Spring |
| 13       |          | Torsion Leaf              | 52       |          | Holding Bracket            |
| 14       |          | Clutch Pressure Spring    | 53       |          | Upper Belt Lifter          |
| 15       |          | Brake Pulley Spring       | 54       |          | Belt Guide Spacer          |
| 16       |          | Coil Spring               | 55       |          | Lower Belt Lifter          |
| 17       |          | Head Mounting Plate       | 56       |          | Take-up Lever              |
| 18       |          | Tape Guide Spacers        | 57       |          | Lower Casting              |
| 19       |          | Turntable                 | 58       |          | Reverse Switch Rod         |
| 20       |          | Spacer                    | 59       |          | Speed Shifter Shaft        |
| 21       |          | Wind Slide                | 60       |          | Spacer                     |
| 22       |          | Roller                    | 61       |          | Automatic Stop Lever       |
| 23       |          | Leaf Spring               | 62       |          | Bearing                    |
| 24       |          | Shaft Extender            | 63       |          | Play Slide Rod             |
| 25       |          | Control Plate             | 64       |          | Take-up Lever Rod          |
| 26       |          | Speed Shift Knob          | 65       |          | Wind Clutch                |
| 27       |          | Reverse Control Rod       | 66       |          | Clutch Spacer Washer       |
| 28       |          | Counter                   | 67       |          | Wind Clutch Tire           |
| 29       |          | Play-Wind Interlock Lever | 68       |          | Brake Adjustment Lever     |
| 30       |          | Capstan Idler Retainer    | 69       |          | Locking Plate              |
| 31       |          | Nylon Washer              | 70       |          | Brake Roller               |
| 32       |          | Left Capstan Idler Arm    | 71       |          | Brake Roller Arm           |
| 33       |          | Roller                    | 72       |          | Motor Mounting Plate       |
| 34       |          | Left Tape Guide           | 73       |          | Shock Mounts               |
| 35       |          | Right Capstan Idler Arm   | 74       |          | Spacer                     |
| 36       |          | Right Tape Guide          | 75       |          | Brake Adjustment Lever     |
| 37       |          | Locking Lever             | 76       |          | Locking Plate              |
| 38       |          | Tape Lifter               | 77       |          | Motor Pulley (60 Cycle)    |
| 39       |          | Play Slide                | 78       |          | Fan                        |

## PARTS LIST AND DESCRIPTION TRANSISTORS

| ITEM No. | ORIG. TYPE | USE             | REPLACEMENT DATA |                           |              | AMPEX PART No. | NOTES |
|----------|------------|-----------------|------------------|---------------------------|--------------|----------------|-------|
|          |            |                 | DELCO PART No.   | GENERAL ELECTRIC PART No. | RCA PART No. |                |       |
| X1       |            | AF Amp.         |                  |                           |              | 570005452      | NPN   |
| X2       |            | AF Amp.         |                  |                           |              | 570005503      | NPN   |
| X3       |            | AF Amp.         |                  |                           |              | 570005452      | NPN   |
| X4       |            | AF Amp.         |                  |                           |              | 570005503      | NPN   |
| X5       |            | AF Amp.         |                  |                           |              | 570004503      | NPN   |
| X6       |            | Output          | DS-503           | GE-3                      |              | DTG-110        | PNP   |
| X7       |            | Output          | DS-503           | GE-3                      |              | DTG-110        | PNP   |
| X8       |            | AF Amp.         |                  |                           |              | 570005452      | NPN   |
| X9       |            | AF Amp.         |                  |                           |              | 570005503      | NPN   |
| X10      |            | AF Amp.         |                  |                           |              | 570005452      | NPN   |
| X11      |            | AF Amp.         |                  |                           |              | 570005503      | NPN   |
| X12      |            | AF Amp.         |                  |                           |              | 570004503      | NPN   |
| X13      |            | Output          | DS-503           | GE-3                      |              | DTG-110        | PNP   |
| X14      |            | Output          | DS-503           | GE-3                      |              | DTG-110        | PNP   |
| X15      |            | Bias Oscillator |                  |                           |              | 570009-01-504  | NPN   |
| X16      |            | Bias Oscillator |                  |                           |              | 570009-01-504  | NPN   |

## POWER RECTIFIERS & SIGNAL DIODES

| ITEM No. | MEASURED CURRENT | ORIGINAL Part or Type No. | RECTIFIERS                |                   |                    |                         | DIODES                    |
|----------|------------------|---------------------------|---------------------------|-------------------|--------------------|-------------------------|---------------------------|
|          |                  |                           | GENERAL ELECTRIC PART No. | MALLORY PART No.  | RCA PART No.       | SARKES TARZIAN PART No. | GENERAL ELECTRIC PART No. |
| X17      | 310MA            | 10B2                      | 1N1692                    | 1N2089 or 1N538 ① | SK-3018 or SK-3017 | F-2 ② or 20C ②          |                           |
| X18      | 310MA            | 10B2                      | 1N1692                    | 1N2089 or 1N538 ① | SK-3018 or SK-3017 | F-2 ② or 20C ②          |                           |
| X19      | 1.6MA            |                           |                           |                   |                    |                         | 1N34AS                    |
| X20      |                  |                           |                           |                   |                    |                         | 1N34AS                    |
| X21      |                  |                           |                           |                   |                    |                         | 1N34AS                    |

① Part #CTP200 may be used to replace X17 and X18.

② Part #6TFC20 may be used to replace X17 and X18.

# PARTS LIST AND DESCRIPTION (CONTINUED)

## ELECTROLYTIC CAPACITORS

| ITEM No. | RATING |       | REPLACEMENT DATA |                  |                           |                           |                  |                  |
|----------|--------|-------|------------------|------------------|---------------------------|---------------------------|------------------|------------------|
|          | CAP.   | VOLT. | AMPEX PART No.   | AEROVOX PART No. | CORNELL-DUBILIER PART No. | GENERAL ELECTRIC PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C1A      | 1000   | 50    |                  |                  |                           |                           |                  | TVLS2335, 4*     |
| B        | 1000   | 50    |                  |                  |                           |                           |                  |                  |
| C2A      | 500    | 50    |                  |                  | BR500-50                  |                           |                  |                  |
| B        | 500    | 50    |                  |                  | BR500-50                  |                           |                  |                  |
| C        | 500    | 50    |                  |                  | BR500-50                  |                           |                  |                  |
| C3       | 22     | 25    |                  | CRE612A          | NLW25-25                  | MT1-11                    | TT25X25          | TE-1207          |
| C4       | 22     | 25    |                  | CRE612A          | NLW25-25                  | MT1-11                    | TT25X25          | TE-1207          |
| C5       | 10     | 150   |                  | CRE957A          | NLW10-150                 | MT1-8                     | TT150X10         | TE-1507          |
| C6       | 27     | 6     | 7540052          |                  | TYR13BB270K               |                           | TAS276K006POC    |                  |
| C7       | 68     | 6     | 7540049          |                  | TYR13BB680K               | MT1-18                    | TT6X75           | VL-1097          |
| C8       | 1.8    | 25    |                  | CRE320A          | TYR13BF1R8K               |                           | TAS185K035POC    |                  |
| C9       | 10     | 10    |                  |                  | TYR13BC100K               | MT1-5                     | TT10X10          | VL-1127          |
| C10      | 10     | 10    |                  | BCD10010         | TYR13BC100K               | MT1-5                     | TT10X10          | VL-1127          |
| C11      | 10     | 10    |                  | BCD10010         | TYR13BC100K               | MT1-5                     | TT10X10          | VL-1127          |
| C12      | 27     | 15    |                  | CRE463A          | TYR13BD270K               | MT1-14                    | TT15X25          | TE-1158          |
| C13      | 250    | 6     |                  | CRE333A          | TYR13BB271K               | MT1-24                    | TT6X250          | TE-1105          |
| C14      | 47     | 25    |                  | CRE617A          | NLW50-25                  | MT1-17                    | TT25X50          | TE-1209          |
| C15      | 10     | 10    |                  | BCD10010         | TYR13BC100K               | MT1-5                     | TT10X10          | VL-1127          |
| C16      | 5.6    | 6     |                  | CRE305A          | TYR13BB5R6K               | MT1-5                     | TT6X6            | TE-1085          |
| C17      | 500    | 35    |                  | PRS1390          | BR500-50                  | QT1-31                    | TC50050          | TVA-1315         |
| C18      | 27     | 6     | 7540052          |                  | TYR13BB270K               |                           | TAS276K006POC    |                  |
| C19      | 68     | 6     | 7540049          |                  | TYR13BB680K               | MT1-18                    | TT6X75           | VL-1097          |
| C20      | 1.8    | 25    |                  | CRE320A          | TYR13BF1R8K               |                           | TAS185K035POC    |                  |
| C21      | 10     | 10    |                  |                  | TYR13BC100K               | MT1-5                     | TT10X10          | VL-1127          |
| C22      | 10     | 10    |                  | BCD10010         | TYR13BC100K               | MT1-5                     | TT10X10          | VL-1127          |
| C23      | 10     | 10    |                  | BCD10010         | TYR13BC100K               | MT1-5                     | TT10X10          | VL-1127          |
| C24      | 27     | 15    |                  | CRE463A          | TYR13BD270K               | MT1-14                    | TT15X25          | TE-1158          |
| C25      | 250    | 6     |                  | CRE333A          | TYR13BB271K               | MT1-24                    | TT6X250          | TE-1105          |
| C26      | 47     | 25    |                  | CRE617A          | NLW50-25                  | MT1-17                    | TT25X50          | TE-1209          |
| C27      | 10     | 10    |                  | BCD10010         | TYR13BC100K               | MT1-5                     | TT10X10          | VL-1127          |
| C28      | 5.6    | 6     |                  | CRE305A          | TYR13BB5R6K               | MT1-5                     | TT6X6            | TE-1085          |
| C29      | 500    | 35    |                  | PRS1390          | BR500-50                  | QT1-31                    | TC50050          | TVA-1315         |

① Some versions may use 500mfd @ 50V.

\* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

## CAPACITORS

| ITEM No. | RATING     | REMARKS     | REPLACEMENT DATA |                    |                           |                  |                  |                  |
|----------|------------|-------------|------------------|--------------------|---------------------------|------------------|------------------|------------------|
|          |            |             | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C30A     | 3 330VAC   | #7540041-01 |                  |                    |                           |                  |                  |                  |
| B        | 1 330VAC   |             |                  |                    |                           |                  |                  |                  |
| C31      | .1 25V     |             | P288N-1          | DF-104             | PM2P1                     | 2DP-3-104        | PVC201           | 2TM-P10          |
| C32      | .0082      |             | P288N-008        | DD-822             | WMF-D82                   | 1DP-1-752        | PVC628           | 6PS-D82          |
| C33      | 820        |             | ADM-19-821       | CPR-820J           | F821J100                  | DM-15-821        | SX382            | MS-382           |
| C34A     | 8-100      |             |                  | 423                |                           |                  |                  |                  |
| B        | 8-100      |             |                  | 423                |                           |                  |                  |                  |
| C35      | 300        |             | ADM-15-301       | CPR-300J           | F301J300                  | DM-15-301        | SX330            | MS-33            |
| C36      | .47        |             |                  |                    |                           |                  | MAG12047         |                  |
| C37      | .02 25V    |             | P288N-02         | DD-203             | PM2S22                    | 4DP-2-203        | PVC212           | 2TM-S20          |
| C38      | .088 100V  |             | P288N-088        |                    | WMF-1S68                  | 1DP-2-683        | PVC1168          | 4PS-S68          |
| C39      | .047 100V  |             | P288N-047        | DD-503             | PM2S47                    | 4DP-3-473        | PVC2147          | 2TM-S47          |
| C40      | .1 25V     |             | P288N-1          | DF-104             | PM2P1                     | 2DP-3-104        | PVC201           | 2TM-P10          |
| C41      | .0082      |             | P288N-008        | DD-822             | WMF-ID82                  | 1DP-1-752        | PVC628           | 6PS-D82          |
| C42      | 820        |             | ADM-19-821       | CPR-820J           | F821J100                  | DM-15-821        | SX382            | MS-382           |
| C43      | .1 100V    |             | P288N-1          | DF-104             | PM2P1                     | 2DP-3-104        | PVC201           | 2TM-P10          |
| C44      | 300        |             | ADM-15-301       | CPR-300J           |                           | DM-15-301        |                  | MS-33            |
| C45      | .47        |             |                  |                    |                           |                  | MAG12047         |                  |
| C46      | .02 25V    |             | P288N-02         | DD-203             | PM2S22                    | 4DP-2-203        | PVC212           | 2TM-S20          |
| C47      | .088 100V  |             | P288N-088        |                    | WMF-1S68                  | 1DP-2-683        | PVC1168          | 4PS-S68          |
| C48      | .047 100V  |             | P288N-047        | DD-503             | PM2S47                    | 4DP-3-473        | PVC2147          | 2TM-S47          |
| C49      | 680        |             | DI-680           | DD-681             | JBY601YP681K              | CCD-681          | GP368            | 10TS-T68         |
| C50      | 880        |             | DI-680           | DD-681             | JBY601YP681K              | CCD-681          | GP368            | 10TS-T68         |
| C51      | .0043      |             | P288N-004        | DD-432             | PM2D47                    | 1DP-2-502        | PVC6247          | 6PS-D47          |
| C52      | .088       |             | P288N-088        |                    | WMF-1S68                  | 1DP-2-683        | PVC1168          | 4PS-S68          |
| C53      | .088       |             | P288N-088        |                    | WMF-1S68                  | 1DP-2-683        | PVC1168          | 4PS-S68          |
| C54      | .005 1400V |             | DAC-9            | DD16-502           | ACV142ZU502E              | 16DP-2-502       | UAC250           | BL-D50           |
| C55      | .005 1400V |             | DAC-9            | DD16-502           | ACV142ZU502E              | 16DP-2-502       | UAC250           | BL-D50           |
| C56      | .01 1400V  |             | DAC-27           | DD16-103           | HVT162ZV103P              | 16DP-3-103       | UAC110           | BL-S10           |
| C57      | .01 1400V  |             | DAC-27           | DD16-103           | HVT162ZV103P              | 16DP-3-103       | UAC110           | BL-S10           |
| C58      | .01 1400V  |             | DAC-27           | DD16-103           | HVT162ZV103P              | 16DP-3-103       | UAC110           | BL-S10           |

† Alternate Value.

# Ampex Part Number

## CONTROLS

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

| ITEM No. | USE                      | RESISTANCE | REPLACEMENT DATA |                    |                    |                  |
|----------|--------------------------|------------|------------------|--------------------|--------------------|------------------|
|          |                          |            | AMPEX PART No.   | CENTRALAB PART No. | CLAROSTAT PART No. | CTS-IRC PART No. |
| R1A      | Play/Record Volume Right | 50K        | 7520000-01       |                    |                    |                  |
| B        | Play/Record Volume Left  | 50K        |                  |                    |                    | †QJ-1941R        |
| R2A      | Tone, Left               | 50K        | 7520001-01       |                    |                    |                  |
| B        | Tone, Right              | 50K        |                  |                    |                    |                  |
| R3       | Bass Boost Switch        | 200K       |                  |                    |                    | X201R254B        |
| R4       | Meter Calibrate, Left    | 250K       |                  |                    |                    |                  |
| R5       | Bias Adjust, Left        | 200K       |                  |                    |                    | X201R254B        |
|          | Meter Calibrate, Right   |            |                  |                    |                    | X201R254B        |
| R6       | Bias Adjust, Right       | 250K       |                  |                    |                    | X201R254B        |

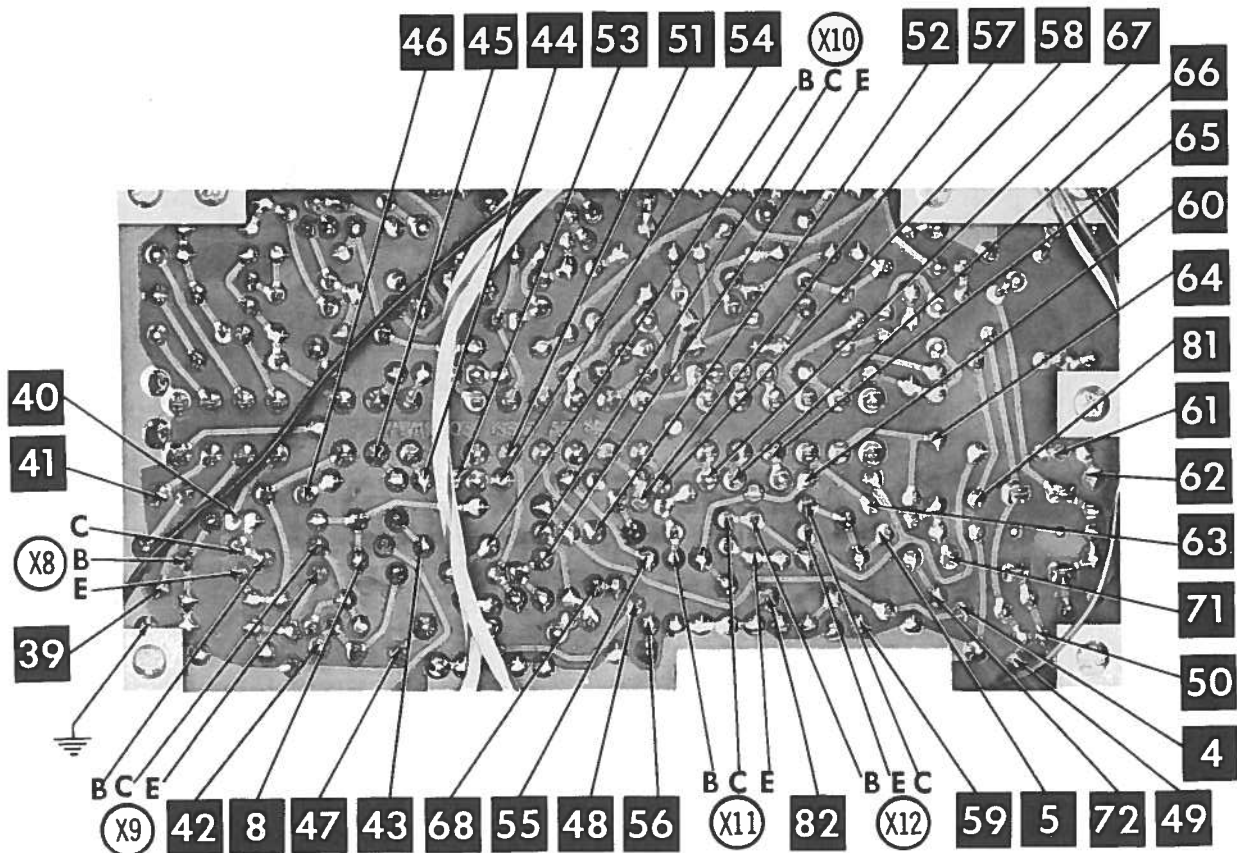
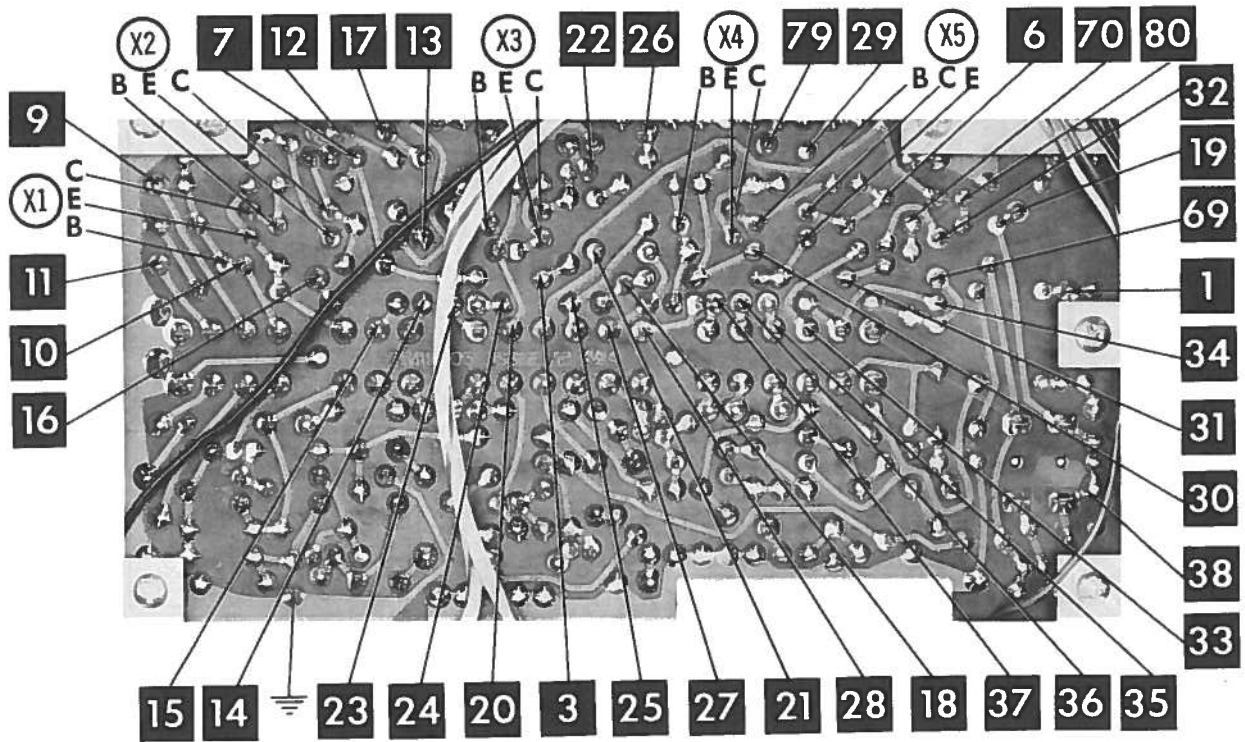
† "CONCENTRIKIT" Equivalent: K-6 Kit with Base Elements and Shafts: B13-123, P23-103 ② (Panel) B13-123, R26-112 (Rear)

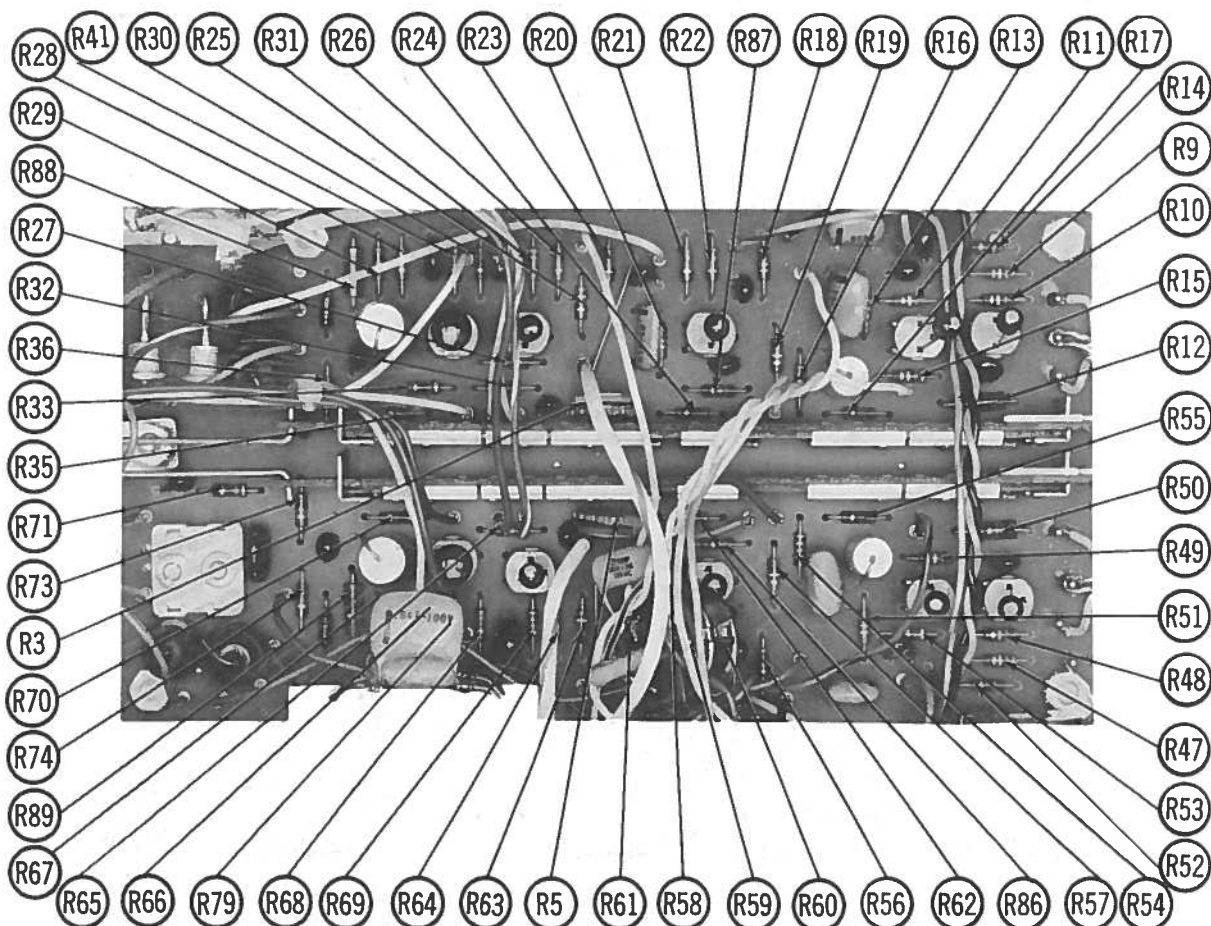
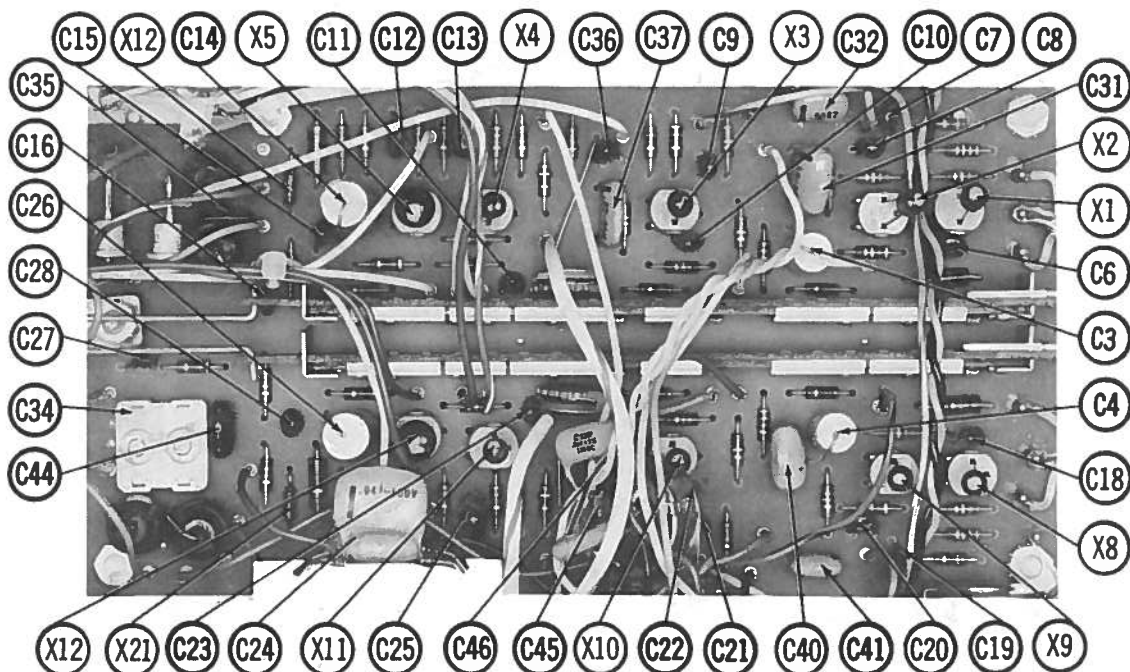
"SNAPTROL" Equivalent: BU5, CF12, CR7, SF7 ②, SR6, DC1

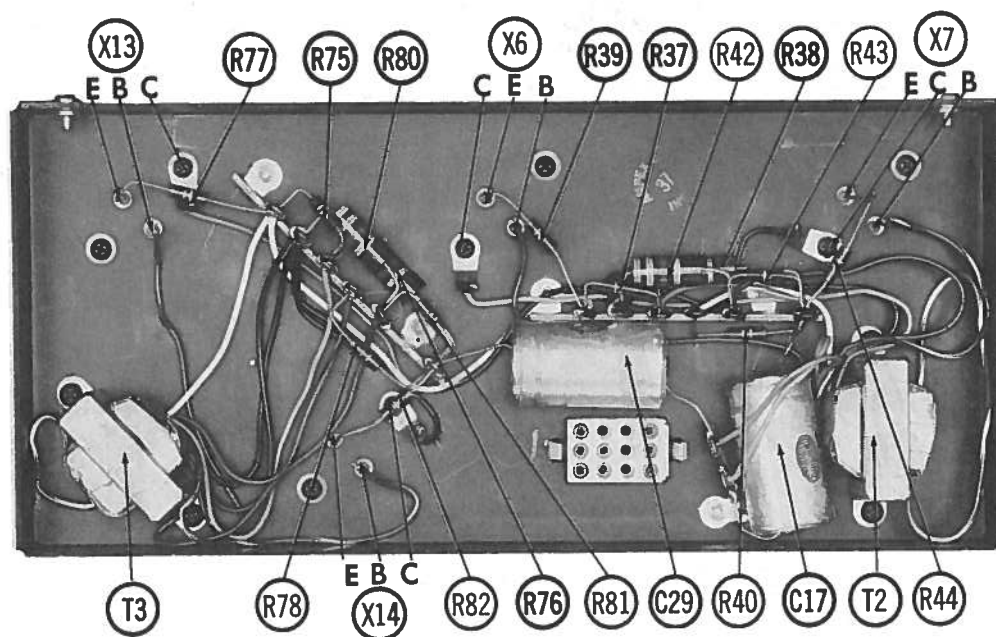
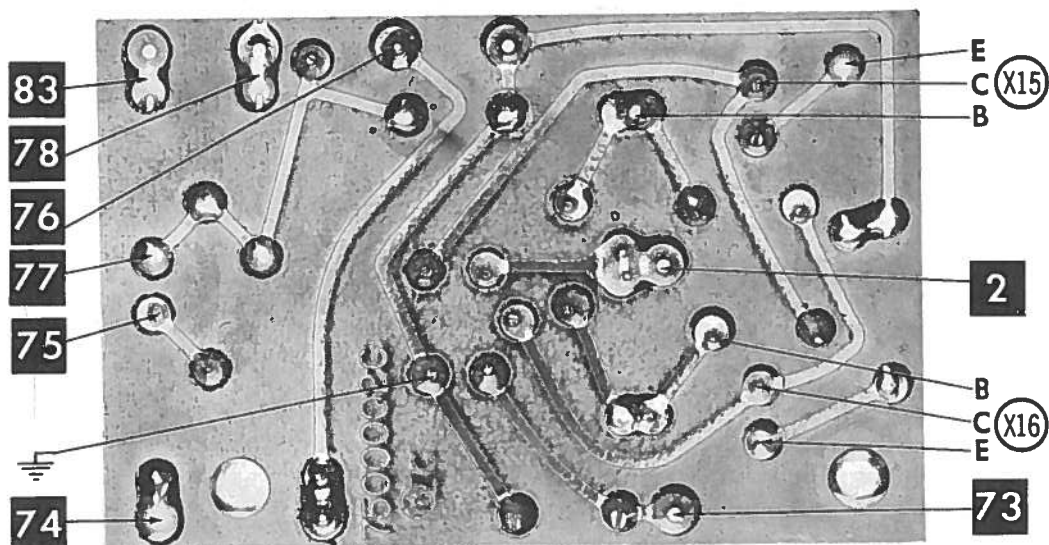
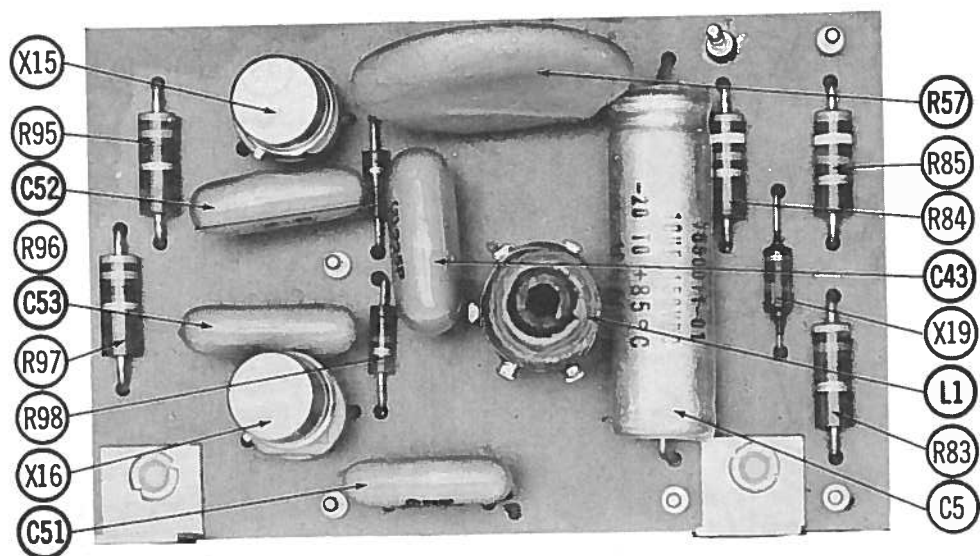
① Squeeze the control end of the outer shaft until the lines touch each other; force inner shaft through compressed end of outer shaft, and proceed in normal manner.

② Form a small dimple with a hammer and punch on the flat mil portion (rear of slot) of the outer shaft to provide drag (friction clutch effect) between shafts. Assemble control in a normal manner.

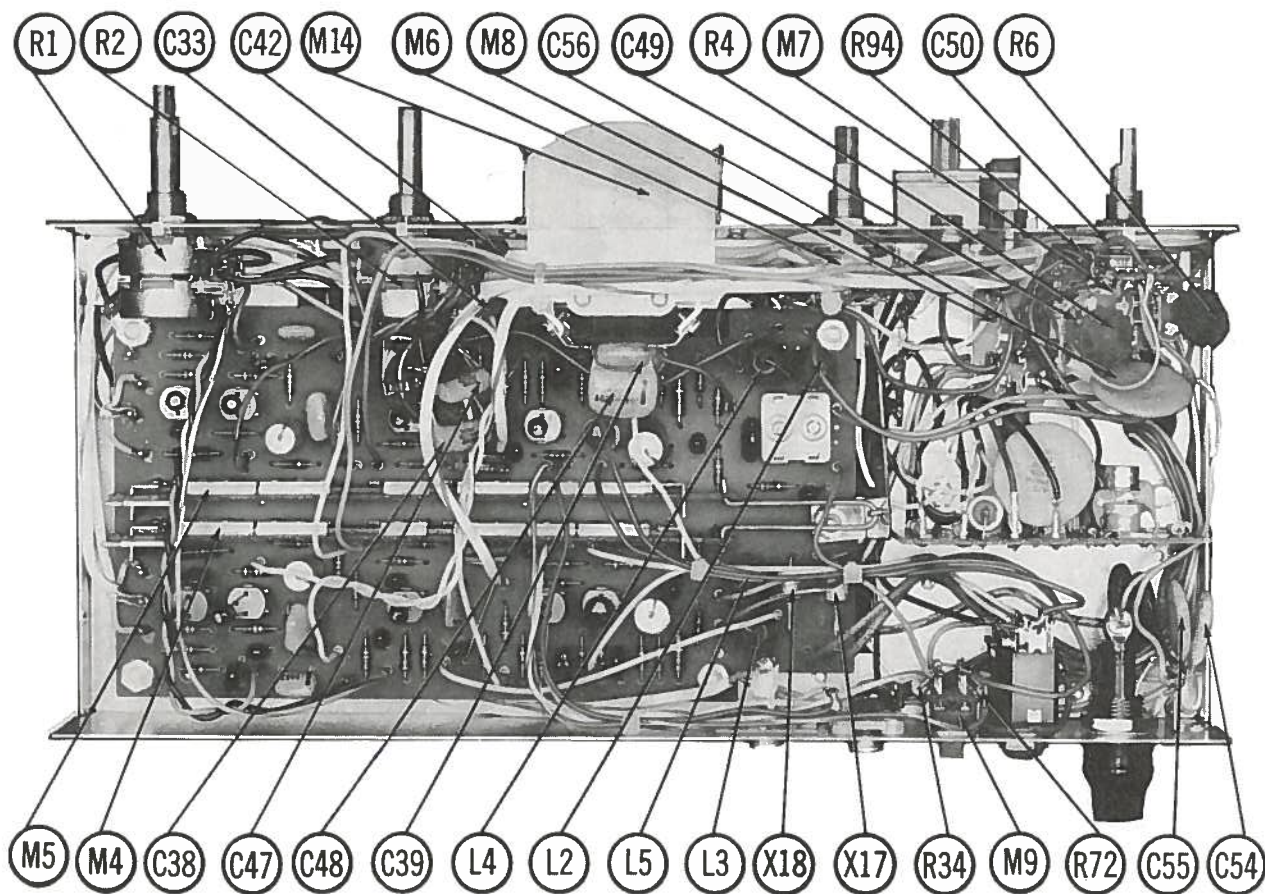
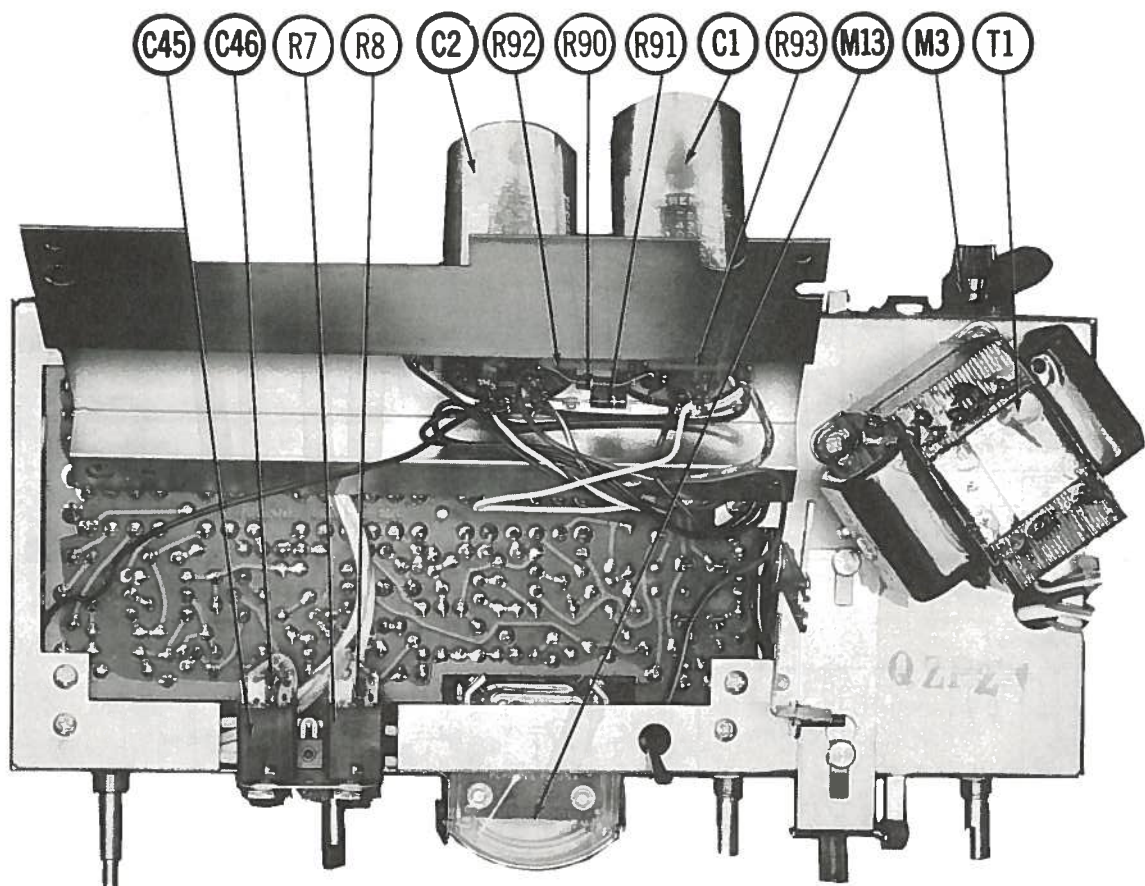
(CONTINUED ON PAGE 28)



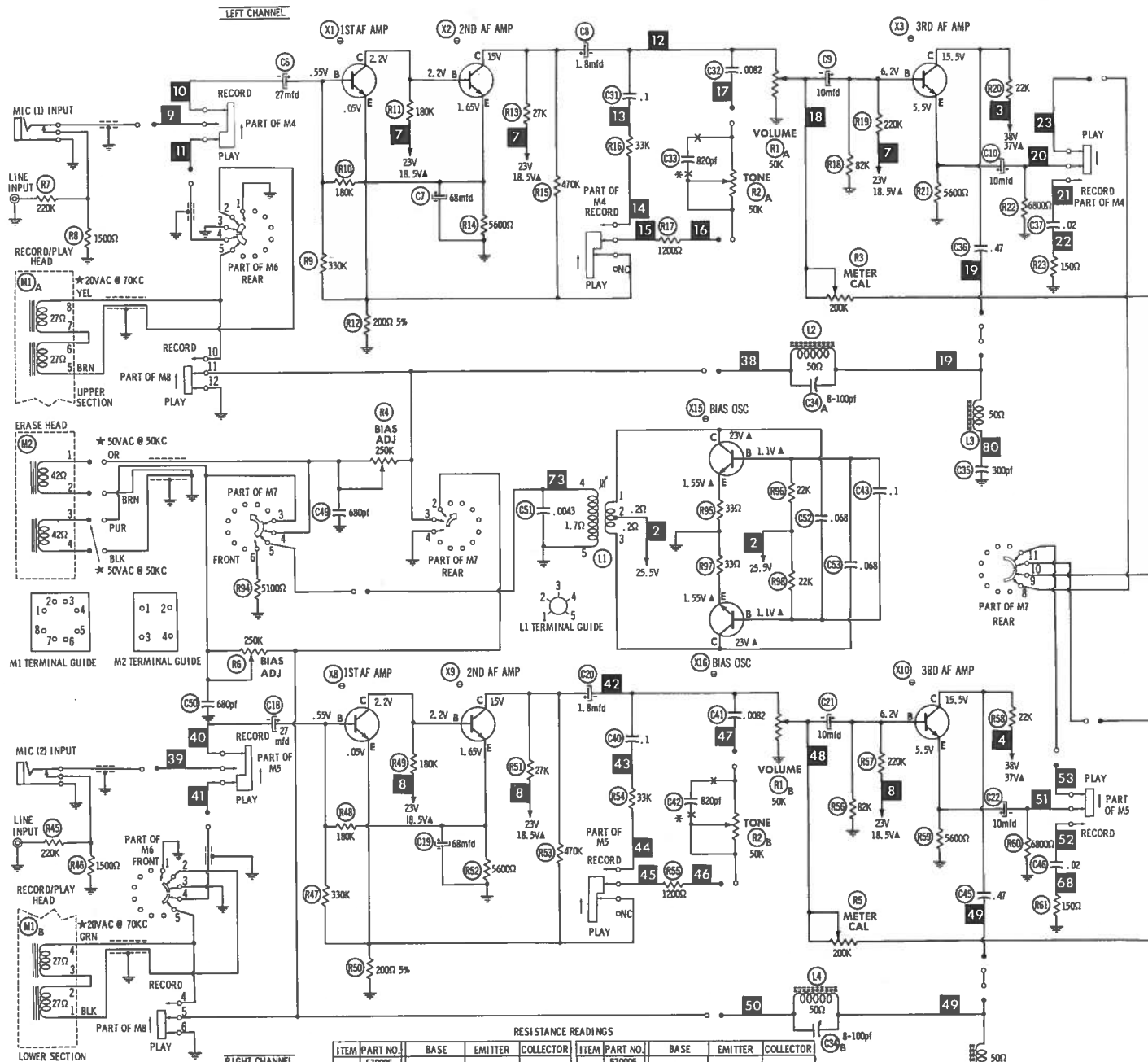








NOTE: DEMAGNETIZE HEADS AFTER SERVICING RECORDER



\* MEASURED IN "RECORD" POSITION WITH AN AUDIO VTVM \* USED IN SOME VERSIONS

1. See parts list for alternate value or application.
2. Voltage measurements taken with vacuum tube voltmeter.
3. All controls set for normal operation, no signal applied.
4. Measured values are from socket pin or terminal to common ground.
5. All terminals viewed from bottom unless otherwise designated.
6. Numbers assigned to terminals may not be found on the unit.
7. Supply voltage maintained at rated value for voltage readings.

A PHOTOFAC STANDARD NOTATION SCHEMATIC with CIRCUIT TRACE

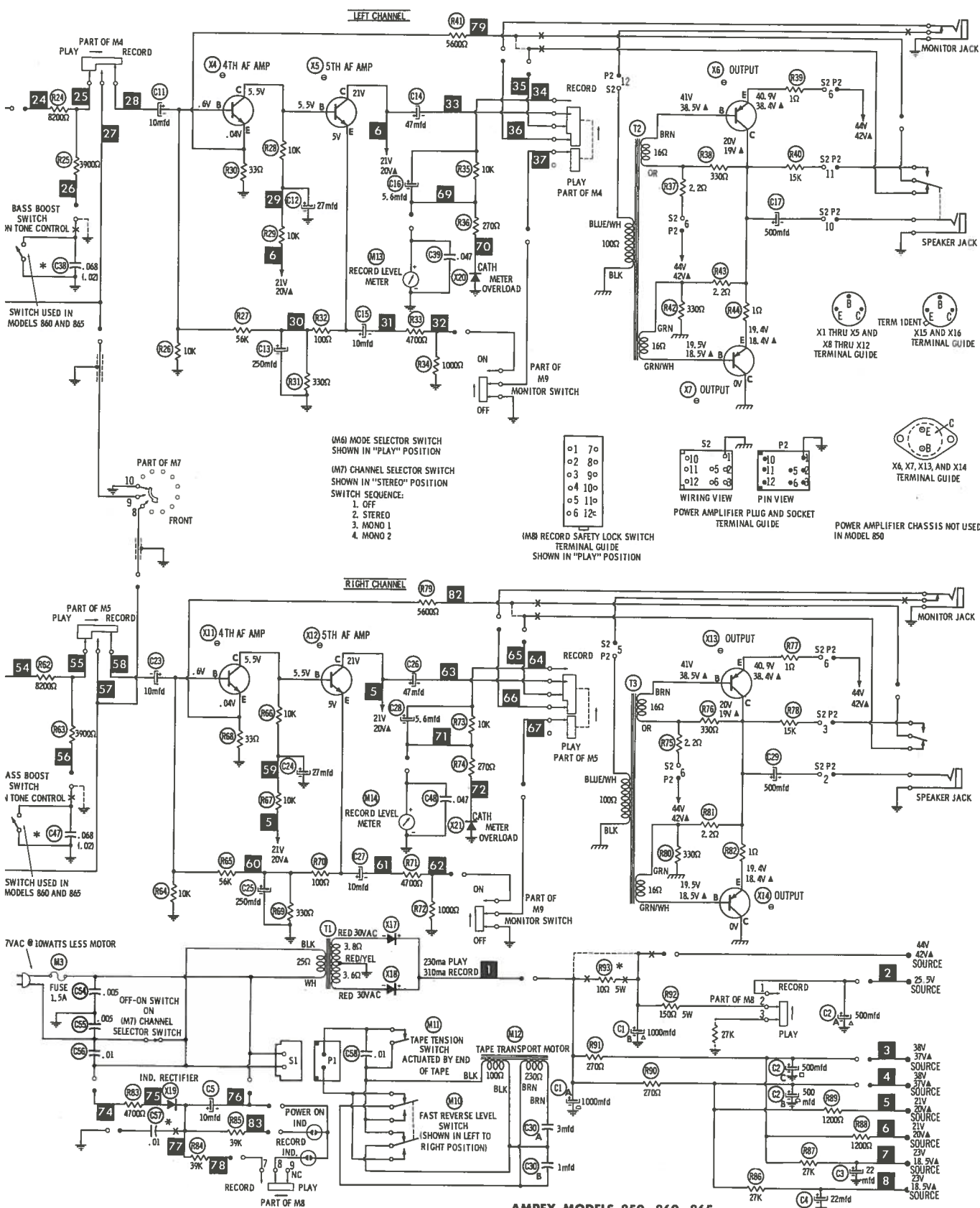
© Howard W. Sams & Co., Inc. 1965

#### RESISTANCE READINGS

| ITEM | PART NO.   | BASE   | EMITTER | COLLECTOR | ITEM | PART NO.      | BASE   | EMITTER | COLLECTOR |
|------|------------|--------|---------|-----------|------|---------------|--------|---------|-----------|
| X1   | 570005 452 | 115K   | 200Ω    | 207K †    | X11  | 570005 503    | 8500Ω  | 33Ω     | 21K †     |
| X2   | 570005 503 | 207K † | 5600Ω   | 45K †     | X12  | 570004 503    | 21K †  | 430Ω    | 1470Ω †   |
| X3   | 570005 452 | 65K    | 5600Ω   | 22K †     | X13  | DTG-110       | 30Ω †  | 11Ω †   | 250Ω †    |
| X4   | 570005 503 | 8500Ω  | 33Ω     | 21K †     | X14  | DTG-110       | 260Ω † | 145Ω †  | 0Ω        |
| X5   | 570004 503 | 21K †  | 430Ω    | 1470Ω †   | X15  | 570009-01-504 | 22K †  | 33Ω     | 150Ω †    |
| X6   | DTG-110    | 30Ω †  | 11Ω †   | 250Ω †    | X16  | 570009-01-504 | 22K †  | 33Ω     | 150Ω †    |
| X7   | DTG-110    | 260Ω † | 145Ω †  | 0Ω        |      |               |        |         |           |
| X8   | 570005 452 | 115K   | 200Ω    | 207K †    |      |               |        |         |           |
| X9   | 570005 503 | 207K † | 5600Ω   | 45K †     |      |               |        |         |           |
| X10  | 570005 452 | 65K    | 5600Ω   | 22K †     |      |               |        |         |           |

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE NOTED.  
† MEASURED FROM OUTPUT OF X17 AND X18.  
Δ MEASURED IN "RECORD" POSITION.  
TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS.

Resistors are 1/2 watt or less and rated 10% or 20% unless otherwise indicated.



AMPEX MODELS 850, 860, 865



## PARTS LIST AND DESCRIPTION (CONTINUED)

### COILS (RF-IF)

| ITEM No. | USE             | REPLACEMENT DATA |                   |                |                 |                  |                  |
|----------|-----------------|------------------|-------------------|----------------|-----------------|------------------|------------------|
|          |                 | AMPEX PART No.   | MEISSNER PART No. | MERIT PART No. | MILLER PART No. | STANCOR PART No. | WORKMAN PART No. |
| L1       | Bias Oscillator | 7580006-01       |                   |                |                 |                  |                  |
| L2       | Trap Coil       |                  |                   |                |                 |                  |                  |
| L3       | Trap Coil       |                  |                   |                |                 |                  |                  |
| L4       | Trap Coil       |                  |                   |                |                 |                  |                  |
| L5       | Trap Coil       |                  |                   |                |                 |                  |                  |

### TRANSFORMER (POWER)

| ITEM No. | RATING       |               |        | REPLACEMENT DATA |                |                  |                     |                | NOTES |
|----------|--------------|---------------|--------|------------------|----------------|------------------|---------------------|----------------|-------|
|          | PRI.         | SEC. 1        | SEC. 2 | AMPEX PART No.   | MERIT PART No. | STANCOR PART No. | THORDARSON PART No. | TRIAD PART No. |       |
| T1       | 117V @ .150A | 80VCT @ .310A |        | 758-0005-01      |                |                  |                     |                |       |

### TRANSFORMER (DRIVER)

| ITEM No. | TURNS RATIO |       | REPLACEMENT DATA |                |                  |                     |                | NOTES |
|----------|-------------|-------|------------------|----------------|------------------|---------------------|----------------|-------|
|          | PRI.        | SEC1  | AMPEX PART No.   | MERIT PART No. | STANCOR PART No. | THORDARSON PART No. | TRIAD PART No. |       |
| T2       | 3           | 1     | 7580008-01       |                |                  |                     |                |       |
|          |             | SEC.2 |                  |                |                  |                     |                |       |
|          |             | 1     |                  |                |                  |                     |                |       |
|          |             | SEC.1 |                  |                |                  |                     |                |       |
| T3       | 3           | 1     | 7580008-01       |                |                  |                     |                |       |
|          |             | SEC.2 |                  |                |                  |                     |                |       |
|          |             | 1     |                  |                |                  |                     |                |       |

### TAPE HEADS

| ITEM NO. | MEASURED   |                        |            | AMPEX PART NO. | NORTONICS PART NO. | DESCRIPTION                |
|----------|------------|------------------------|------------|----------------|--------------------|----------------------------|
|          | INDUCTANCE | BIAS/ERASE VOLTS (RMS) | BIAS FREQ. |                |                    |                            |
| M1       | 166MH      | 20VAC                  | 70KC       | 4040737-10①    | 1207 & QK06        | 4-Track Stereo Record/Play |
| M2       | 9.3MH      | 50VAC                  | 70KC       | 7680005-01①    | 1401 & QK18        | 4-Track Stereo Erase       |

① Part #704003P includes heads and mounting assembly.

### FUSE DEVICES

| ITEM No. | TYPE    | RATING  | REPLACEMENT DATA |         |                     |        |               |        |
|----------|---------|---------|------------------|---------|---------------------|--------|---------------|--------|
|          |         |         | PART No.         |         | LITTELFUSE PART No. |        | BUSS PART No. |        |
|          |         |         | FUSE             | HOLDER  | FUSE                | HOLDER | FUSE          | HOLDER |
| M3       | 3AG S/B | 1 1/2A① |                  | 085-001 | 313015              | 342012 | MDL 1 1/2     | HKP    |

① 1A used in Model 850.

### MISCELLANEOUS

| ITEM No. | PART NAME     | AMPEX PART No. | NOTES   |
|----------|---------------|----------------|---|
| M4       | Switch        |                | Play-Record, Left Channel (Slide)                                 |
| M5       | Switch        |                | Play-Record, Right Channel (Slide)                                |
| M6       | Switch        |                | Play-Record (Rotary Wafer)  |
| M7       | Switch        |                | Channel Selector (Rotary Wafer) Includes On-Off Switch(Snap Type) |
| M8       | Switch        |                | Record Safety Lock (Slide)  |
| M9       | Switch        |                | Monitor (Slide)   |
| M10      | Switch        | 4625010-01     | Fast Reverse (Leaf)   |
| M11      | Switch        |                | Tape Tension (Leaf)   |
| M12      | Motor         | 7590000-01     |   |
| M13      | Meter         | 7140000-01     | Left Channel  |
| M14      | Meter         | 7140000-01     | Right Channel   |
|          | Printed Board | 7050017-01     | With Components, Model 850  |
|          | Printed Board | 7050017-02     | With Components, Models 860, 865                                  |
|          | Printed Board | 7050019-01     | Bias Oscillator   |

### CABINETS & CABINET PARTS

(When Ordering Specify Model, Chassis & Color)

| ITEM                     | PART No.   | ITEM                           | PART No.   |
|--------------------------|------------|--------------------------------|------------|
| Case, Model 865          | 7040045-01 | Control Panel, Models 860, 865 | 7040037-02 |
| Case, Model 860          | 7040043-01 | Head Cover                     | 4045046-04 |
| Control Panel, Model 850 | 7040037-01 |                                |            |

### WIRING DATA

|  |  |
|--|--|
| General-use Unshielded Hook-up Wire .....      | Use BELDEN No. 8530 (Solid) Available in 12 Colors       |
| Power Cord .....                               | 8524 (Stranded) Available in 12 Colors                   |
| Power Cord (Interlock Type) .....              | Use BELDEN No. 17106 (Plastic) or 17126 (Rubber) - 6 Ft. |
| Low-Loss Shielded Lead (Interconnecting) ..... | 17109 (Plastic) or 17129 (Rubber) - 9 Ft.                |
| Phono Pick-up Arm Cable .....                  | Use BELDEN No. 8874 (Rubber) or 8895 (Plastic)           |
|  | Use BELDEN No. 8401 or 8421                              |
|  | Use BELDEN No. 8430 (Two Conductor-Unshielded)           |
|  | 8429 (Two Conductor-Shielded)                            |
|  | 8419 (Three Conductor-Shielded)                          |