

TEAC[®]

A-1500 / A-1600

**STEREOPHONIC
TAPE RECORDER**

SERVICE MANUAL

TEAC CORPORATION

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EXPLODED VIEW

AMPLIFIER PRINTED CIRCUIT BOARD

SCHEMATIC DIAGRAM

REVISION

CONTROLS AND SWITCHES (Ref. Fig. 1)

1. Tape transport mechanism
2. Amplifiers
3. AC POWER IN: Power cord receptacle
4. Remote Control: Remote control socket; a dummy plug is inserted when remote control plug is not in use.
5. Fuse 2 Amp.: Replace only with 2 ampere fuse.
- 6A. LINE INPUT A: Line input jack for Channel A
- 6B. LINE INPUT B: Line input jack for Channel B
Phono preamplifier, tuner and other sources may be connected to this input.
- 7A. OUTPUT A: Output jack for Channel A
- 7B. OUTPUT B: Output jack for Channel B
8. Monitor: Jack for high impedance stereo head-phone
9. Left reel turntable
10. Left reel turntable shaft
11. Right reel turntable
12. Right reel turntable shaft
13. Index counter: for numerical reference within a reel of tape
14. Reverse sensing post: provides automatic and manual reverse play function.
15. Head assembly
16. Tape lifter: lifts tape from heads during fast wind operations.
17. Transport selector switches: selects tape operation, ◀◀ (rewind), STOP, ▶▶ (fast forward), PLAY, REC (record).
18. Capstan: drives tape for recording and playback.
19. Pinch roller: engages tape to capstan during recording and playback.
20. Automatic shut-off lever: shuts off power to transport when tape runs out, and also restores transport selector switches to a neutral mode.
21. TAPE SPEED: Tape speed selector pushbutton switch; electrically changes motor speed and selects appropriate equalizer circuit.
22. RECORD SELECTOR: selects various recording functions.
 - CHAN A; for monophonic recording on Channel A
 - CHAN B; for monophonic recording on Channel B
 - STEREO; for stereophonic recording on Channels A and B, both A and B are depressed
 - ADD 1; for sound-on-sound recording (Channels A to B)
 - ADD 2; for sound-on-sound recording (Channels B to A)
 - STEREO ECHO; for stereo echo effect when both ADD 1 and ADD 2 are depressed
 - SAFETY; safety interlock switch to prevent accidental erasure, also used to restore record selectors to neutral mode

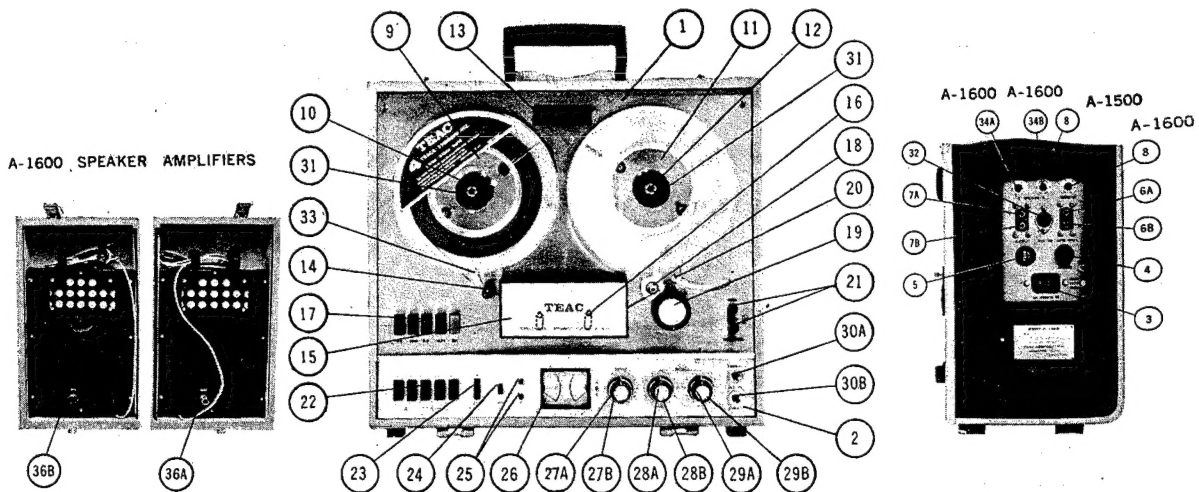
23. POWER: AC power switch turns recorder on or off.
24. MONITOR:
 SOURCE position; The input signal to be recorded can be reproduced through headphones or speaker system while the VU meter indicates the level.
 TAPE position; During playback or while recording, recorded signal on the tape can be reproduced as above.
25. Record Indicators: Indicate energizing of record and erase circuits, and the record mode which has been selected.
26. Level Indicators: VU type dual meter, indicates record level or playback output level dependent on the position of monitor selector. The dual meter indicates correct levels for recording playback without regard to the setting of the output level control. With the MONITOR selector in SOURCE position, meter indication of zero VU (0 VU) represents that the output level is 1 volt when the control is at maximum (clockwise) position.
- 27A. OUTPUT: Output level control for Channel A
- 27B. OUTPUT: Output level control for Channel B
- 28A. LINE INPUT: Line input level control for Channel A
- 28B. LINE INPUT: Line input level control for Channel B
- 29A. MIC INPUT: Microphone input level control for Channel A
- 29B. MIC INPUT: Microphone input level control for Channel B

NOTE: Level controls shown (27) (28) and (29) above are dual potentiometers, and inner knob (Channel A) is friction coupled with outer knob (Channel B). May be operated together or separately.

- 30A. MIC IN: Microphone input jack for Channel A
- 30B. MIC IN: Microphone input jack for Channel B
31. Reel Holders
32. REC/PB: Line inputs and outputs socket for DIN connection.
33. Tension arm
- 34A. Speaker amplifier A: Jack for Channel A speaker amplifier (A-1600)
- 34B. Speaker amplifier B: Jack for Channel B speaker amplifier (A-1600)
- 36A. TONE: Channel A tone control (A-1600)
- 36B. TONE: Channel B tone control (A-1600)

MODEL A-1600

The Model A-1600 controls and switches are identical with the A-1600, except the model A-1600 has jack (Fig. 1) for the external speaker-amplifiers which are equipped with the unit. These jacks are for connection of the power supply in the recorder and the audio output to the amplifier-speaker and are not to be used for any other connection, or serious damage to the recorder may result. DO NOT PLUG ANY OTHER SPEAKERS OR ACCESSORY EQUIPMENT INTO THESE JACKS OTHER THAN THE AMPLIFIER-SPEAKERS PROVIDED WITH THE UNIT (A-1600).



CONTROLS AND SWITCHES

DISASSEMBLY

REMountING UNIT FROM CASE

1. Remove power cord, remote or shorting plug and audio cables.
2. Remove the lid.
3. Lay the recorder face down on a soft mat.
4. Turn the recorder and lay the recorder face up on a soft mat.
5. Remove the following parts and hardware (see Fig. 3).

Pinch roller (3)

Dust Cap (2)

Reel Tables (7) (left and right) by removing three (each) screws (6)

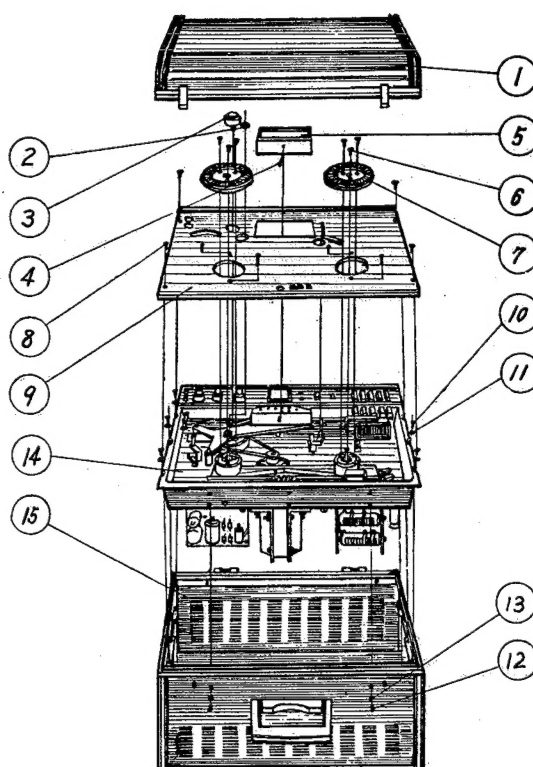
Head housing (5) by removing screw (4)

Four mounting screws (8)

Face plate (9)

Five mounting screws (10) and washers (11)

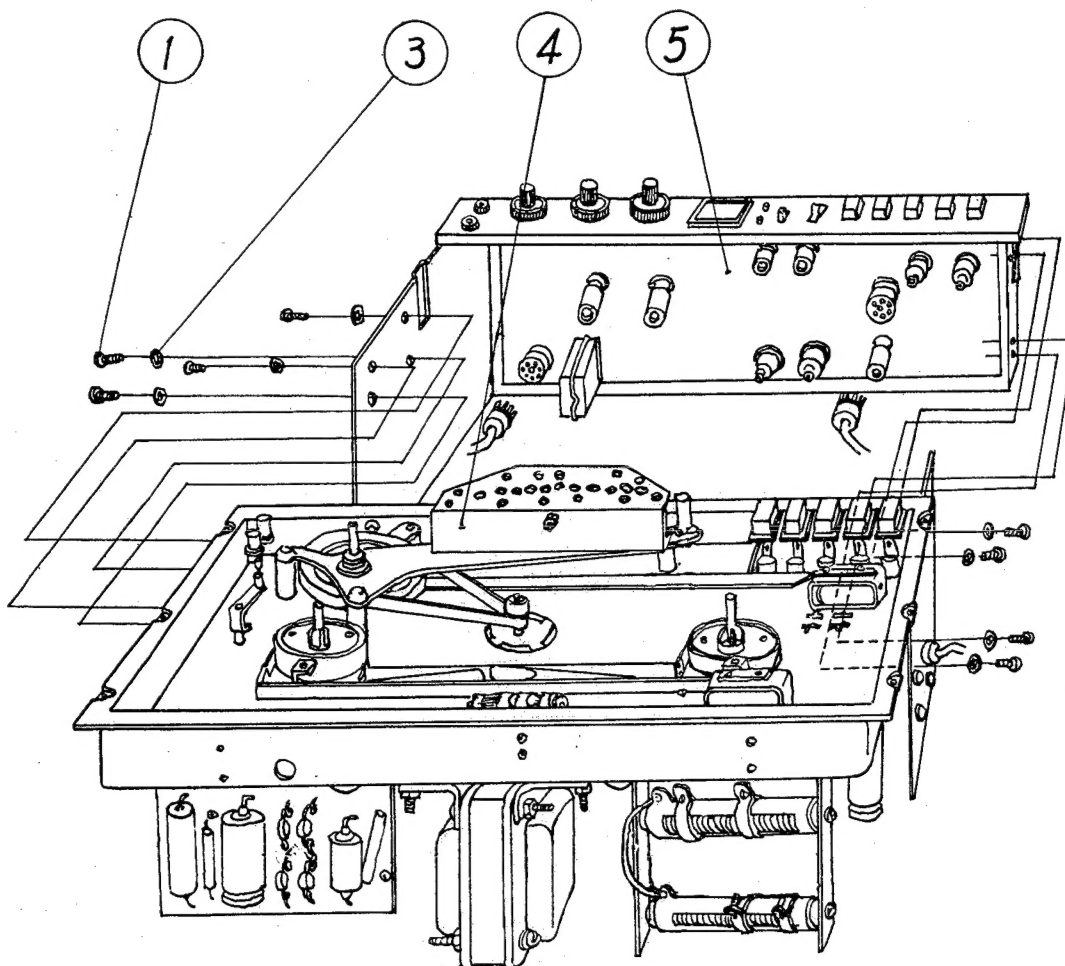
Two mounting screws (12) and washer (13)



REMOVING UNIT FROM CASE

REMOVING AMPLIFIER FROM TRANSPORT

Refer to Figure 4.



REMOVING AMPLIFIER FROM TRANSPORT

TAPE TRANSPORT CONTROL FUNCTIONS

TAPE SPEED SELECTOR (21)

This is a rotary switch operated by two pushbuttons. It selects either high ($7\frac{1}{2}$ ips) or low ($3\frac{3}{4}$ ips) speed of drive motor. The Tape Speed selector switch also changes record equalization, and playback equalization for the selected speed.

TRANSPORT SELECTOR (17)

Electro-mechanical pushbutton switches provide positive tape feed which prevents spilling from reels. The selector pushbuttons are automatically released by solenoid when the shut-off switch is operated. The pushbuttons operate the transport for the following functions.

1. REWIND

When the REWIND button (marked \ll) is depressed,

- a. Brake solenoid is energized, freeing the turntables.
- b. Full AC line voltage is supplied to the left reel motor,
- c. The pinch roller solenoid is not energized.

2. STOP

Depressing the STOP pushbutton mechanically releases only previously selected pushbuttons thereby restoring the electrical circuits to neutral. It must be remembered that deenergization of the brake solenoid results in the application of brakes to the reel turntable.

3. FAST FORWARD

When the FAST FORWARD button (marked \gg) is depressed, similar functions are performed as described in REWIND operation. However, the voltage supplying arrangements are reversed.

4. PLAY

When the PLAY button is depressed,

- a. The brake solenoid is energized, freeing the turntables.
- b. Reduced voltages are supplied to the left and right reel motors through resistors R 204 and R 205 respectively.
- c. The pinch roller solenoid is energized, and the pinch roller clamps the tape to the capstan.

5. RECORD

When the REC button is depressed, the record circuits are energized *provided* the play button is depressed simultaneously.

REVERSE SENSING POST (14)

When the sensing post is operated (automatically or manually), reverse relay (K1) is energized,

- a. Reverses direction of drive motor rotation by switching start coil polarity.
- b. Reverses reduced voltage supply arrangements to the left and right reel motors.
- c. Energizes head selector relay, which switches connections from the forward playback head to the reverse playback head.

MECHANISM ADJUSTMENTS

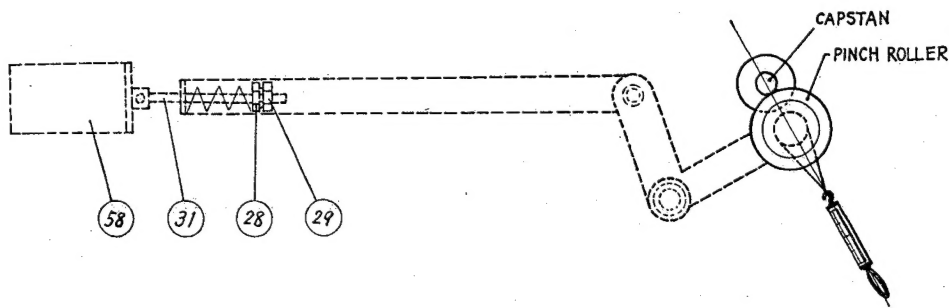
PINCH ROLLER PRESSURE ADJUSTMENT

The pinch roller is forced against the capstan by the action of pinch roller solenoid (58, Fig. 5). Pinch roller pressure is supplied by the pinch roller pressure spring, and is adjusted by a lock nut on the capstan solenoid spade bolt (31, Fig. 5).

The recommended procedure for adjusting pinch roller pressure is as follows.

1. Hold the shut-off lever so that the shut-off lever switch is held in the operated position (A rubber band is convenient for this purpose).
2. With the POWER switch in the ON position, press the PLAY button, and note whether the capstan solenoid plunger is bottomed. The pressure against the capstan shaft should be approximately 5.2 pounds.
3. If it is desired to measure pinch roller pressure, press the STOP button, and using a string about 20 inches long, tied in a loop slip the loop between the pinch roller and roller arm so that the string rests against the pinch roller shaft.
4. Attach the other side of the loop to a 0 to 8 pounds scale, letting the string remain slack.
5. Depress the PLAY pushbutton, causing the pinch roller to clamp against the capstan.
6. Pull the scale away so that the string is taut and makes a 90 degree angle with the pinch roller arm.
7. Slowly pull the scale away with sufficient power to cause the pinch roller to leave the capstan, reading the scale at the instant the pinch roller leaves the capstan. The scale reading should be 5 ~ 5.5 pounds. If necessary, adjust the nut (28) shown in Fig. 5.

NOTE: Reduced pinch roller pressure can result from either two extremes of adjustment. Remember that maximum efficiency is obtained from the solenoid only when it's plunger is "bottomed".



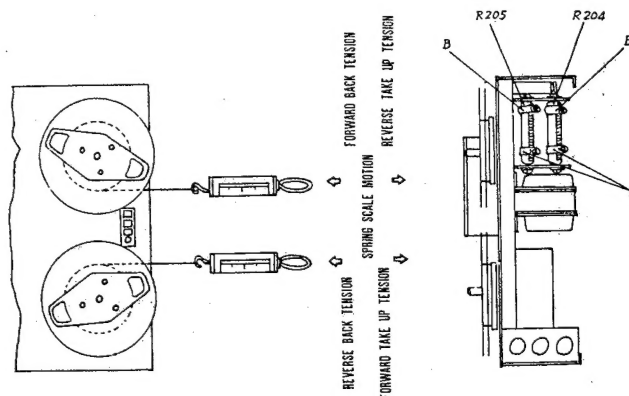
PINCH ROLLER PRESSURE ADJUSTMENT

TAKE-UP AND SUPPLY TENSION ADJUSTMENTS

Take-up and supply tension in forward and reverse play mode are determined by the positioning of the sliders on resistors R 204 and R 205 located in the tape transport control chassis (Fig. 6). The torque of both the left and right reel motors must be adjusted as follows.

	left motor	right motor
forward play	4.1 ± 0.7 in-oz	4.1 ± 0.7 in-oz
reverse play	4.1 ± 0.7 in-oz	4.1 ± 0.7 in-oz

1. Place an empty 7 inch reel having 4 inch diameter hud on the tape supply turntable.
2. Turn on the power switch.
3. Block the shut-off lever switch in the operated position.
4. Make small loops at both ends of a 30 inch piece of string.
5. Attach one loop to the tape anchor on the reel hud and the other to a 0 to 4 oz. spring scale.
6. Operate the PLAY button and allow the clockwise motion of the left reel to draw a turn of twine onto the hub.
7. Make certain that the string is now parallel to the plane of the top of the tape transport and that the string is centered and not touching either reel flange.
8. Let the reel motor pull the string slowly onto the hub by following the torque motor force with the scale while observing the readings on the scale until a constant reading is obtained.
9. If necessary, adjust the slide A on resistor R 204 in the control chassis until a scale reading between 1.4 and 2.1 ounces is achieved.
10. Next operate the reverse switch lever, then check the torque using the same procedure as above. However, spring scale motion are reversed (See Fig. 6), The scale should be indicated approximately 1.7 ~ 2.4 ounces by adjusting the slide B on resistor R 204.
11. Use the procedures in the preceding steps to check and adjust the right reel motor tension which are set by the slide B on R 205 (approx. 1.7 ~ 2.4 oz.) for forward play, or slide A on R 205 (approx. 1.4 ~ 2.1 oz.) for reverse play (not that the reel on this side will rotate only in counterclockwise direction).



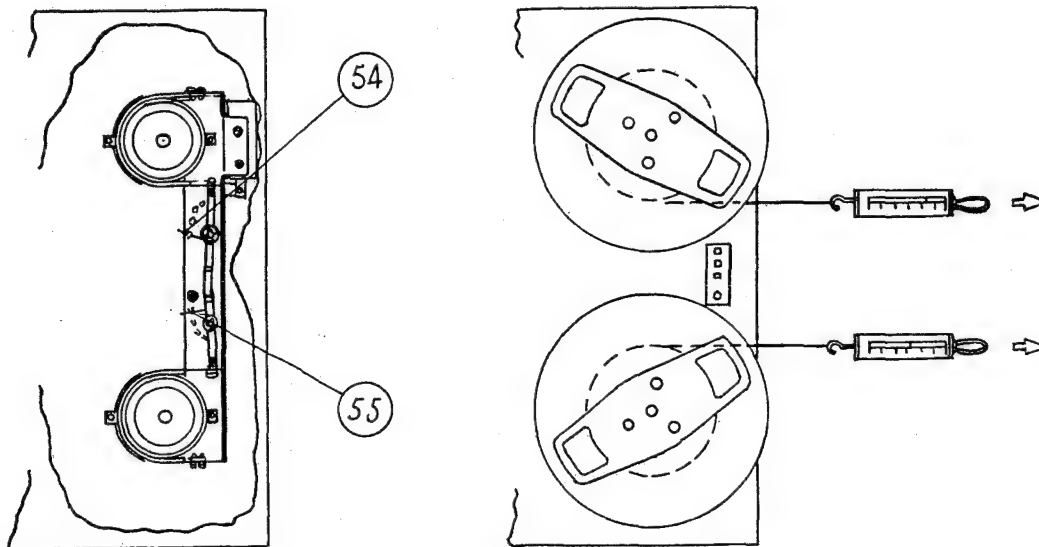
TAKE-UP AND SUPPLY TENSION ADJUSTMENTS

BRAKE ADJUSTMENT

Brake adjustment is made (with no power applied to the equipment) at the point shown in Fig. 7.

1. Place an empty 7 inch reel having 4 inch diameter hub on the left reel turntable.
2. Make small loops at both ends of a 30 inch string.
3. Attach one loop to the tape anchor on the reel hub and the other to a 0 ~ 10 oz. spring scale.
4. Wind several turns of string onto the hub, counterclockwise.
5. Pull the scale, making certain that the string does not touch either flange of the reel. The turntable will rotate counterclockwise. Take a reading only when the turntable is in steady motion, as the force required to overcome the static friction will produce a false and excessively high initial reading.
6. Adjust the left motor brake by the position of the brake adjusting plate (54, Fig. 7 for a scale reading of approximately 5.5 ~ 7 ounces (11 ~ 14 in-oz.)
7. To adjust the brake on the right reel turntable, repeat the entire procedure as described for the left reel turntable, with the exception that all directions of rotation area reversed.

NOTE: The difference in reading of the right and left reel turntable brakes should be kept within 2.8 inch-ounces.



BRAKE ADJUSTMENT

ALIGNMENT AND PERFORMANCE CHECKS

INSTRUMENTS AND TAPE REQUIRED

1. Ampex Standard Alignment Tape or equivalent
7½ ips (Ampex 31321-01 or TEAC test tape No. 02801)
3¾ ips (Ampex 31331-01)
2. AC Vacuum Tube Volt Meter capable of indicating rms voltages of .003V or less.
3. Standard AF Signal Generator with stable output from 50 cps to 15,000 cps.
4. Earphones or Speaker System for monitoring
5. Reel of blank tape (Scotch 150, 190 or equivalent)
6. Channel Selecting Switch

HEAD HEIGHT ALIGNMENTS (Fig. 8)

1. Watch tape as it passes through head assembly, and observe the position of the tape at each of the heads.
2. Lay a piece of clear tape (or recording tape with oxide coating removed) across head assembly in the observed playing position. Adjust height of head as follows.

Erase head : Top (front) edge of head laminations slightly (.0015")
above edge of tape

Record head: Top (front) edge of head laminations flush with edge of tape

Play (Forward) head: Top (front) edge of head laminations slightly (.0015")
within edge of tape

Play (Reverse) head: Bottom (back) edge of head laminations slightly (.0015")
within edge of tape

NOTE: Height adjustment of heads when completed should have all head surfaces, when viewed from side, aligned parallel with the tape guide surface.

PLAYBACK PERFORMANCE

1. Thread recorder with a standard alignment tape.

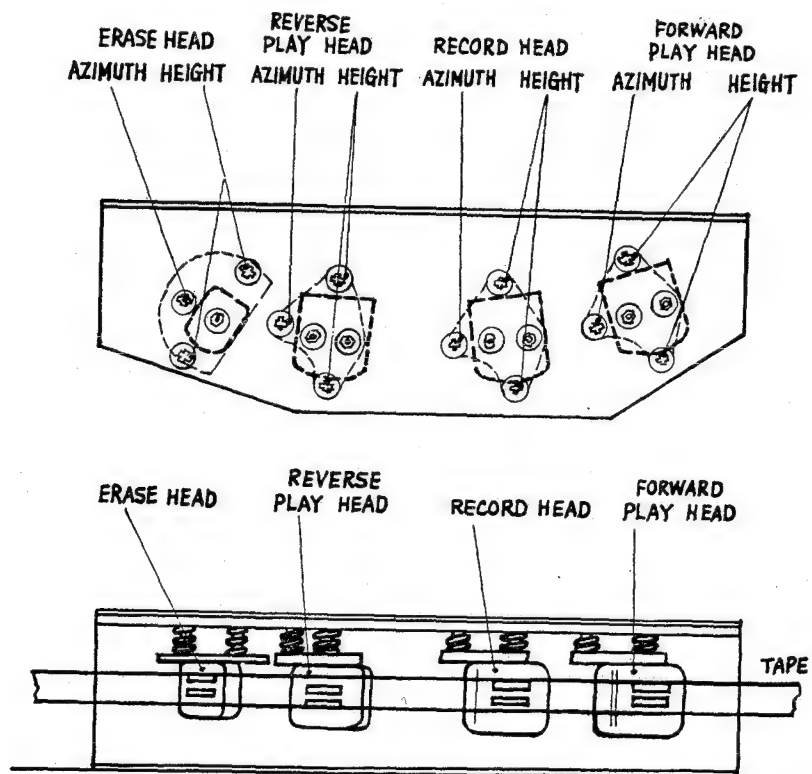
CAUTION: The standard alignment tape used in following procedures may be partially erased if the record and playback heads are permanently magnetized. Demagnetize the heads before proceeding.

2. Set RECORD SELECTOR switch to SAFETY, MONITOR selector switch to TAPE, and TAPE SPEED selector switch to HIGH.
3. Connect a temporarily provided channel selecting switch, across the output jacks of Channels A and B, and the output of the switch to an AC VTVM.

4. Play 700 cycle (or 500 cycle) reference tone (10 db below normal operating level), adjust OUTPUT level control so that VTVM reads exactly -5 db (0.44V).

Playback Head Azimuth

5. Play 15 kc tone and turn azimuth adjustment screw (Fig. 8) of forward playback head until maximum meter reading is obtained.
6. Operate tape reverse switch to reverse the direction of tape.
7. Turn azimuth adjustment screw (Fig. 8) of reverse playback head until maximum meter reading is obtained.



HEAD ALIGNMENTS

Frequency Response

8. Play (forward) the alignment tape from 15 kc to 50 cycles.
9. Check the frequency response of both channels.
10. Operate tape reverse switch, and make the same adjustment as above, for both reverse channels.
11. Check the low speed frequency response for both channels and both directions, using 3 3/4 ips alignment tape.

Playback Level Setting

12. Play ($7\frac{1}{2}$ ips, forward) 700 cycle tone recorded at normal operating level by using the standard alignment tape.
13. Adjust the playback level control on the printed circuit board (VR9 for Channel A, VR11 for channel B, Fig. 9) to obtain 0 VU reading on the VU meter.

NOTE: When the VU meter indicates 0 VU and with the OUTPUT level control at maximum position, the output level is approx. +4 db (1.2V).

Playback Noise Check

1. Play 700 cycle tone (normal operating level), and adjust OUTPUT level controls so that VTVM reads exactly 0 db (0.775V).
2. Stop the tape and read noise level on the VTVM.

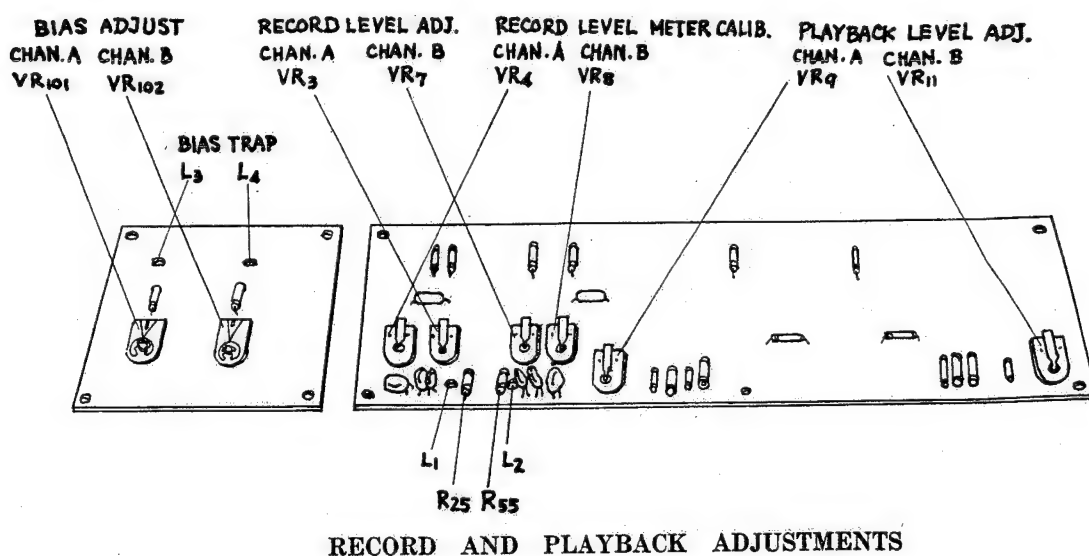
NOTE: The signal to noise ratio measured from 3% distortion level (peak recording level) is generally obtained by adding 6 db to the value measured above.

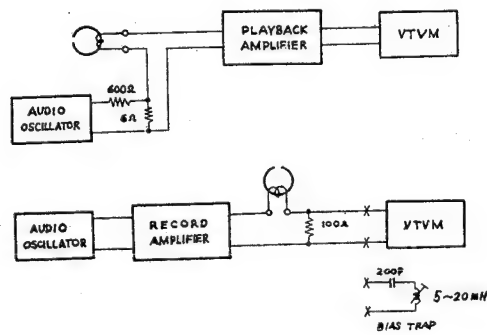
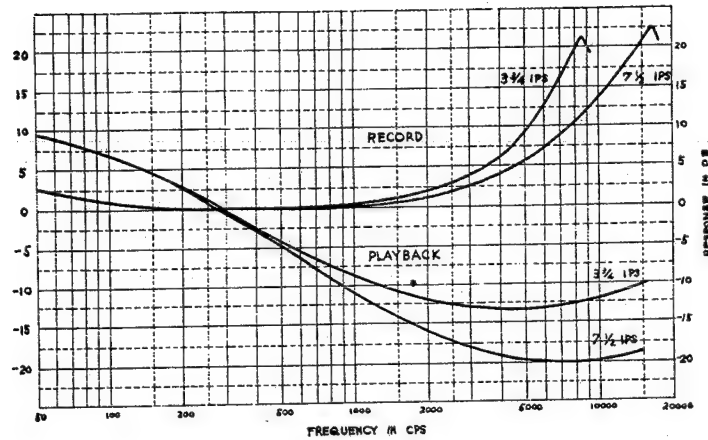
Playback Amplifier Check

If playback amplifier check is desired, connect a signal generator to playback input circuit as shown in Fig. 10, then check the frequency response, noise or amplifier gain etc.

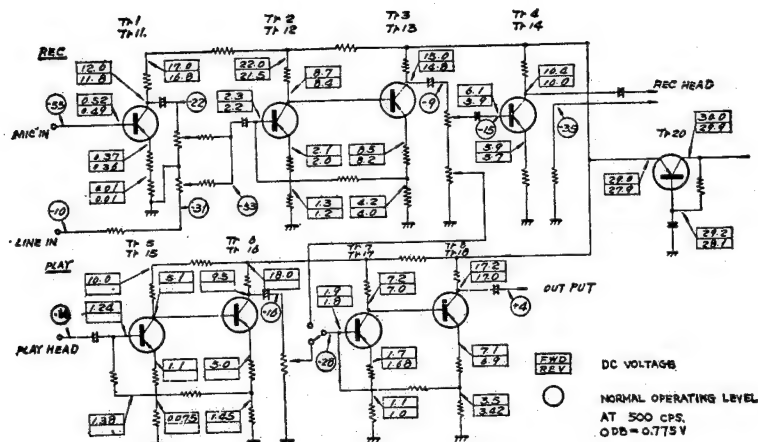
- NOTE: 1. Excessive input may cause overloading and distortion in the amplifier. Adjust the output level of the signal generator so that the VU meter indication is kept below 0 VU.
2. This is a high gain circuit. Make certain that the signal generator and input cabling are free from hum generation and pick-up, which may cause false readings.

Fig. 10 shows a typical frequency response curve and Fig. 11 shows a typical voltage chart.





AMPLIFIER MEASUREMENT



A-1500/A-1600 AMPLIFIER LEVEL AND DC VOLTAGE CHART

RECORDING PERFORMANCE

Record Bias Adjustment

1. Connect a signal generator to Channel A LINE input. Set MONITOR selector switch to TAPE position, RECORD SELECTOR switch in STEREO position, TAPE SPEED selector switch to HIGH.
2. While recording a 500 cycle tone on tape, adjust Channel A bias adjusting potentiometer (VR101, Fig. 9) for maximum output. Then turn the bias adjusting potentiometer counterclockwise until output meter reading decreases by 0.5 db from the maximum level.
3. Connect the signal generator to Channel B LINE input, and perform the same steps as above adjusting Channel B bias adjustment potentiometer (VR102, Fig. 9).

Record Level Calibration

NOTE: The playback level must be calibrated using standard tape prior to calibrating the record level (see Playback Level Setting).

1. Connect a temporarily provided channel selecting switch, across the output jack of Channels A and B, and the output of the switch to an AC VTVM. Set MONITOR selector switch in TAPE position, RECORD SELECTOR switch to STEREO position, and TAPE SPEED selector switch to HIGH position.
2. Turn LINE INPUT level control of both channels to maximum.
3. Set the signal generator output level at -16 db (0.12 volt), 500 cycle.
4. While recording a 500 cycle signal on the tape, adjust Record Level Calibration (VR3, VR7, Fig. 9) to obtain VU meter reading of exactly 0 VU.
5. Set MONITOR selector switch to SOURCE position.
6. Adjust Record Meter Level Calibration (VR4, VR8, Fig. 9) to obtain VU meter reading of exactly 0 VU.

Record Head Azimuth

1. Connect a signal generator to Channels A and B LINE INPUT. Connect a temporarily provided channel selecting switch, across the output jacks of Channels A and B, and the output of the switch to an AC VTVM. Set MONITOR selector switch to TAPE position, RECORD SELECTOR switch to STEREO position, and TAPE SPEED selector switch to HIGH position.
2. While recording a 15 kc signal on the tape, set LINE INPUT level control so meter reads 15 ~ 20 db below normal operating level (-15 ~ 20 VU on VU meter), and then adjust the record head azimuth screw (Fig. 8) for maximum output.
3. Check setting by repeating the above procedure using Channel B.

Overall Frequency Response

To avoid tape saturation, overall frequency response check at $7\frac{1}{2}$ ips and $3\frac{3}{4}$ ips should be made at least 20 db below operating level.

1. Connect a signal generator to Channel A LINE input. Set MONITOR selector switch to TAPE position, RECORD SELECTOR switch to STEREO position, TAPE SPEED selector switch to HIGH.
2. While recording a 500 cycle signal on the tape, set LINE INPUT level controls to obtain VU meter reading of 0 VU, and adjust OUTPUT level controls to obtain a VTVM reading of exactly 0 db (0.775 V).
3. Reset LINE INPUT level control to obtain a VTVM reading of exactly -20 db (77.5 mV).

NOTE: If bias frequency signal leakage is indicated on the VTVM, a filter as shown in Fig. 10 can be used at the input of the VTVM.

4. Record signals from 50 c to 15 kc at $7\frac{1}{2}$ ips, or from 50 c to 7.5 kc at $3\frac{3}{4}$ ips on tape, and read the reproduced output on a VTVM. Check the frequency response of both channels.
If adjustment is required, adjust L1 (Channel A) and L2 (Channel B) for $7\frac{1}{2}$ ips, replace C16 (Channel A) and C36 (Channel B) for $3\frac{3}{4}$ ips.

Record Noise Check

1. While recording a 500 cycle signal on the tape, adjust LINE INPUT level control to obtain a VTVM reading 6 db above normal operating level.
2. Set the LINE and MIC INPUT level controls to minimum.
3. Rewind the tape to the beginning portion of the 500 cycle recording.
4. Record the tape with LINE and MIC INPUT level controls at minimum position, over the portion where plus 6 VU recording was made, and make certain that erasure is being accomplished.
5. Erase the tape by recording with no signal input.
6. Rewind the tape to the beginning of the recording.
7. Read the VTVM indication for noise level while playing back the portion which had been previously recorded.

Record Amplifier Check

If a Check of the record amplifier is required. Connect a signal generator to record input circuit as shown in Fig. 10, then check the frequency response, noise or amplifier gain etc.

NOTE: To avoid overloading the amplifier, frequency response check should be made at least 20 db below normal operating level.

Figure 10 shows a typical record amplifier response curve, and Figure 11 shows a typical record amplifier voltage check chart.

If a check of the recording monitor circuit (record input to line output) is required, connect a signal generator to record input circuit, and an VTVM across output jacks. Set MONITOR selector switch to SOURCE position. Then check the frequency response, noise etc.

MAINTENANCE

CLEANING THE HEADS

To prevent the loss of high frequency response or insufficient erasure, the heads should be cleaned frequently. Under average operating conditions, cleaning the heads after each eight to ten hours of use will insure against the loss of high frequency response. To clean the head, moisten a clean, lintless cloth with carbon tetrachloride or alcohol. Carefully wipe the face of each head and the tape guides to remove all traces of dirt and magnetic oxide deposits.

DEMAGNETIZATION

The tape heads should be demagnetized occasionally with a head demagnetizer to maintain the best possible performance of the equipment and to prevent the possibility of gradual deterioration of your recorded tapes.

CAUTION: Do not allow the demagnetizer to come in close proximity with the level indicator meter, as permanent damage to the meter may result.

Demagnetizing:

To demagnetize the heads, use a two-pole type of demagnetizer, with a piece of ordinary splicing tape over the tips. With the power completely removed from the recorder, *gently* place the protected tips against the upper pole pieces of the first head. Then slowly move the tips downward toward the lower pole pieces of the head. Alternate between the two sets of pole pieces while slowly withdrawing the demagnetizer. Repeat this process for each of the heads. Do not remove the power from the demagnetizer until it is at least 2 feet away from the recorder.

LUBRICATION

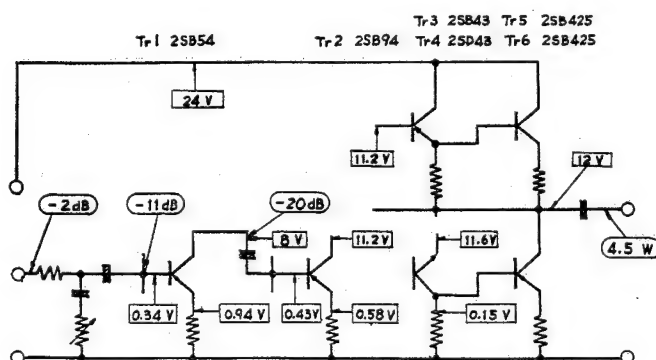
Most of the rotating parts of the transport have been permanently lubricated at the factory. Further lubrication should be limited to applying SAE-10, non-detergent oil to the following points if there should be evidence of binding or dragging.

Capstan assembly top bearing 2 drops

Pinch roller bearing 1 drop

Capstan motor and reel motor 1 cc (after every 1000 hours of use)

Remove excess oil from pinch roller and capstan with isopropyl alcohol.



**A-1600 SPEAKER AMPLIFIER
LEVEL AND DC VOLTAGE
CHART**

TROUBLE SHOOTING

Capstan fails to turn when unit is switched on.

1. Line fuse (F1) blown
2. Drive belt (8) off or broken
3. Capstan shaft or bearing defective
4. Capstan motor defective
5. Bad contacts on reverse relay (K1)
6. Tape speed selector switch (608) defective
7. Capacitor C220, C221, C222, C233, or C227 defective
8. Shut-off switch (66) defective

Transport selector pushbuttons fail to lock.

1. Transport selector switch (401) mechanism defective

Pinch roller fails to contact capstan.

1. DC fuse (F2) open
2. Jumper plug not in remote control socket
3. Capstan solenoid (35) defective
4. Transport selector switch (401) defective

DC fuse open.

1. Silicon diode (D205) defective
2. Capacitor C204, C205, C224, C225, C226 defective
3. Solenoid coil shorted
4. Relay coil shorted

Pinch roller fails to contact capstan when PLAY pushbutton is depressed.

1. Capstan solenoid defective
2. Jumper plug not in remote control socket
3. Bad contacts on transport selector switch (401)
4. Poor adjustment of pinch roller

Takeup reel fails to rotate when Fast Forward or OPER pushbutton is depressed.

1. Resistor R205 open
2. Brake drum (82) loose on motor shaft
3. Bad contact on switch (401)
4. Right motor defective
5. Right hand brake defective
6. Capacitor C217, C219 defective

No reverse play

1. Reverse switch (79) defective
2. Bad contacts or defective relay (622)
3. Resistor R206 open

No REWIND

1. Brake drum (82) loose on motor shaft
2. Bad contact on switch (401)
3. Left motor defective
4. Brake defective
5. Capacitor C216, C218 defective

Footage counter doesn't function.

1. Belt for counter (88) broken or misaligned
2. Pulley loose on counter shaft
3. Insufficient pressure when resetting

Tape spillage when transport is stopped.

1. Oil on brake drums (82) or brakes
2. Brake springs weak or broken

No sound in playback

1. Lifter (16, 17) defective
2. Bad contacts relay (529)
3. playback head defective
4. Amplifier defective
5. Tape twisted (oxide out)

No erasing

1. Foreign matter on erase head (clean head)
2. Bias oscillator circuit defective
3. Erase head defective

No recording

1. Record head defective
2. Amplifier defective
3. Bad contacts on record selector switch (502)
4. Bad contacts on transport selector switch (401)
5. Bias oscillator circuit defective

Weak or distorted sound

1. Foreign matter on heads
2. Heads magnetized
3. Poor bias adjustment
4. Amplifier defective

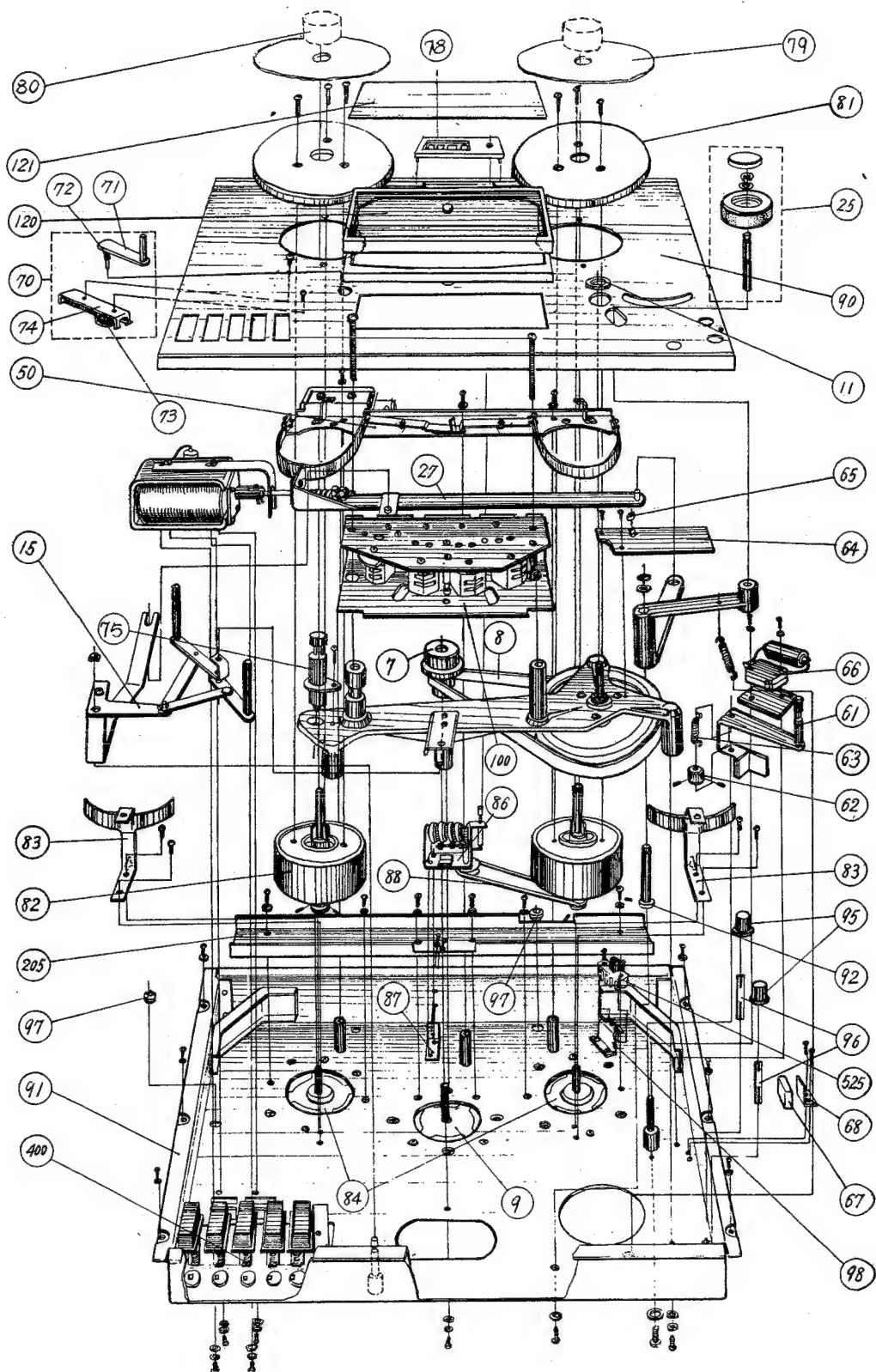
Shut-off fails to function.

1. Shut-off switch (66) defective
2. Transport selector (401) defective
3. Shut-off solenoid (451) defective

EXPLODED VIEW AND PART LIST

Replacement parts are available through your nearest TEAC dealer or directly from the TEAC office. Changes are constantly being made to make TEAC products better and more reliable. Therefore, when ordering parts, always include the following information:

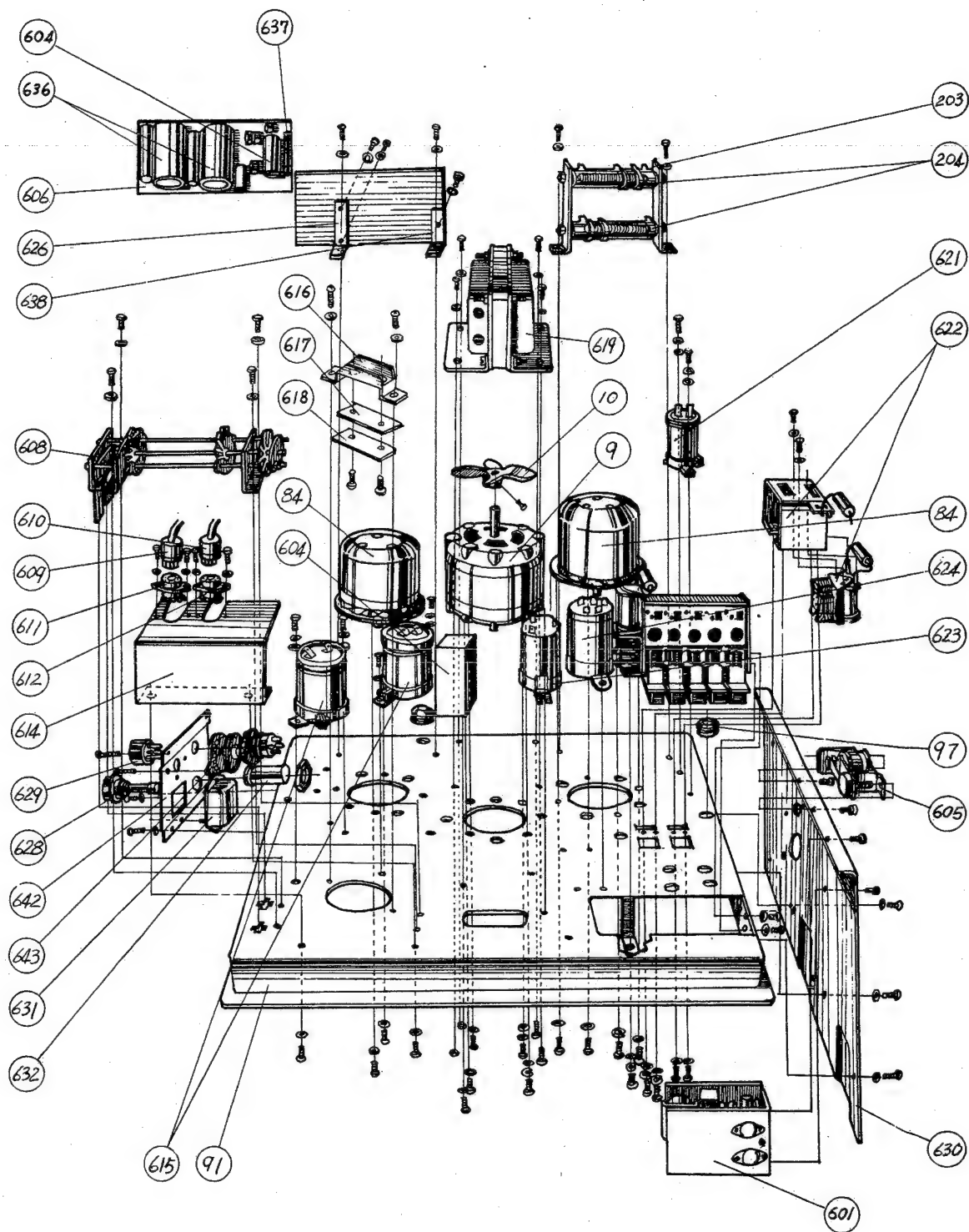
<i>MODEL</i>	<i>REF NO.</i>	<i>PARTS NO.</i>	<i>DESCRIPTION</i>
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TAPE TRANSPORT TOP, EXPLODED VIEW

TAPE TRANSPORT-TOP

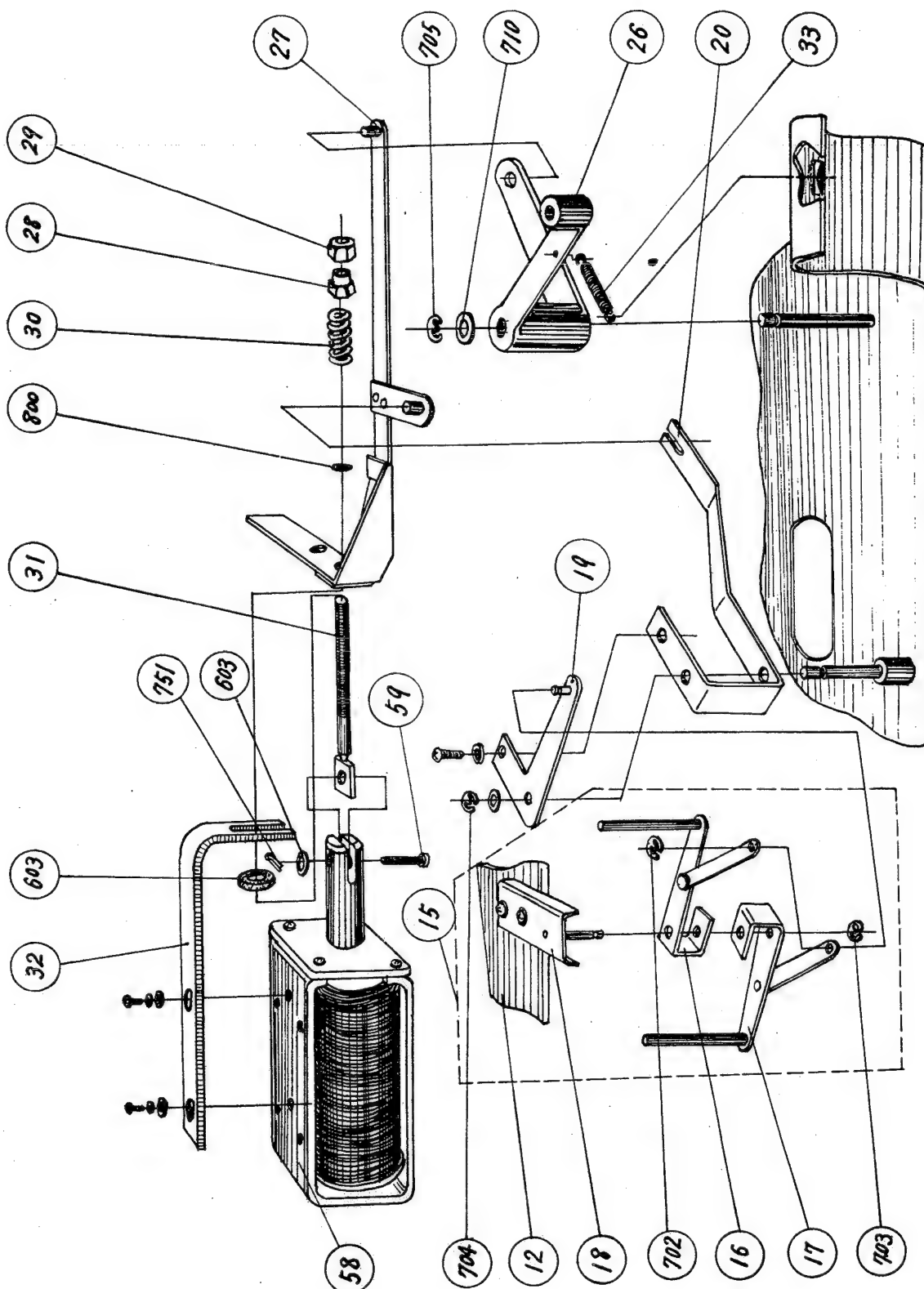
REF NO.	TEAC PARTS NO.	DESCRIPTION	1ST	2ND
61	50180141	Shut-off Arm Assy		
62	50182080	Stop Ring		
63	50220340	Arm Spring		
64	50182270	Arm Cover		
65	50182150	Stopper		
66	50446110	Shut-off Switch(V5-1A44)	50446130 (V-1A44)	
67	50182160	Magnet		
68	50182172	Magnet Catcher		
71	50182220	Compliance Arm	50180324	
72	50181820	Arm Holder		
73	50182250	Retaining Nut		
74	50182210	Compliance Assy		
75	50449560	Sensing Assy		
76	50182070	Arm Holder Nut		
77	50182240	Spring		
78	50272810	Counter Escutcheon		
79	50161472	Reel Pad		
80	50161400	Reel Holder	50161580	
81	50161483	Reel Table	50161551	50161563
82	50171850	Brake Drum		
83	50171721	Brake Guard		
84	50702140	Reel Motor	50702173	
85	50181760	Arm Shaft		
86	50505050	Index Counter		
87	50271191	Counter Retainer		
88	50271420	Counter Belt		
90	50111641	Face Plate		
91	50111521	Transport Chassis	50111615	
92	50141521	Roller Arm Shaft		
95	50251100	Speed Selector Button		
96	50251600	Speed Selector Switch Lever		
97	50270480	Rubber Grommet		
100	50130130	Head Assy	50130140	
400	50250150	Transport Selector Switch Assy		
7	50122562	Motor Pulley	50123421	50123790
8	50122250	Capstan Drive Belt	50123213	
11	50122480	Dust Cap		
15	50150070	Tape Lifter Assy		
25	50140090	Pinch Roller Assy	50140200	
27	50150120	Pinch Roller Link Arm Assy	50150150	
50	50170020	Brake Mounting Base Assy		
120	50133572	Head Housing		
121	50133670	Head Housing Face Plate (A-1500)		
	50133780	Head Housing Face Plate (A-1600)		
205	50116930	Stiffener		
525	50444070	Frequency Selector Switch		
98	50271650	Switch Retaining Plate		



TAPE TRANSPORT-BOTTOM, EXPLODED VIEW

TAPE TRANSPORT-BOTTOM

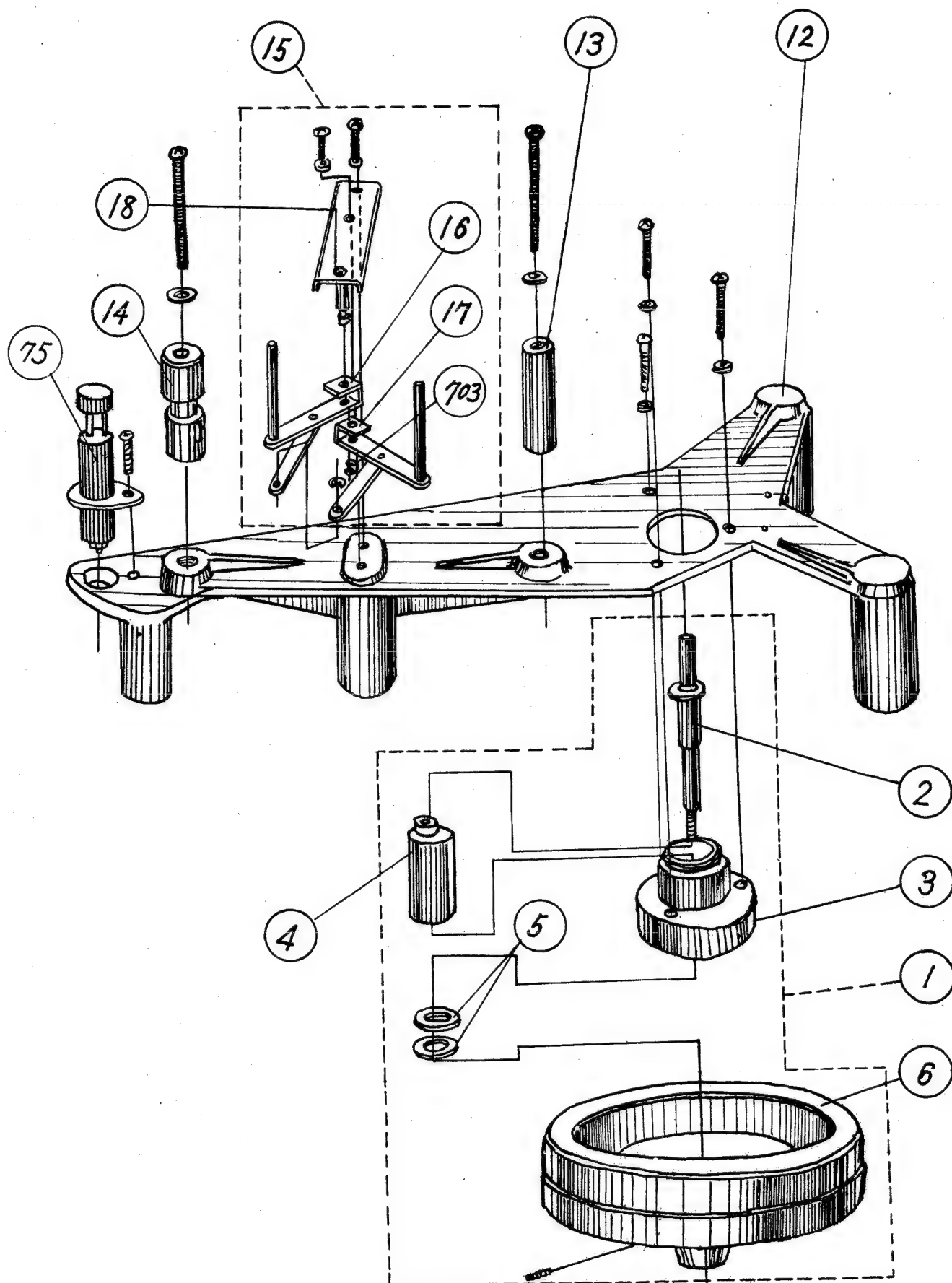
REF NO.	TEAC PARTS NO.	DESCRIPTION	1ST	2ND
9	50701140	Capstan Motor	50701161	50701181
10	50122500	Fan	50132980	
84	50702140	Reel Motor	50702173	
91	50112462	Transport Chassis		
97	50270480	Rubber Grommet		
203	50271980	Resistor Retaining Plate		
204	50524160	Tension Adjust Resistor		
601	50400320	Oscillator Assy		
604	50541020	Capacitor 0.1u FX6		
605	50610360	Delay Relay		
606	50480650	Power Supply Printed Circuit Board		
607		Resistor 1k 2W Wire Wound		
608	50443250	Speed Selector Switch		
609	50432090	Plug 7-Pin (Brown)		
610	50432100	Plug 7-Pin (Black)		
611	50272820	Thrust Plate Retainer		
612	50434150	Tube Socket 7-Pin (Black)		
613	50452060	Terminal Strip 1L-2P		
614	50230240	Switch Cover		
615	50551110	Capacitor 1000u F/50V Electrolytic	50551290	
617	50272640	Thrust Plate, Nylon		
618	50272850	Thrust Plate, Steel		
619	50561392	Power Transformer		
620	50452020	Terminal Strip 1L-3P (Left)		
621	50551120	Capacitor 100u F/150V Electrolytic		
622	50610370	Relay (4T2M1B)		
623	50545330	Capacitor 2.8 + 1 F/250VAC	50545650 2+0.8u/ 250VAC	
624	50545390	Capacitor 2.8 + 1uF x 2/250VAC	50545480 3+1uF	
625	50230220	PCB Leg		
627	50434260	Socket 4-Pin		
628	50411140	Fuse 2A		
629	50432260	Short Plug 4-Pin (Black)		
630	50231880	Side Panel (Left)		
631	50431050	AC Receptacle		
632	50412070	Fuse Post		
633	50271450	Cord Clamper		
636	50555040	Capacitor 200u F/50V Electrolytic		
637	50411040	Fuse 1A		
638	50430230	PCB Leg		
	50470770	Power Cord		
642	50230990	Side Plate		
643	50442120	Voltage Selector		



LIFTER/PINCH ROLLER ASS'Y, EXPLODED VIEW

LIFTER/PINCH ROLLER ASSY

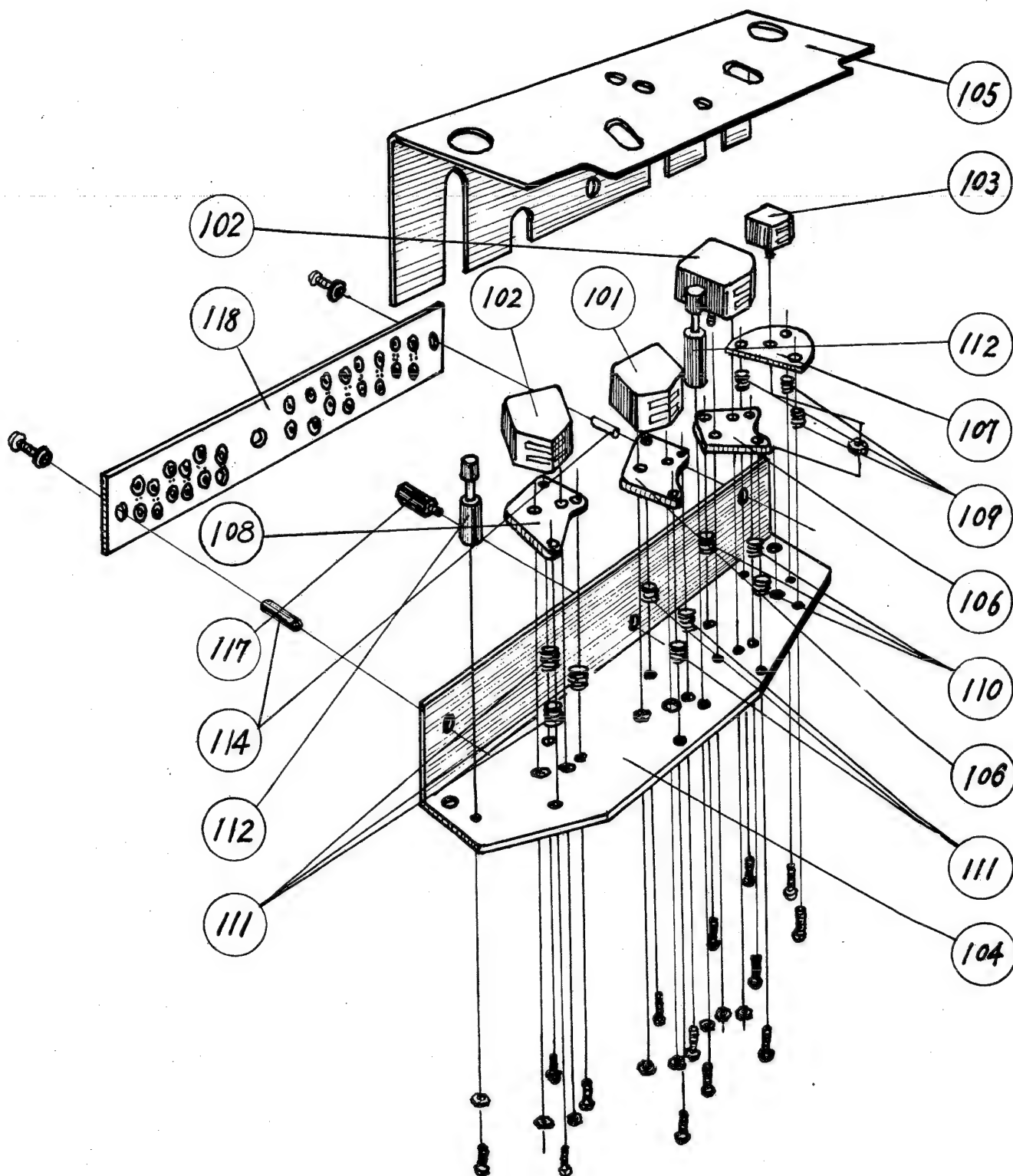
REF NO.	TEAC PARTS NO.	DESCRIPTION	1ST	2ND
26	50141420	Roller Arm	50141602	
27	50150120	Pinch Roller Link Arm Assy	50150150	
28	50141501	Double Nut A 4 mm		
29	50141511	Double Nut B 4 mm		
30	50220040	Pressure-Spring		
31	50121530	Pressure Adjust Screw		
32	50141350	Stopper	50141530	
33	50220441	Spring		
705		E-clip M5		
710		Fiber Washer M7		
800	50271520	Felt Washer		
58	50616211	Solenoid Assy or 50616171		
59	50121550	Pin A		
603		Flat Washer M3		
751	50218400	Pin M 1		
15	50150070	Tape Lifter Assy		
16	50151601	Lifter Assy A		
17	50151611	Lifter Assy B		
18	50151420	Lifter Retaining Plate Assy		
702		E-clip M2		
703		E-clip M3		
704		E-clip M4		
19	5015190	Lifter Lever Assy		
20	50151930	Lifter Arm		
12	50122600	Capstan Base	50122730	



CAPSTAN ASS'Y, EXPLODED VIEW

CAPSTAN ASSY

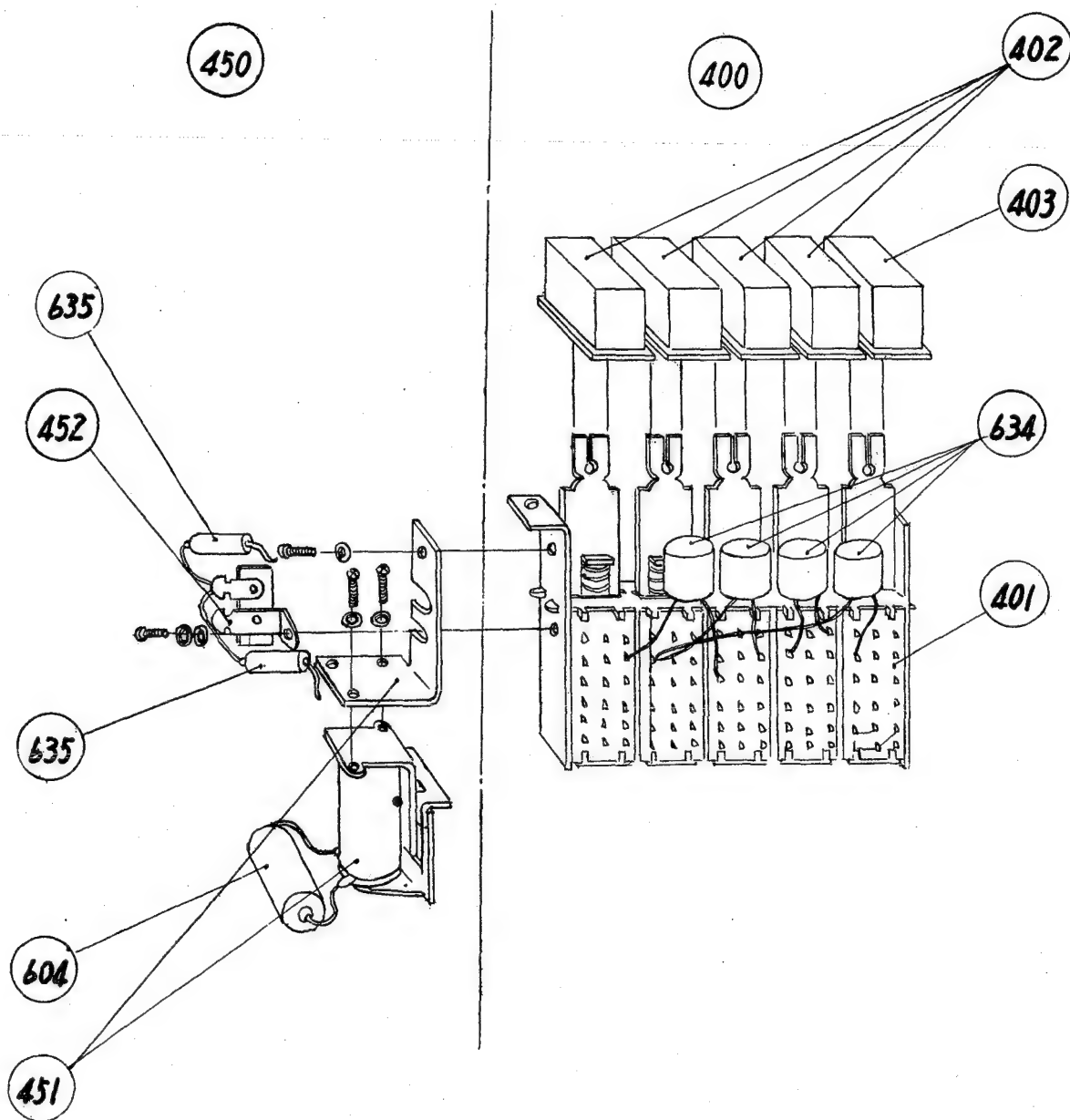
REF NO.	TEAC PARTS NO.	DESCRIPTION	1ST	2ND
1	50122670	Capstan Shaft Assy		
2	50122630	Capstan Shaft	50122726	
3	50122640	Capstan Housing	50123080	
4	50122620	Metal Bearing		
5	50272730	Bearing Washer		
6	50121663	Fly Wheel		
13	50133330	Housing Leg	50134290	
14	50133351	Tape Guide B		
15	50150070	Tape Lifter Assy		
16	50151600	Lifter Assy A		
17	50151611	Lifter Assy B		
18	50151420	Lifter Retaining Plate Assy		
703		E-clip M3		
12	50122310	Capstan Base	50122730	



HEAD ASS'Y, EXPLODED VIEW

HEAD ASSY

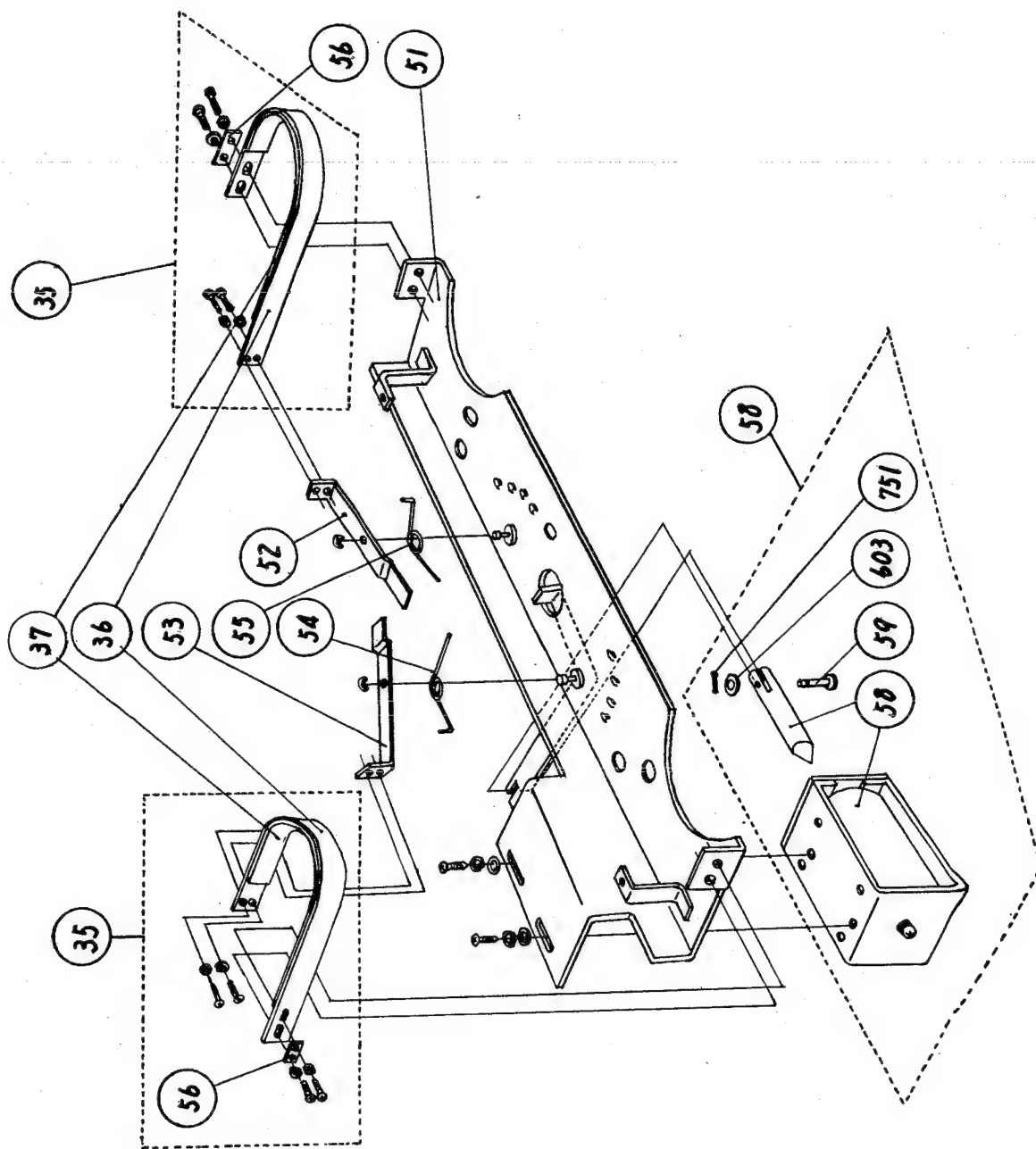
REF NO.	TEAC PARTS NO.	DESCRIPTION	1ST	2ND
100	50130140	Head Assy		
101	50666041	Record Head		
102	50669031	Playback Head		
103	50663031	Erase Head		
104	50133620	Head Base Plate		
105	50133630	Bottom Shield Plate		
106	50133591	Head Mounting Plate R		
107	50133601	Head Mounting Plate E		
108	50133580	Head Mounting Plate P		
109	50220200	Spring		
110	50220450	Spring		
111	50220420	Spring		
112	50133340	Tape Guide A		
114	50240390	Leg		
117	50133290	Housing Leg		
118	50480311	Printed Terminal Strip 15P		



TRANSPORT SELECTOR SWITCH, SHUT-OFF SOLENOID, EXPLODED VIEW

TRANSPORT SELECTOR SWITCH/SHUT-OFF SOLENOID

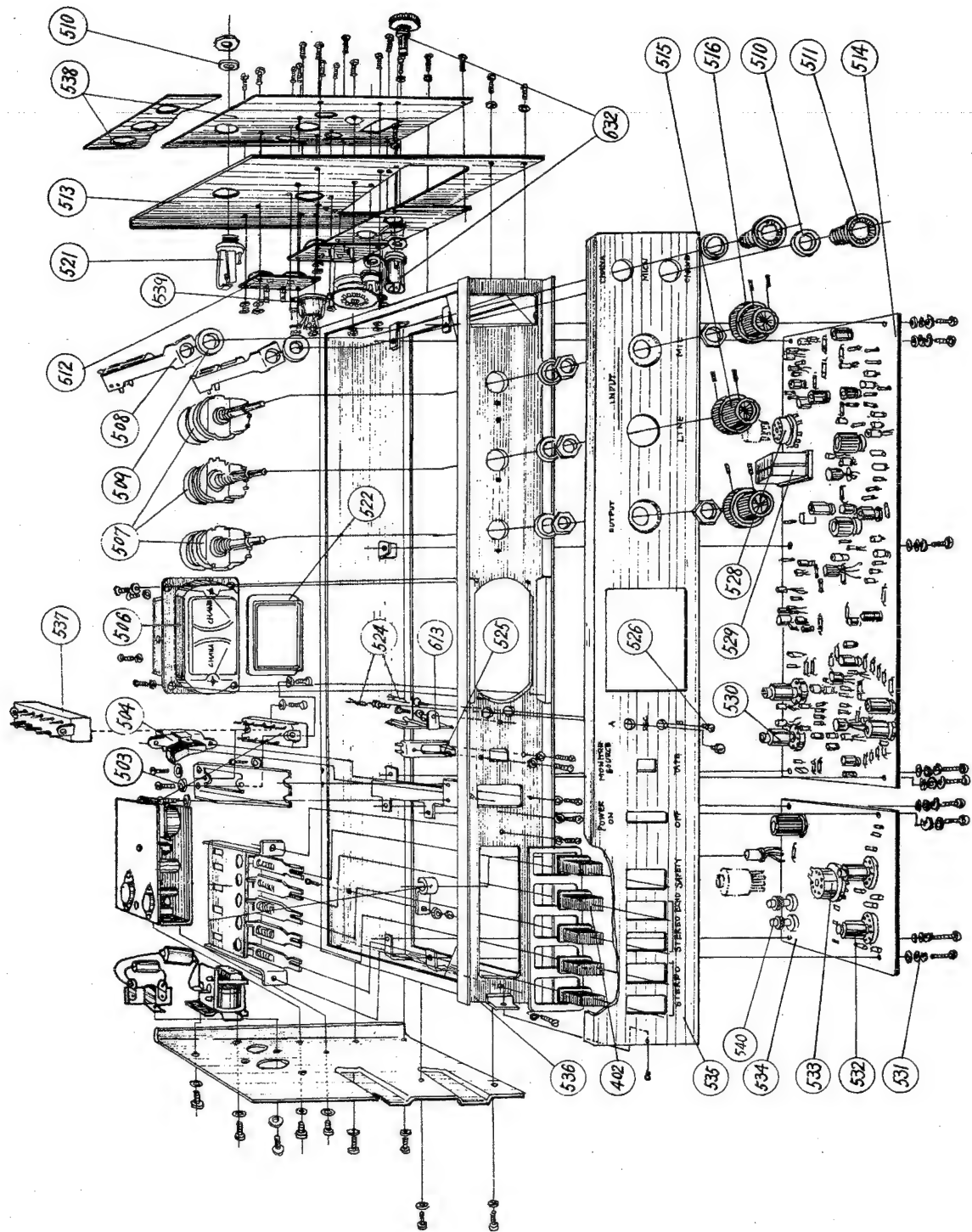
REF NO.	TEAC PARTS NO.	DESCRIPTION	1ST	2ND
400	50250150	Transport Selector Switch Assy		
401	50443150	Transport Selector Switch		
402	50251081	Transport Button (Black)		
403	50251091	Transport Button (Red)		
634	50548060	Capacitor 0.1 u F/250 Film		
450	50250160	Shut-off Solenoid Assy		
451	50616060	Shut-off Solenoid		
452	50452100	Terminal Strip 1L-1P (Right)		
604	50541020	Capacitor 0.1 u F Paper		
635	50541060	Capacitor 0.01 u F/400V Oil-Filled		



BRAKE ASS'Y, EXPLODED VIEW

BRAKE ASSY

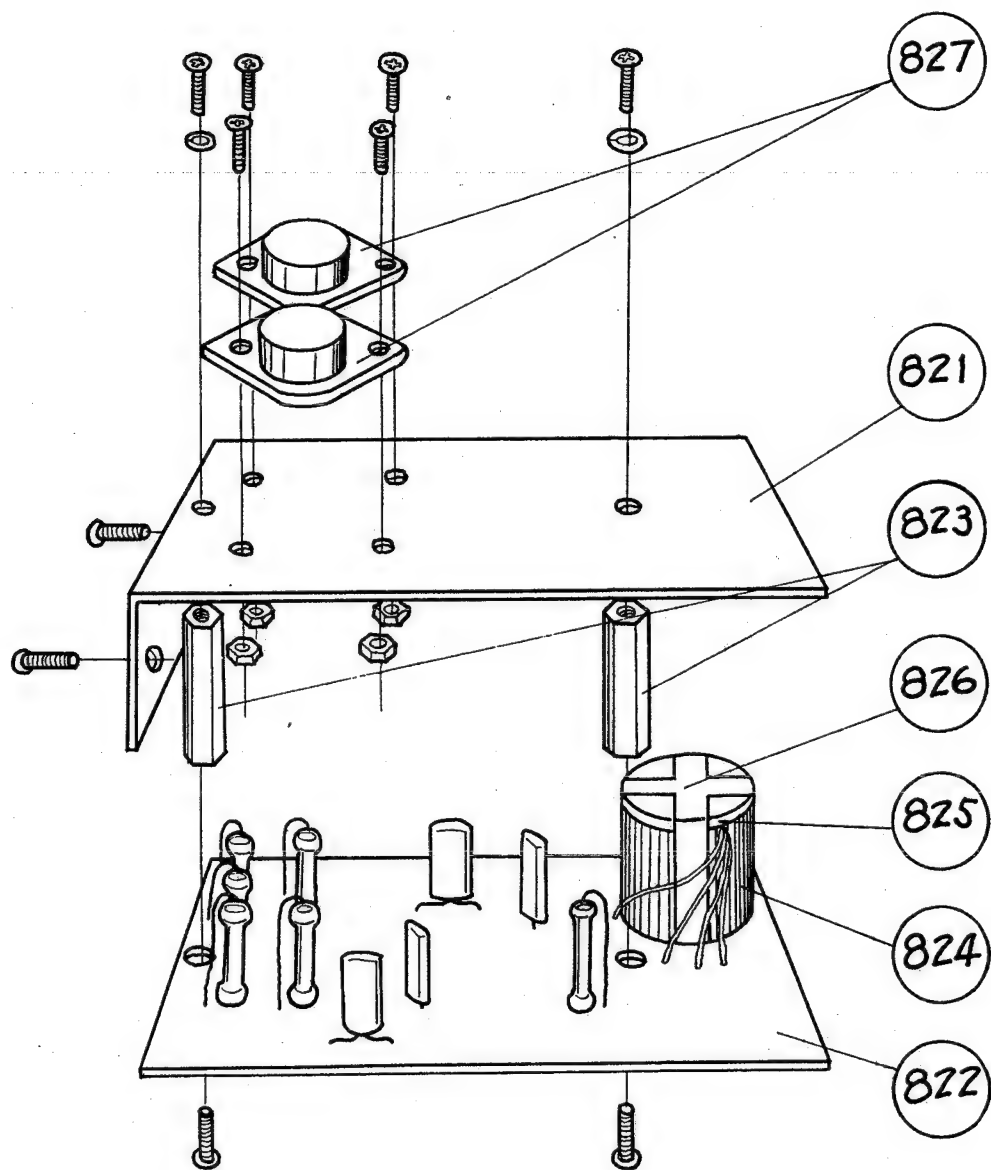
REF NO.	TEAC PARTS NO.	DESCRIPTION	1ST	2ND
35	50170010	Brake Band Assy	50616211	
36	50171910	Brake Band		
37	50171382	Brake Felt		
50	50170020	Brake Mounting Base Assy		
51	50171791	Brake Mounting Base		
52	50171680	Brake Lever A		
53	50171690	Brake Lever B		
54	50171900	Left Brake Spring		
55	50171890	Right Brake Spring		
56	50171800	Brake Band Retainer		
58	50616170	Solenoid Assy		
59	50121550	Pin A		
603		Flat Washer M3		
751	50218400	Pin M1		



AMPLIFIER, EXPLODED VIEW

AMPLIFIER

REF NO.	TEAC PARTS NO.	DESCRIPTION	1ST	2ND
500	50400280	Pre-Amplifier Assy (A-1500)		
	50400290	Pre-Amplifier Assy (A-1600)		
501	50429050	Heat Sink		
502	50443020	Record Selector Switch		
503	50230740	Connector (15-Pin) Mounting Frame		
504	50441060	Power Switch		
505	50436010	Connector 15-Pin		
506	50581161	Volume Indicator Meter		
507	50537060	Double Potentiometer 10k ohm		
508	50434270	Mic Jack		
509	50230560	Fiber Washer		
510	50271460	Plastic Washer		
511	50230690	Jack Nut		
512	50434390	Pin Jack		
513	50230981	Side Panel (Right)		
514	50480303	Printed Circuit Board		
515	50252010	Knob (Inner)	50251250	50252960
516	50251310	Knob (Outer)		
521	5043418	Phone Jack	50434560	50432440
522	50583010	Meter Bezel		
523	50414040	Pilot Lamp	50414350	
524	50415010	Lamp Holder		
525	50444070	Monitor Selector Switch		
526	50417010	Lamp Cap		
528	50434200	Socket 7-Pin	50610460	
529	50610240	Head Selector Relay		
530	50566070	Choke Coil 8-2.2mH		
531	50270160	Rubber Cushion		
532	50566030	Choke Coil 10mH		
533	50434210	Socket 9-Pin		
534	50480621	Printed Circuit Board		
535	50230281	Amp. Dress Panel		
536	50230703	Pre-Amplifier Chassis		
402	50251080	Transport Selector Button (Black)		
613	50452060	Terminal Strip 1L-2P		
	50423020	Transistor 2SB257		
	50423110	Transistor 2SA49		
	50423040	Transistor 2SB189		
	50423050	Transistor 2SB94		
	50423210	Transistor 2SB415		
	50423220	Transistor 2SB440		
	50423240	Transistor 2SB486		
537	50438010	Connector Socket 15-Pin		
538	50111822	Side Dress Panel (A-1500)		
	50111220	Side Dress Panel (A-1600)		
539	50430010	DIN Connector		
540	50566090	Choke Coil 3mH		
632	50412070	Fuse Post		

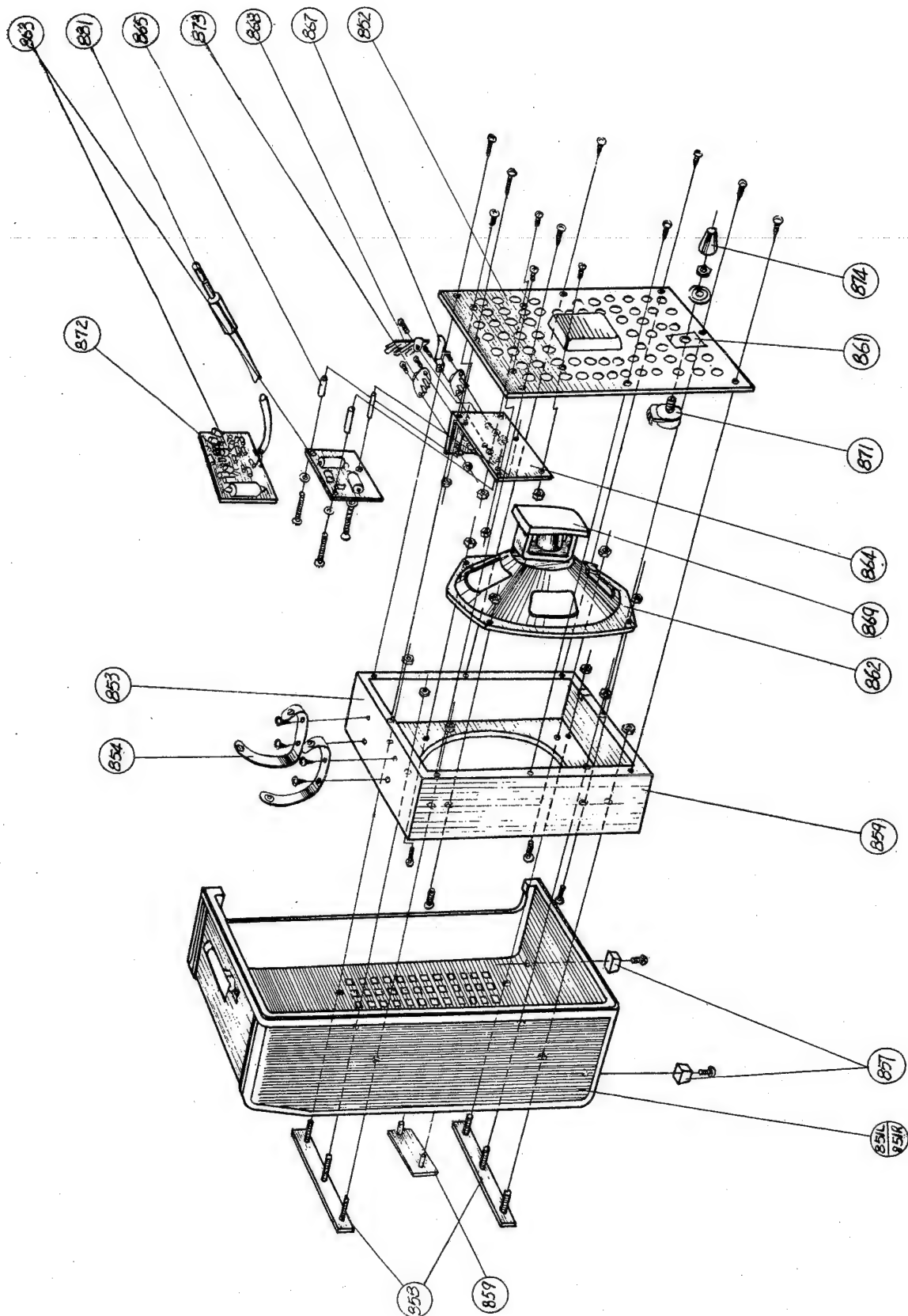


820

BIAS OSCILLATOR ASS'Y EXPLODED VIEW

BIAS OSCILLATOR ASSY

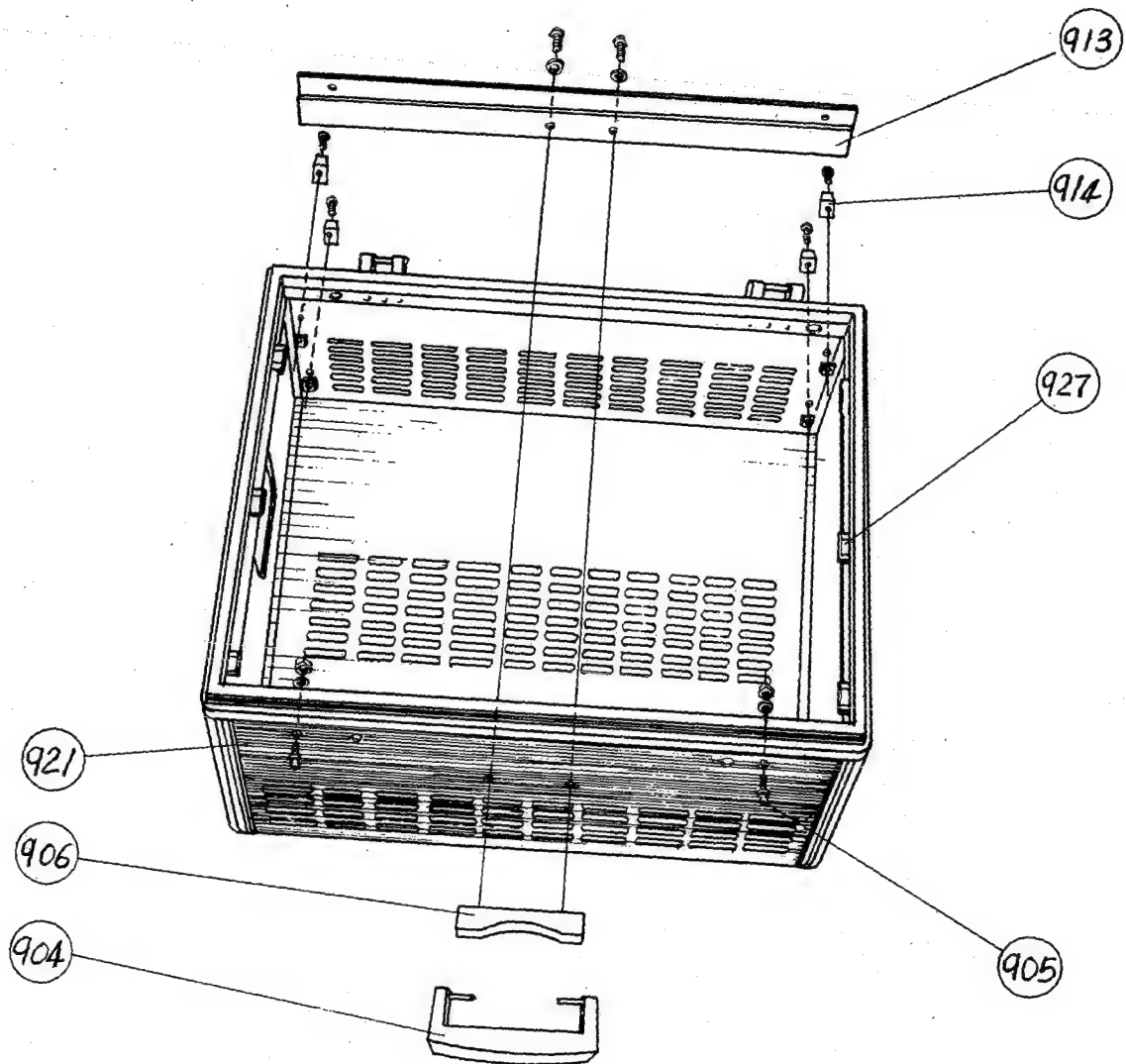
REF NO.	TEAC PARTS NO.	DESCRIPTION	1ST	2ND
820	50400320	Bias Oscillator Assy		
821	50231741	Heat Sink		
822	50480790	Printed Board		
823	50240630	Leg		
824	50563070	Oscillator Transformer		
825	50272910	Felt		
826	50272921	Band		
827	50423230	Transistor 2SD24		



SPEAKER AMPLIFIER, EXPLODED VIEW

SPEAKER AMPLIFIER

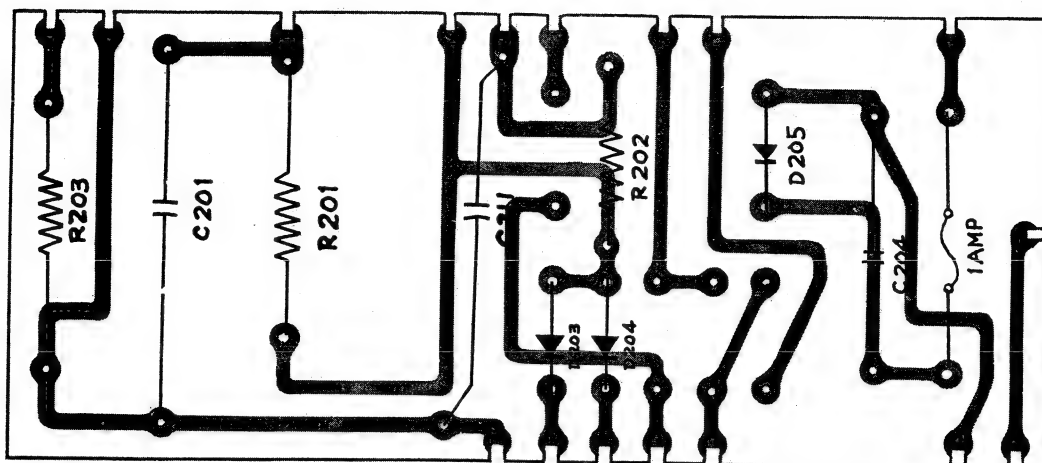
REF NO.	TEAC PARTS NO.	DESCRIPTION	1ST	2ND
850L	50280600	Left Speaker Case Assy		
850R	50280610	Right Speaker Case Assy		
851L	50284220	Left Speaker Case		
851R	50284230	Right Speaker Case		
852	50284330	Left Speaker Case Lid		
853	50284290	Speaker Case		
854	50284320	Cord Clamper		
855	50284310	Catch		
857	50284340	Case Foot		
858	50284300	Emblem		
861	50271070	Dial Plate		
862	50630080	Speaker 4"x8"		
863	50480200	Printed Circuit Board		
864	50230420	Heat Sink		
865	50240050	Spacer		
866	50270160	Rubber Cushion		
867	50230430	Thermistor Holder		
868	50532060	Terminal Strip 1L-2P		
869	50283110	Dumper		
871	50533100	Potentiometer 20k ohm		
872	50533050	Potentiometer 150k ohm (D.C. Balancer)		
873	50423100	Transistor 2SB54		
	50423050	Transistor 2SB94		
	50423080	Transistor 2SB43		
	50423090	Transistor 2SD43		
	50423190	Transistor 2BS425		
	50425010	Thermistor D-22A		
874	50251250	Knob	502529610	
875	50470730	Speaker Amp. Input Cable		
880	50400300	Speaker Amp. Assy		
	50280620	Right Complets Speaker Case (With speaker and its amplifier)		
	50280630	Left Complets Speaker Case (With speaker and its amplifier)		
881	50432040	Plug (3P)		



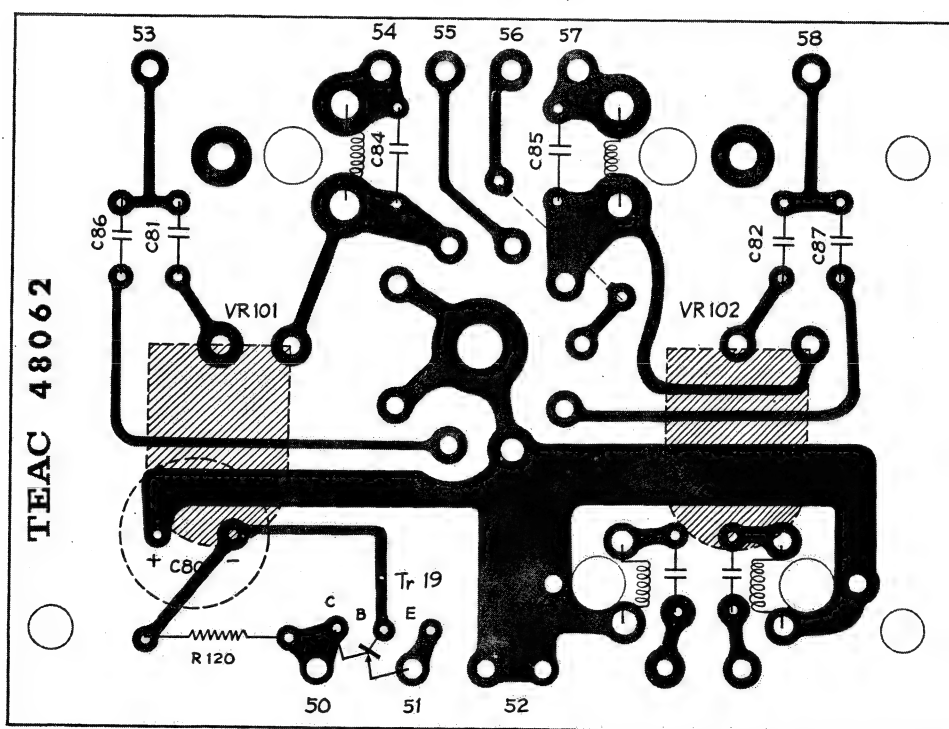
CARRYING CASE, EXPLODED VIEW

CARRYIG CASE

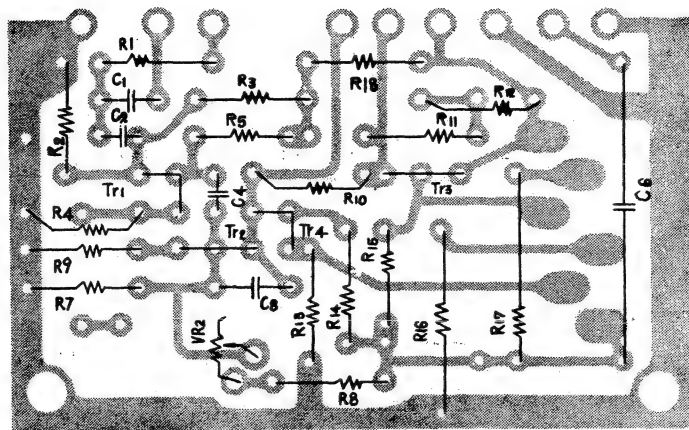
REF NO.	TEAC PARTS NO.	DESCRIPTION	1ST	2ND
900	50283960	Carrying Case Body Assy		
904	50284160	Handle		
905	50284180	Catch B		
906	50284170	Handle Retainer		
913	50284210	Handle Retaining Plate		
914	50284200	Rubber Foot		
921	50284190	Carrying Case Body		
927	50283860	Nut		
	50280590	Carrying Case Assy (A-1600)		
	50280580	Carrying Case Assy (A-1500)		
	(50285502	Wooden Case)		



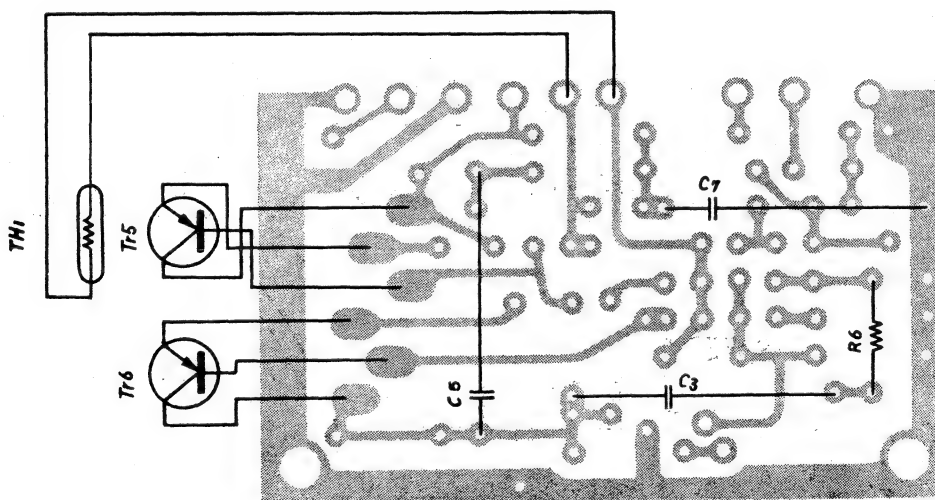
POWER SUPPLY PRINTED CIRCUIT BOARD



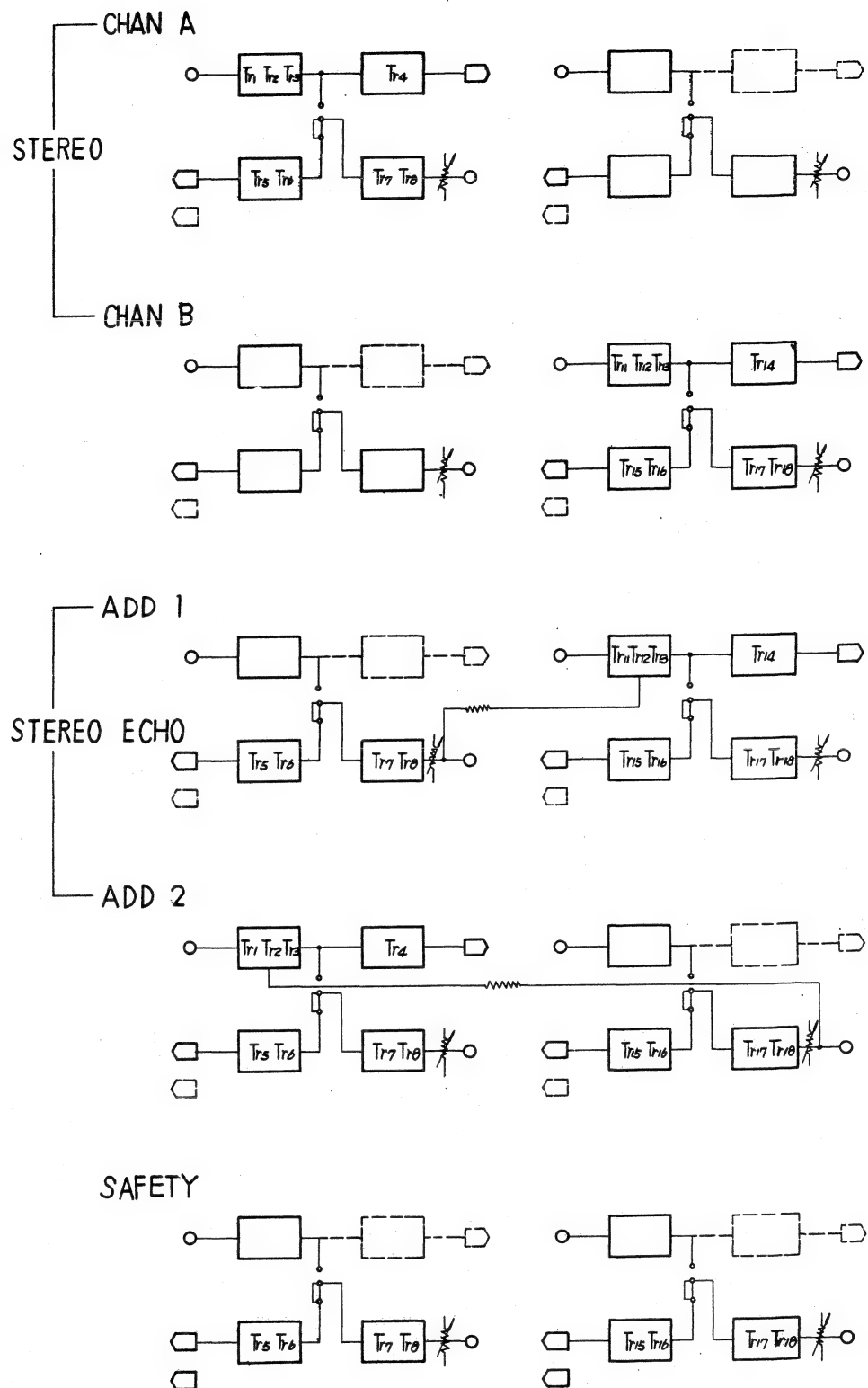
RECORD OUTPUT PRINTED CIRCUIT BOARD



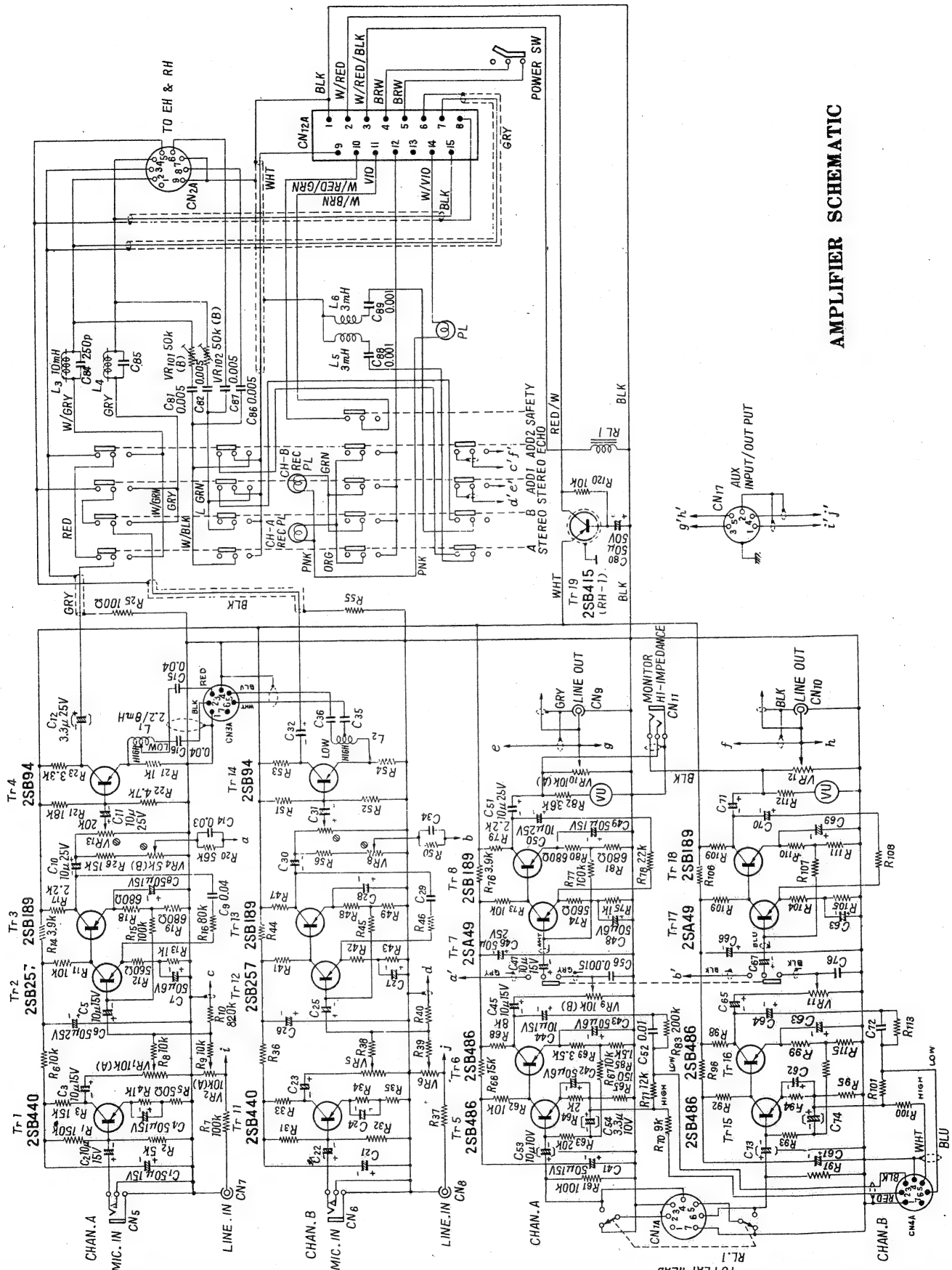
SPEAKER AMPLIFIER CIRCUIT BOARD - I -



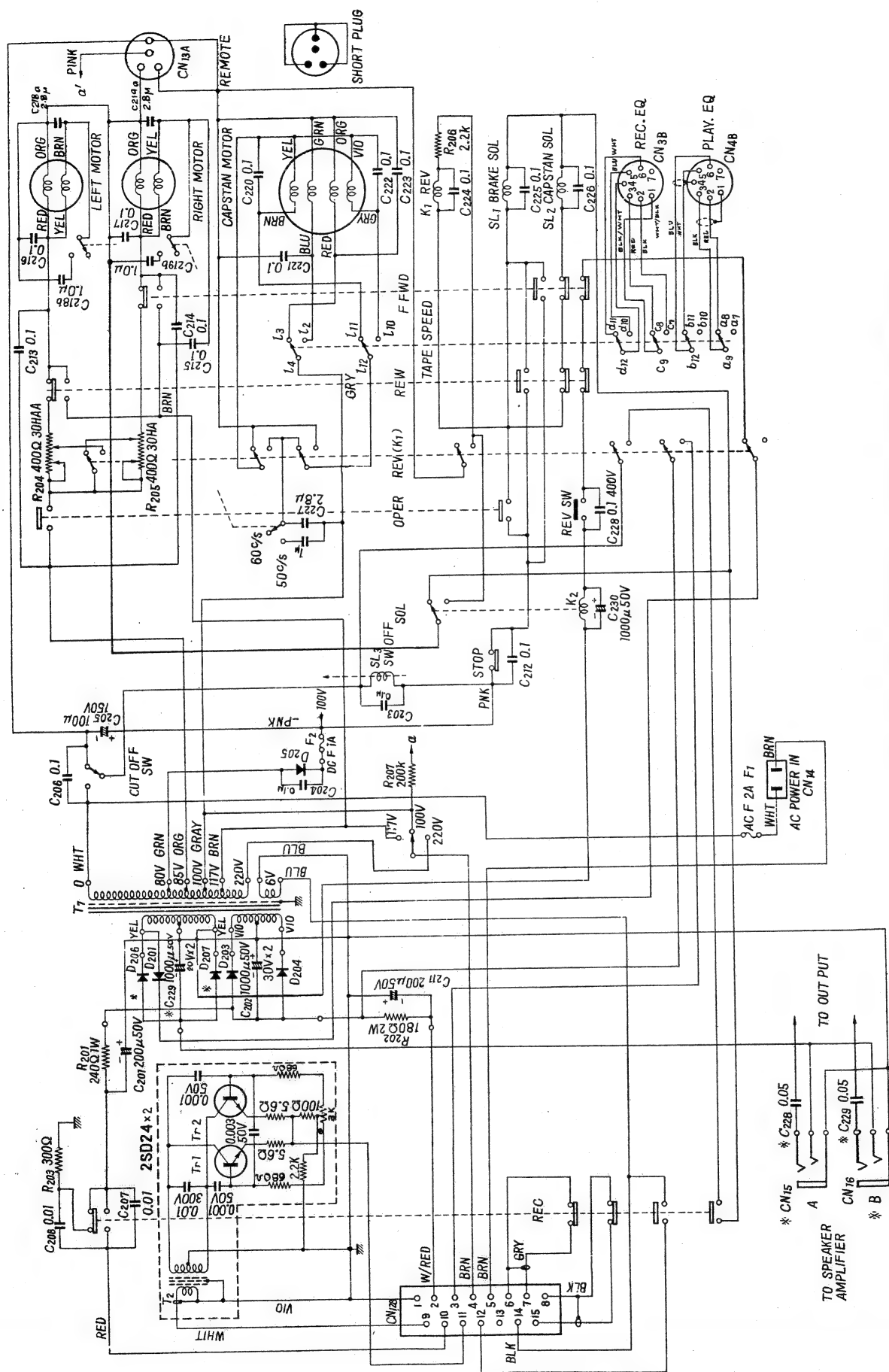
SPEAKER AMPLIFIER CIRCUIT BOARD - II -



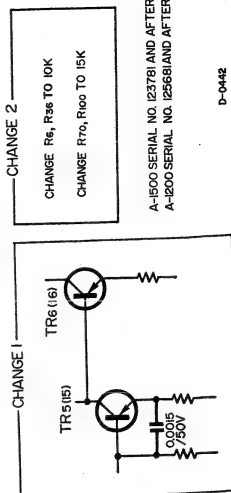
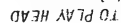
AMPLIFIER BLOCK DIAGRAM



AMPLIFIER SCHEMATIC



* A-1600 RECORDER ONLY



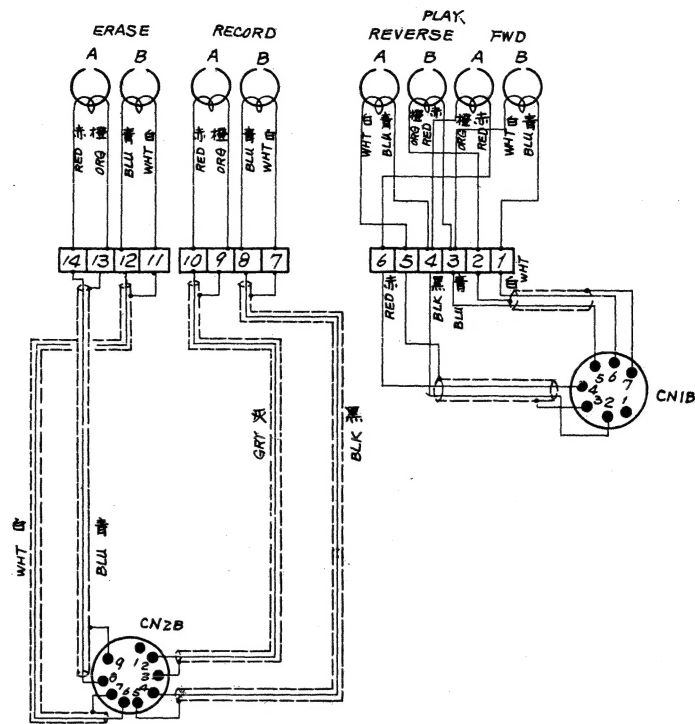
—CHANGE 2—

A-1500 SERIAL NO. 123781 AND AFTER
A-1200 SERIAL NO. 125681 AND AFTER

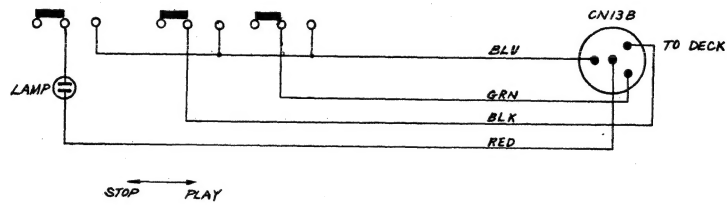
D-0442

AMPLIFIER SCHEMATIC DIAGRAM

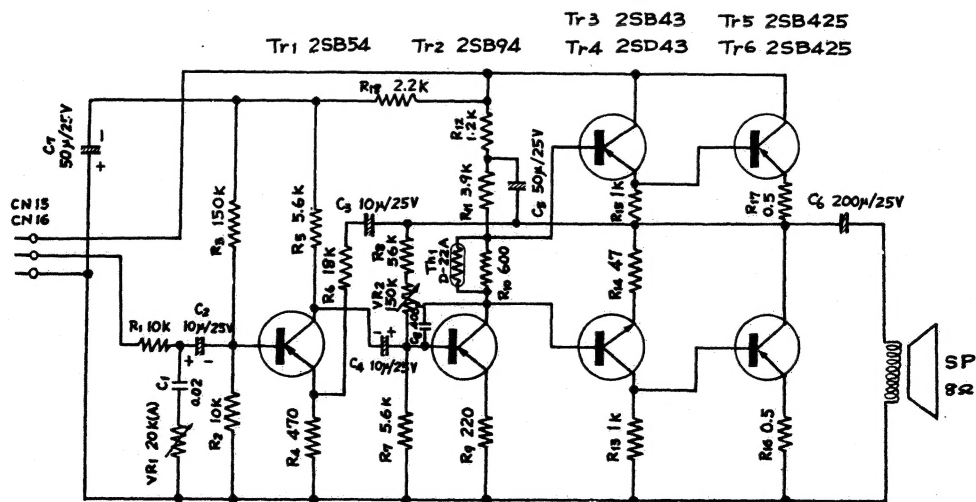
NOTE. COMPONENT VALUES ARE SUBJECT TO CHANGE WITHOUT NOTICE



HEAD ASSEMBLY SCHEMATIC



REMOTE CONTROL UNIT SCHEMATIC

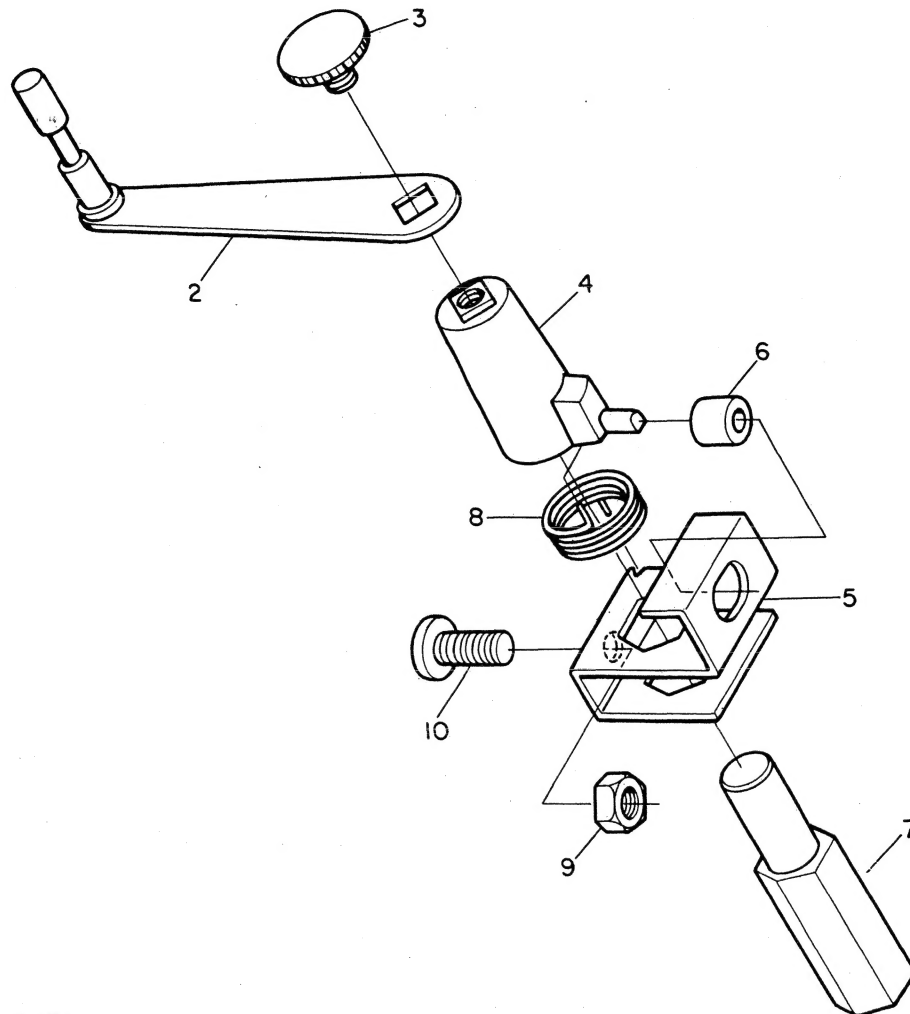


A-1600 SPEAKER AMPLIFIER SCHEMATIC

REVISION

Change notices, recommended modifications etc. will be issued for the models in this manual, when appropriate.

COMPLIANCE ARM ASSY



N-0134

SERIAL NO. 96831 AND AFTER

REF NO.	TEAC PARTS NO.	DESCRIPTION	1ST	2ND
1- 2	50180400	Compliance Arm	5018296	
1- 3	50182651	Knurled Screw		
1- 4	50182640	Arm Holder		
1- 5	50182620	Arm Stopper		
1- 6	50275690	Rubber Cushion		
1- 7	50182630	Arm Shaft		
1- 8	50220990	Arm Spring		
1- 9	50211330	Nut 4φ		
1-10		Screw M4x6		

A-1200, A-1500/A-1600

EARLY AND LATER MODEL PARTS COMPARISON CHART

REPLACED OR SUPERSEDED BY					ORIGINAL COMPONENTS				
Circuit Ref No.	Parts No.	Description		Qt.	Parts No.	Description		Qt.	Circuit Ref No.
R1, R31	50518890	Carbon Resistor	1/4W 270k	2	50511720	Carbon Resistor	1/4W 150k	2	R3, R33 R2, R32
R3, R33, R2, R32	50513870	Carbon Resistor	1/4W 47k	4	50511590	Carbon Resistor	1/4W 15k	2	
R4, R34	50513880	Carbon Resistor	1/4W 5.6k	2	50511520	Carbon Resistor	1/4W 5k	2	
R5, R35	50518730	Carbon Resistor	1/4W 47	2	50511430	Carbon Resistor	1/4W 1k	2	
					50511250	Carbon Resistor	1/4W 50	2	
R62, R92	50517150	Carbon Resistor	1/4W 82k	2	50511570	Carbon Resistor	1/4W 10k	2	
R63, R93	50513930	Carbon Resistor	1/4W 22k	2	50511600	Carbon Resistor	1/4W 20k	2	
R64, R94	50513950	Carbon Resistor	1/4W 2.2k	2	50511460	Carbon Resistor	1/4W 2k	2	
R67, R97	50513990	Carbon Resistor	1/4W 56k	2	50511570	Carbon Resistor	1/4W 10k	2	
R68, R98	50513970	Carbon Resistor	1/4W 4.7k	2	50513550	Carbon Resistor	1/4W 8k	2	
R69, R99	50513300	Carbon Resistor	1/4W 100	2	50511490	Carbon Resistor	1/4W 3.5k	2	
R85, R115	50511430	Carbon Resistor	1/4W 1k	2	50511450	Carbon Resistor	1/4W 1.5k	2	
R76, R106	50513950	Carbon Resistor	1/4W 2.2k	2		Carbon Resistor	1/4W 3.9k	2	
R71, R101	50511590	Carbon Resistor	1/4W 15k	2	50511580	Carbon Resistor	1/4W 12k	2	
C92, C93	50543610	Polystyrene Cap.	100p/50V	2	50543180	Polystyrene Cap.	500p/250V	2	
C43, C63	50554010	Electrolytic Cap.	50u/16V	2	50554030	Electrolytic Cap.	50u/6V	2	
C51, C71	50554940	Electrolytic Cap.	2.2u/25V	2	50554040	Electrolytic Cap.	10u/25V	2	
Tr1, Tr11	50424140	Silicone Transister	2SA572YL	2	50423220	Germanium Transister	2SB440	2	
Tr15, Tr16, Tr5, Tr6	50424140	Silicone Transister	2SA572YL	4	50423240	Germanium Transister	2SB486	4	

NOTE

Tr1, Tr11, Tr5, Tr15 may be replaced by 2SA493Y transisters.
Tr6, Tr16 may be replaced by 2SA493Y, 2SA494Y or 2SA666IS transisters.