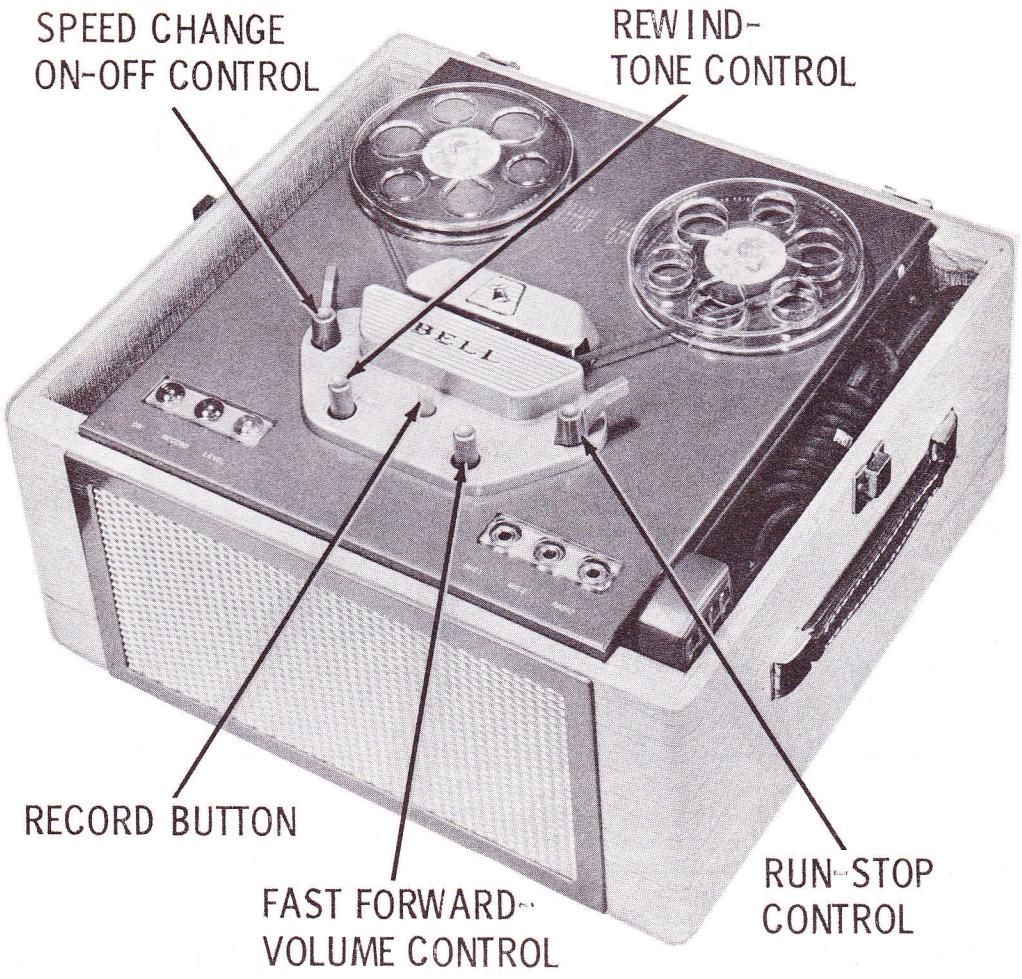

BELL
MODEL RT-75

BELL
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MODEL RT-75

3-SPEED TAPE RECORDER AND PLAY BACK UNIT

Manufactured by:

BELL SOUND SYSTEMS, INC.
A Subsidiary of Thompson Products, Inc.
555 Marion Road
Columbus, Ohio

This material compiled and published by

HOWARD W. SAMS & CO., INC., INDIANAPOLIS, INDIANA

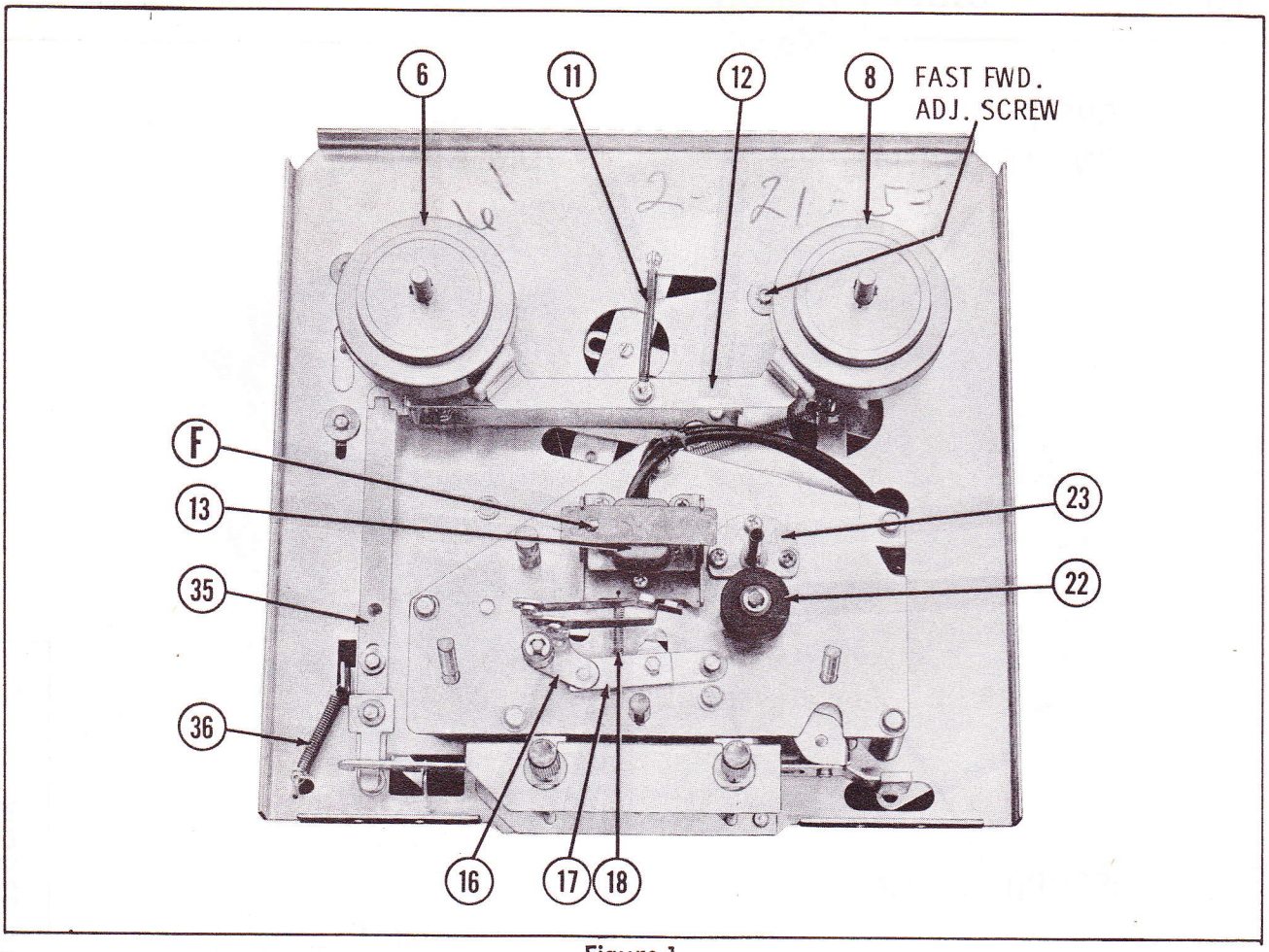


Figure 1

GENERAL INFORMATION

The Bell Model RT-75 is a three speed, dual track tape recorder.

A single control knob turns power to the motor and amplifier "On" and "Off" and selects the desired speed (1 7/8, 3 3/4, or 7 1/2 inches per second).

The dual track feature allows more recording time on each reel and with light weight tape, as much as eight hours total or four hours each side, may be had on a 7" reel at slowest speed.

Push buttons provide for "Fast Forward" and "Fast Rewind"; these same buttons act as "Volume" and "Tone" controls.

Two output jacks permit use of an external speaker or high fidelity amplifier system. A terminal strip inside the amplifier is available for 500 ohm output, at 30 dbm level.

A removable cover plate on the bottom of the cabinet allows easy access to tubes, motor, fan, hum adjustment, and 500 ohm output terminal.

Built in interlocks prevent the operator from placing the machine in more than one mode at a time. This prevents tape breakage, spillage, or accidental erasure.

SPECIFICATIONS

Size: 16 3/8" x 15" x 9 1/8" less hardware.

Weight: 35 lb. approx.

Power Required: 110-120 volts 60 cycle A.C. only — 100 watts.

Overall Frequency Response: 30 to 10,000 cycles at 7 1/2 I.P.S.

Inputs (three): 2 microphones, 1 radio-phono-amplifier - TV.

Outputs (two): External Speaker, actual impedance 3.2 ohms — use any speaker 4 to 16 ohms; External Amplifier, high impedance.

Power Output: 3 watts.

Speeds (three): Play or Record. 7 1/2, 3 3/4, or 1 7/8 inches per second.

Fast Forward: 1200 ft. in 90 seconds.

Fast Rewind: 1200 ft. in 70 seconds.

Wow and Flutter: Less than .25% at 7 1/2 I.P.S.

Speaker: 6" x 9" heavy duty oval.

Type of Erase and Bias: High Frequency (A. C.) 60KC.

Tube Complement: 1-12AY7 or ECC-83, 1-12AX7, 1-6C4, 1-6V6GT, 1-6X5GT.

Controls:
1. Speed Change, On-Off Control.
2. Run-Stop Control.
3. Record Push Button.
4. Tone and push button rewind.
5. Volume and push button fast forward.

OPERATING INSTRUCTIONS

Preparing The Bell For Recording-

1. Place the recorder on a flat surface and remove the cover. Make certain that the "Run-Stop" control is in the "Stop" position and that the "Speed" control is in the "Off" position.

2. Insert the A. C. power cord plug into a convenient 110-120 volt, 60 cycle A. C. outlet.

Threading The Tape-

1. Place a reel of "A" wind tape on the supply reel support (6) and an empty reel of the same size on the takeup reel support (8).

2. Unwind about two feet of tape. Hold a section of tape straight with both hands and insert the tape into the tape slot. Insert the free end of the tape into one of the radial slots in the hub of the empty reel. Rotate reel counter clockwise three of four turns to secure and take up all slack between reels.

To Record From Microphone-

1. Turn recorder on by placing speed control knob (1) in the speed position desired. Allow approximately 30 seconds for the unit to warm up. Insert the microphone plug into the Mic. 1 input jack. Use Mic. 2 input jack only when using two microphones or when mixing with Radio, Phono., or TV programs. If microphone is set on a hard surface, place sponge rubber or several thicknesses of cloth underneath it to absorb any vibrations. Set record level before recording by depressing the red record button and observing the flash of the neon record level indicator. While sound source is striking microphone, carefully adjust the volume control so that the level lamp flashes on peak passages.

NOTE: Correct recording volume is very important. If the neon level lamp flashes all the time, the recording will be overloaded and distorted on playback. If level lamp does not flash at all, playback will be weak and contain high background noise.

2. After level adjustment has been set, turn the run-stop control (2) to "Run". The tape is now moving and any sound entering the microphone will be recorded on the tape. When recording is finished, turn control (2) to "Stop".

To Record From Radio, Phono, Or TV-

Recordings can be made from a radio or television receiver by placing the microphone near the loudspeaker, however this type of recording is usually not satisfactory because of background noises picked up by the microphone and lack of good quality. A better recording can be made by connecting the "Radio" input of the recorder to the radio or TV voice coil terminals. In the case of an AM-FM Tuner, connect to the tuner output.

Dual Track Operation-

NOTE: Recordings are made on half the width of the tape at one time. Since it is impossible to edit and splice one "track" without affecting the other, recordings which are to be edited should be limited to one track.

1. After a reel of tape has been recorded, a second track may be recorded on the same reel (without rewinding) by removing the full reel from the right hand spindle, turning it over, then placing on the left hand spindle. Place the empty reel on the right hand spindle.

2. Rethread the tape and proceed with the recording as previously described.

3. After the second track has been recorded, the first track is ready to be played without rewinding, by changing reels as described in Step #1 above.

To Rewind-

After a recording is made, tape may be rewound by pushing "Rewind" knob down positively. It will lock in position so it is unnecessary to hold down. When desired portion of tape is rewound, push down and release "Fast Forward" knob. This will stop the tape. When rewinding a complete or large portion of a reel, it is better to take tape out of slot and run straight across from reel to reel. This saves wear on the head and is somewhat faster since it eliminates the drag set up by the tape running through the head slot.

To Play A Recording-

1. To play back recordings, place reels on reel supports and thread as previously described. Turn the speed control pointer (1) to the correct speed; this also supplies power to the motor and amplifier. Place the run-stop pointer (2) in the "Run" position and adjust the "Volume" and "Tone" controls for desired listening level. If speed of tape is unknown, the speed control pointer (1) can be turned after the unit is playing. After the recordings have been played, return the run-stop pointer (2) to the "Stop" position. This releases the pressure roller (22) from the capstan and stops the tape.

2. After the first track has been played, the second track may be played, without rewinding, by turning the reels over and placing them on opposite reel platforms. This may be done at any time during playback.

NOTE: When recordings are played back thru the built-in speaker, remove any phone plug which may be inserted in either the External Speaker or High-Z output jacks. These jacks, when used, disconnect the built-in speaker.

Fast Forward-

In playback, it is sometimes desirable to skip portions of tape to a particular spot. To do this, push down and hold "Fast Forward" knob until tape arrives

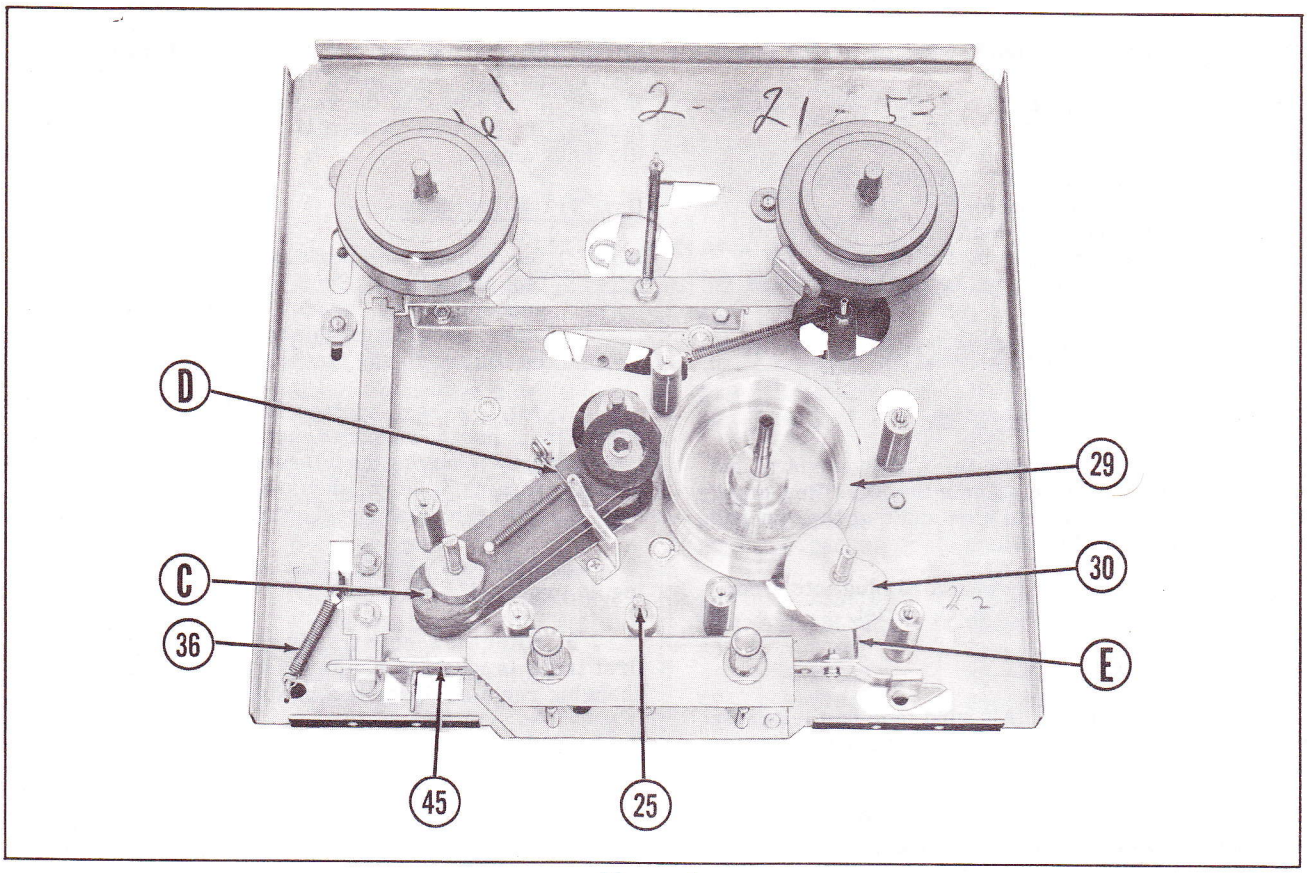


Figure 2

at desired spot. To stop tape, release the "Fast Forward" knob. To prevent unnecessary head wear, tape should be taken out of head slot when large portions of a reel are to be skipped.

DISASSEMBLY INSTRUCTIONS

Top-Deck Plate-

To service parts located directly under the top-deck plate (5) it is not necessary to remove the unit from the case. Remove top-deck plate as follows:

Remove four screws (one in each corner of the turned down flange) and use a #10 spline wrench to remove the two pointer knobs. Lift top-deck plate straight up.

To Remove Recorder From Cabinet-

To remove recorder from cabinet, first remove the top-deck plate (5). Next, remove the three screws from the rear of the cabinet located just above the vent grille. Remove four screws from the bottom of the case and lift recorder straight up. Remove speaker leads before lifting recorder completely out of case.

To Remove Amplifier From Transport Mechanism-

For some mechanical adjustments on the bottom of the tape transport mechanism, it will be necessary to first remove the amplifier. Remove as follows:

Remove three sheet metal (hex. head) screws from each side plate. Remove four hex. head screws from the jack and lamp brackets, 2 each side. Remove head plug and motor plug from their sockets. Loosen the three Phillips head screws in the right hand side plate so that the amplifier and power cord will miss flanges as the mechanical unit is lifted straight up. Tighten the three Phillips head screws in the right hand side plate and place the mechanical unit on a flat surface.

ADJUSTMENTS

When the amplifier is removed from the mechanical unit, tape may be placed on the unit and driven in any model by using an AC power cord with a socket that will fit the motor plug. On units with serial #14,000 to 15,200 use a Bell part #B-20209P19 socket. On units above serial #15,200, use a Bell part #B-20209P29 socket.

Rewind Belt Adjustment-

Leave 12 to 15 turns of tape on the take-up reel (right hand) and push rewind button all the way down. Tape should start in motion. If the recorder meets this test, shut off the motor with speed control pointer (1). Place run-stop pointer (2) in the run position. Now start the motor by placing speed control pointer (1) in the 7 1/2 I.P.S. position. The motor should start tape under load, not stall. If motor stalls, rewind belt (67) is too tight. If machine fails to rewind last few turns of tape, rewind belt (67) is too loose. Make adjustment as follows, if necessary.

Remove the reels and loosen the two screws (1/2 turn) which mount the rewind idler pulley assembly (66). To loosen belt, reach under bottom plate and slide the rewind idler pulley assembly (66) toward the

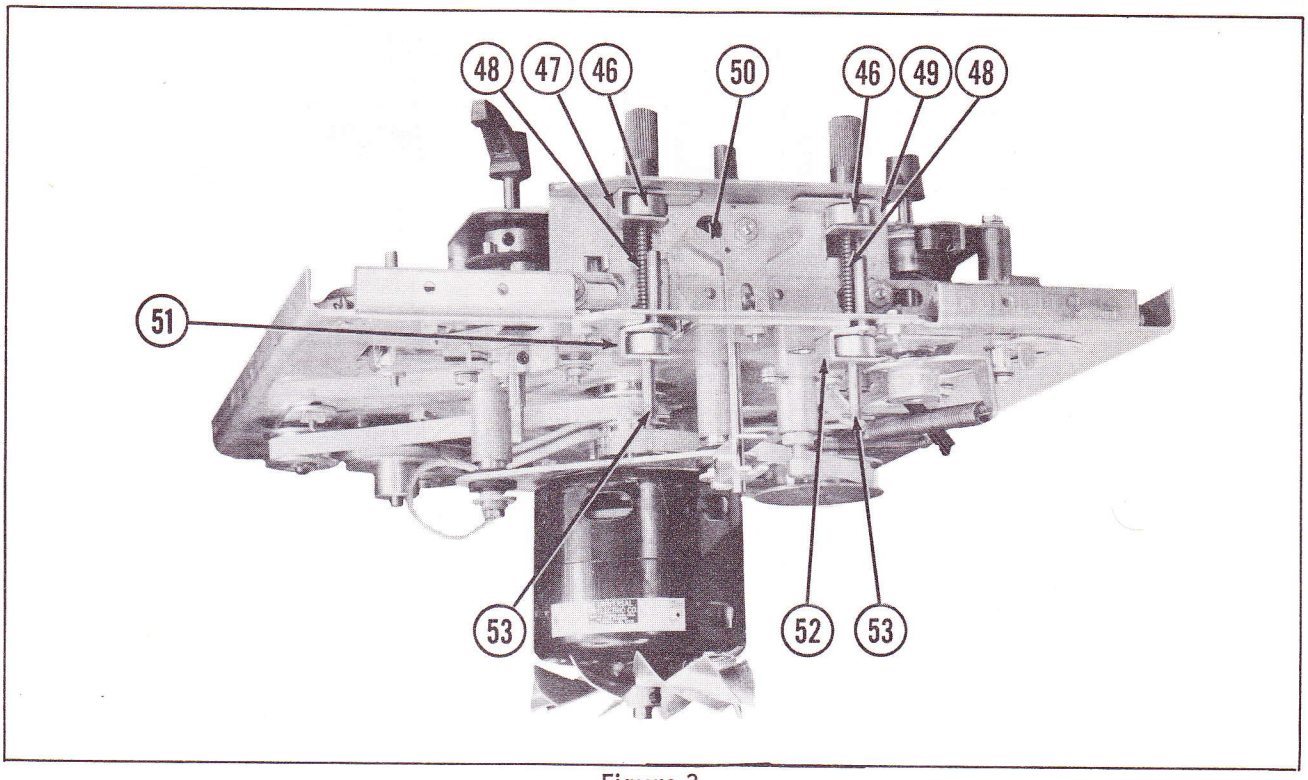


Figure 3

front and to the left. To tighten belt, move idler assembly (66) toward the rear and to the left. Move the idler assembly about 1/32" at a time, then install reels and re-make tests.

Fast Forward Adjustment-

Leave 12 to 15 turns of tape on the left hand (supply) reel and push fast forward button all the way down and hold. Tape should start to wind in forward direction.

Next, hold right hand (take up) reel from turning (do not press down). Observe the take-up belt (73), it must be turning and clutch plate (9) must be slipping against the take-up reel support (8), when the fast forward button is held down. If take-up belt (73) does not turn, it is too loose. Make adjustment as follows, if necessary:

Loosen the fast forward adjustment screw (see Figure 2) about 1/2 turn. To tighten belt, reach under bottom plate and slide the fast forward and play pulley assembly (71) away from the take-up reel support (8). Move very little at a time as this adjustment is very critical. After adjustment is made, tighten screw.

Check adjustment as follows:

1. Do not load tape on recorder.

2. Place run-stop pointer (2) in the "Stop" position.

3. Place speed control pointer (1) in one of the three speed positions.

4. Grasp the major brake assembly (12) and pivot it toward the front of the recorder. The take-up reel support (8) must not turn when the brakes are released. If reel support (8) turns, belt (73) is too tight.

Brake Adjustments — (Refer To Figure 5)-

Check brake operation as follows before making adjustments:

1. Place a full 7" reel of tape on the take-up reel support (8) and an empty reel on the supply reel support (6). Do not place tape in head slot but run straight across from reel to reel. Place recorder in "Rewind" position and when tape is up to fastest speed, stop tape by depressing the "Fast Forward" button. Release immediately. Tape must not spill or throw loops.

2. Place nearly a full reel on the supply reel support (6) and thread tape straight across from reel to reel (not through head slot). Place run-stop control in the "Run" position (this eliminates holding fast forward button down). When tape has reached fastest speed, place run-stop control in the "Stop" position. Tape must not spill or throw loops.

If brakes require adjustment, do so as follows:

1. (For units with serial #14, 000 to 15, 200 only). Check the two dimensions as shown in Figure 5. Measure from inside bottom plate flange to edge of brake pivot bracket. This should measure 2 1/4". To adjust for both dimensions, loosen the two screws (A) and re-position the brake pivot bracket.

2. (This adjustment is for all units). Check space between brake lever cam and brake lever (35). There should be some play, about 1/64". Also check to see that the brake lever cam is approximately in the center of the control arm slide (45).

Test brake release in Fast Forward, Rewind, and Run. Brakes must release in all three positions.

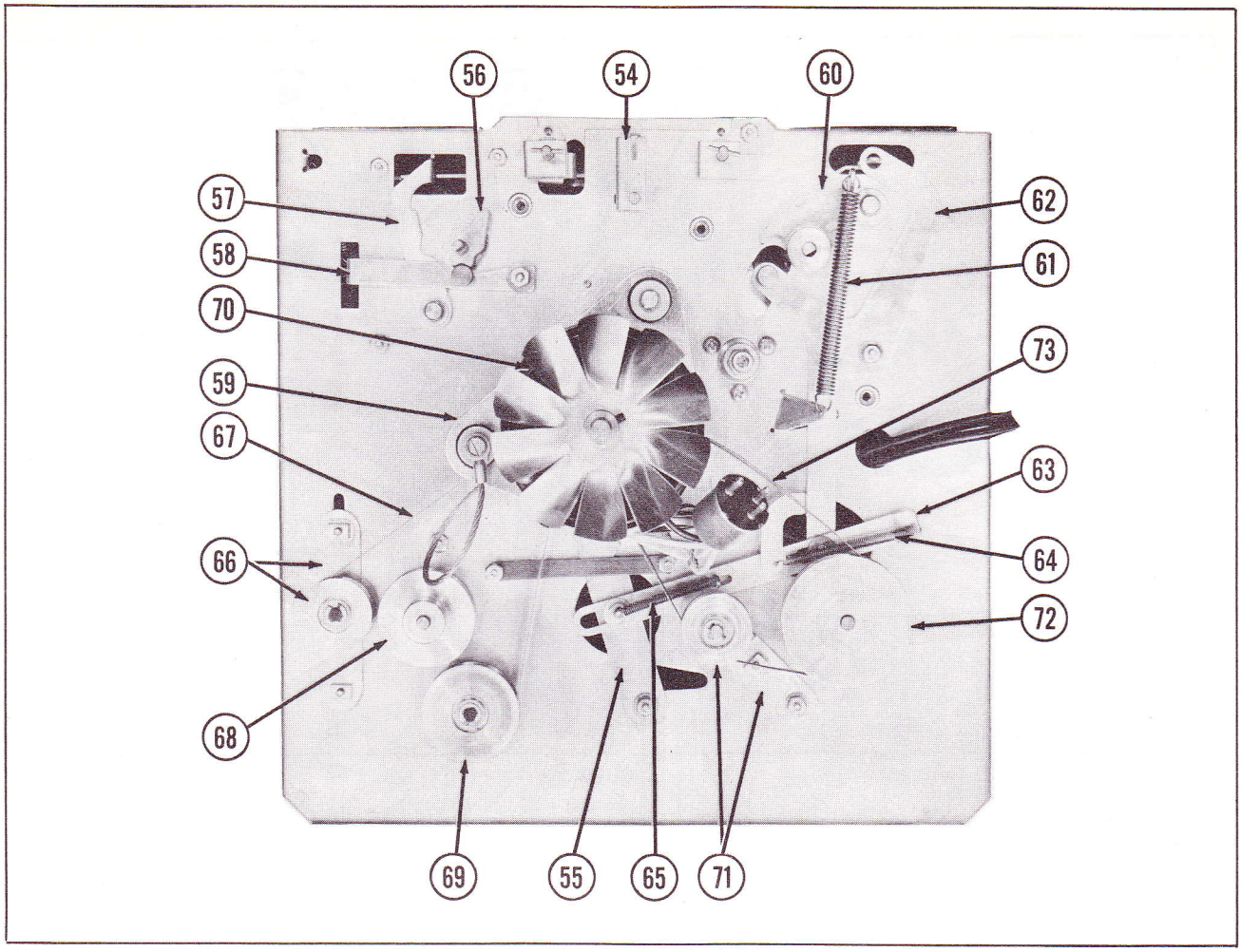


Figure 4

To change clearance between brake lever (35) and brake lever cam, loosen screws (B) holding brake lever bracket. Move bracket forward or backward to obtain the 1/64" spacing. Use this same adjustment to center cam in control arm slide (45). Move bracket to right or left to obtain correct spacing.

NOTE: (For units with serial #14,000 to 15,200 only). If brakes release more in one direction than another, that is more in fast forward than in rewind or visa versa, this can be equalized by sliding the brake lever bracket to the right or left after loosening screws (B).

Speed Slide Cam And Damper Adjustment-
(Refer To Exploded View And Figure 2)-

1. (For units with serial #14,000 to 15,200 and for units with serial numbers beginning with 25,000, 35,000 and 45,000). Speed cams (40), (41), and (42) must clear the control pins (point "C" Figure 2) by approximately 1/16" when that particular slide is engaged. Position of motor on motor mounting plate and position of motor mounting plate on spacers will effect this. See paragraph on motor mounting.

The control pins (point "C" Figure 2) must be in the center of the speed cam notch (40), (41), or (42), when that particular slide is engaged. To adjust, loosen set screw and turn cam. Spacing between the phenolic slides should be such that they are parallel to top and bottom plates. If a phenolic washer is used above cam, space between cam and slide is about .008 inch, if no washer, about .025 inches. Slide cam (40), (41), and (42) up or down to adjust. Adjust bottom cam (42) first.

2. (For units with serial #14,000 to 15,200 only). The phenolic slides must clear the sides of speed slide bracket (44) when that particular slide is engaged. Speed slide bracket (44) should be located as near the motor pulley and pressure roller (22) as the mounting slots will permit. This will allow full use of the slide springs.

3. (This applies to all units). The speed slide dampers (point "D" Figure 2) must press down firmly on the phenolic slides to hold idler wheels in position when engaged. However, this damper spring must not interfere with the smooth operation of the slide against its spring tension. Adjust damper springs carefully with mounting screws on side of speed slide bracket (44).

Capstan Actuating Cam (30) Adjustment-

The capstan actuating cam (30) must have some end play between top plate (24) and the capstan pressure arm (27). Also, there must be some play between cam (30) and flywheel (29). To adjust, turn run-stop control (2) to "Run". Loosen set screw in cam hub

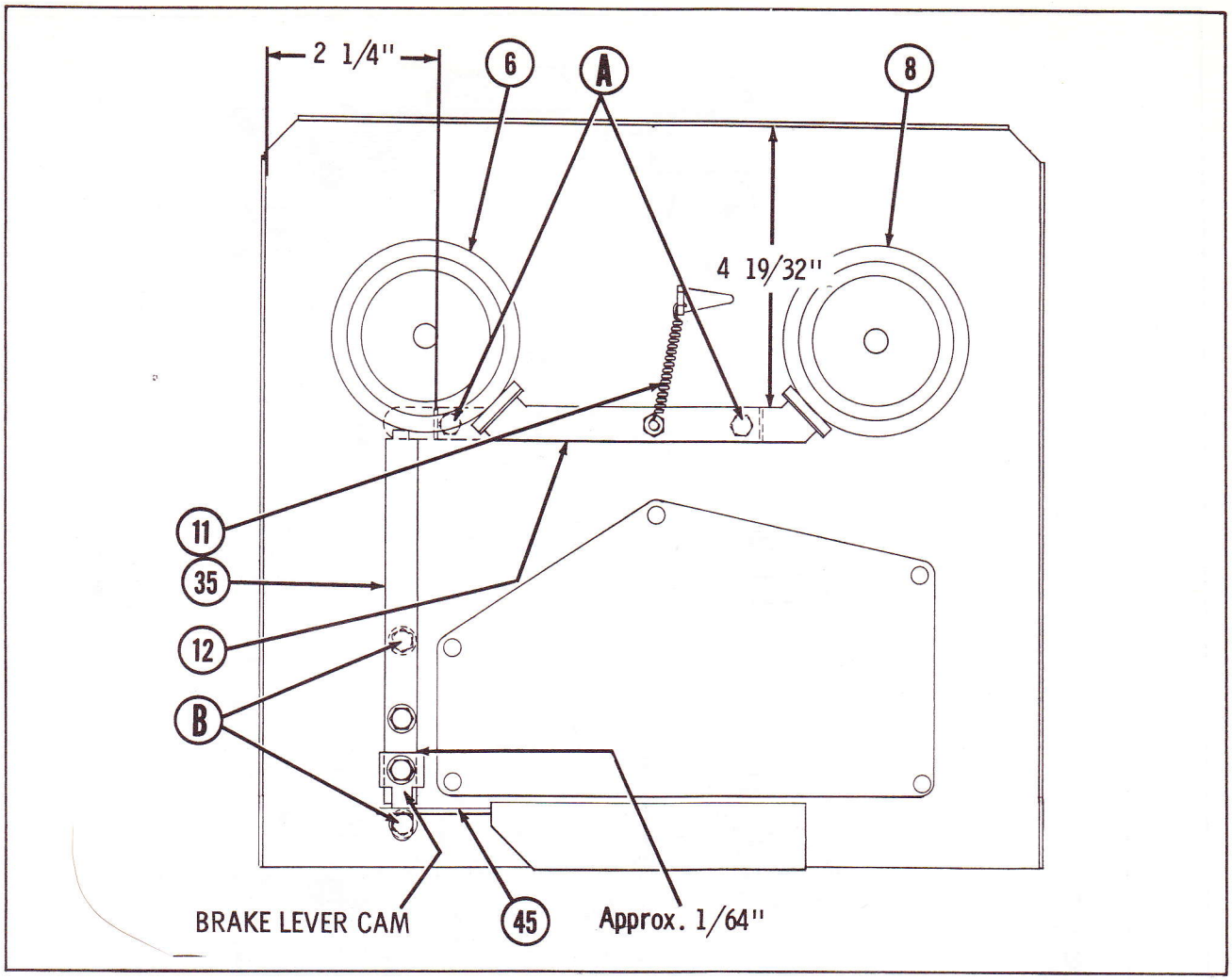


Figure 5

and slide cam (30) up or down. While making this adjustment, push wrench toward rear (turning cam) until pressure roller (22) is pushed away from the capstan shaft. Now, back up (pull wrench toward front) and after pressure roller (22) meets capstan shaft, move still further to provide some clearance. Check height of cam (30) again and tighten set screw.

Record Safety Release Cam (31) Adjustment-

(For units with serial #14,000 to 15,200 and for units with serial number beginning with 25,000 and 35,000). Adjust record safety release cam (31) with the run-stop control (2) in the "Run" position. With the point of the cam to the left, adjust cam so that the front diagonal slope of the pointer is parallel to the front of the bottom plate. Adjust height so that it contacts record safety release (point "E" Figure 2) approximately in the center.

With control (2) still in the "Run" position, adjust the safety release (point "E" Figure 2) so that it points to the center of the run-stop control shaft. Adjust by sliding to right or left in the slotted hole. Keep at right angles to the bottom plate. Tighten screw.

When properly adjusted, the red record button should return to its "up" position when run-stop control (2) is placed in the "Stop" position.

Motor Mounting And Spacing Adjustment-

(For units with serial #14,000 to 15,200). The motor mounting plate (59) is mounted on rubber shock mounts and if replaced or removed for any reason the spacing between flywheel (29) and the largest diameter of the motor pulley should be checked. This dimension should be .410 to .420 inches and can be accomplished by moving the motor plate on its spacers (3 hex. nuts) or by moving the motor on the plate (2 hex. nuts).

At the same time above dimension is checked, check the control pin adjustment as described under "Speed Slide Cam And Damper Adjustment". The motor must be positioned to meet both of these dimensions for good operation.

Volume And Tone Control Alignment-

If the volume or tone controls bind when rotated in either direction, remedy as follows: Remove driver linkage from both controls. Loosen hex. nut on both controls. Use another 3/8 - 32 nut and lock down tight on top of first nut, both controls. This will allow .010 to .012 play in the control shafts and will prevent binding.

Hum Adjustment-

The hum adjustment is located on right center of recorder, looking at vent opening with recorder resting

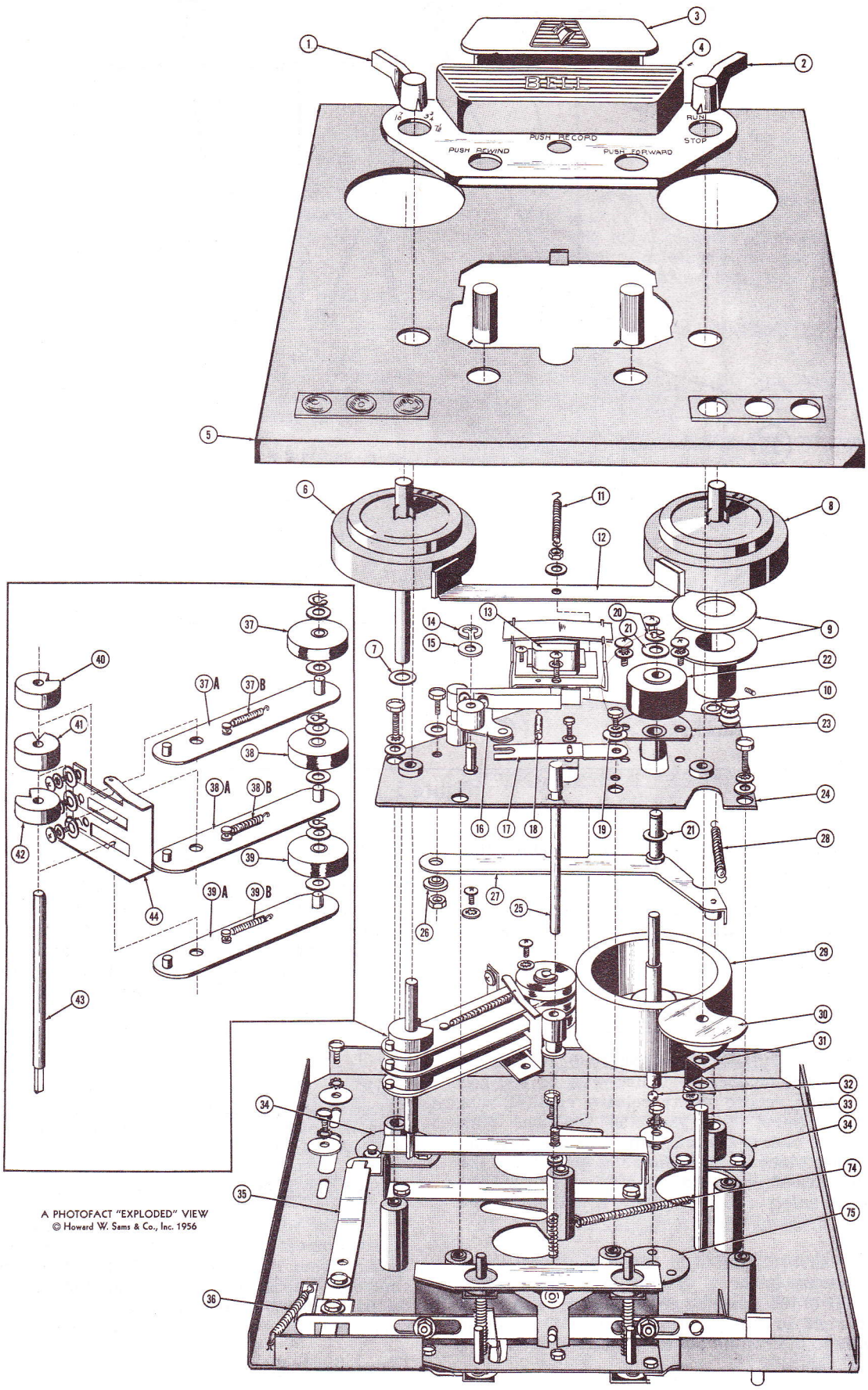


Figure 6A. Exploded View Of Parts Above Baseplate.

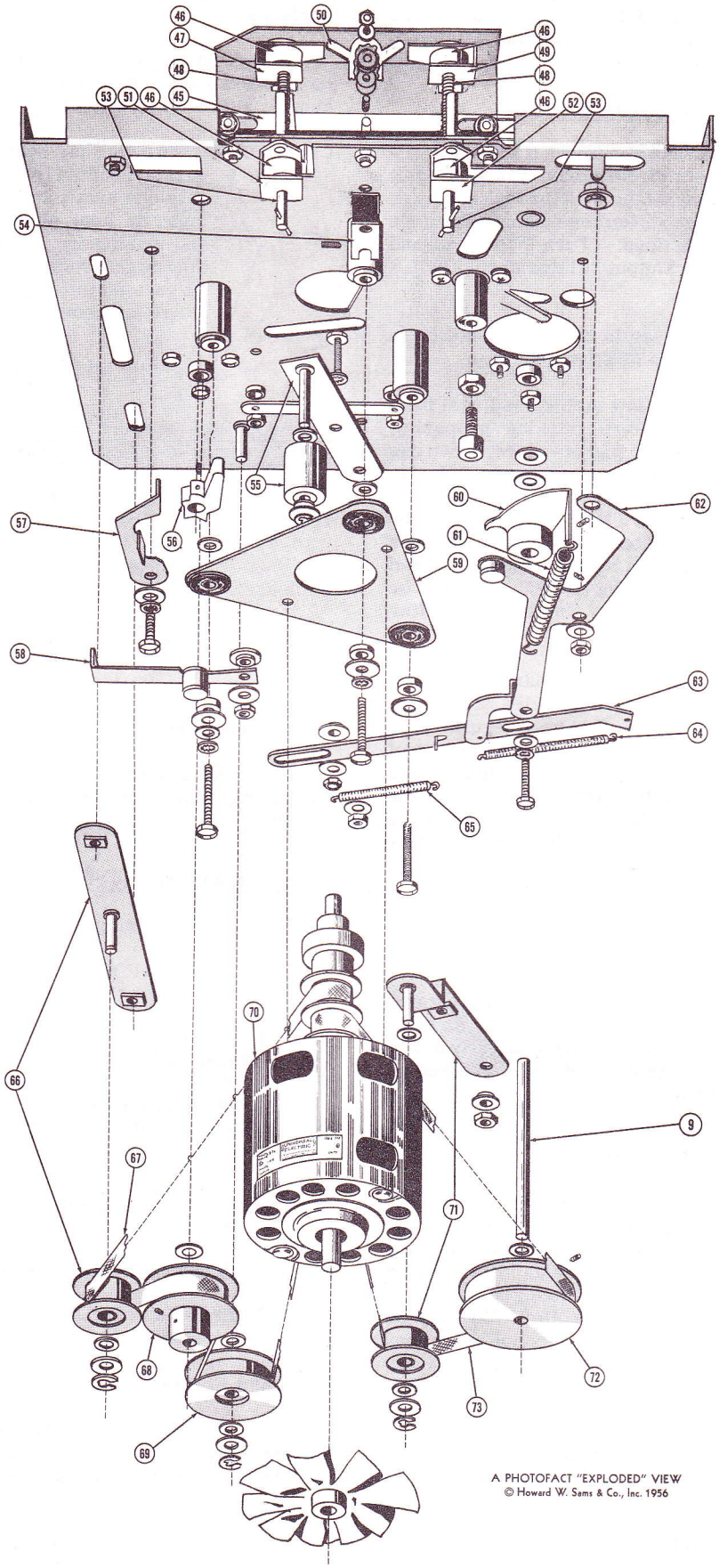


Figure 6B. Exploded View Of Parts Below Baseplate.

on back of case. To adjust, position recorder away from all strong electrical fields, such as transformers in amplifiers, motors, etc. Adjust with "Volume" and "Tone" controls at maximum. Adjust for minimum hum. Try line cord plug both ways.

Head And Pressure Pad Adjustments-

To properly check head alignment it is necessary to have a reel of pre-recorded alignment tape of 1 mil wave length. Play alignment tape back through recorder with an A. C. vacuum tube voltmeter connected across the speaker or 3.2 ohm load. Turn "Volume" and "Tone" controls full on. Output voltage should be 1.3 volts or higher.

CAUTION: Be sure recorder is in "Play" position to prevent erasure of alignment tape.

Three things can cause low meter readings) providing amplifier and tubes are working properly). Dirty head, improper pressure pad pressure, or wrong head alignment angle. Check these things as follows:

1. Check head to be sure there is no dirt on the pole piece or bakelite portion. Dirt holds the tape away from the pole piece and lowers output. If head is dirty, clean with head cleaning solvent, alcohol, or carbon tetrachloride. Wipe dry immediately after cleaning.

2. Adjust pressure pads so that maximum signal can be had with maximum pressure on poles of 1 ounce. Adjust record-play pad first. For best results, this pad should be shifted slightly to the right of center of pole. After maximum output is obtained, adjust erase pad. Hold pressure pad bracket (16) while pulling erase pad spring back with a spring scale. Adjust for a maximum reading of 1 ounce. Re-check record-play pad.

NOTE: Adjustment of either pad may affect the other, which means when adjustment is made to one pad, the other pad must also be checked.

3. Head alignment is accomplished by turning the screw (point "F" Figure 1) which is located directly to the left of the head. Turn this screw slightly in and out until the maximum voltage reading is obtained on the A. C. vacuum tube voltmeter.

CLEANING

The capstan shaft, pressure roller, tape guide, and play-record-erase head are subject to an accumulation of tape coating oxide which is worn off the tape as it passes these parts. These parts should be cleaned approximately every ten hours of running time. All of these parts except the pressure roller (22) may be cleaned with head cleaning solvent, alcohol, or carbon tetrachloride. Use alcohol or water when cleaning the pressure roller; never use carbon tetrachloride when cleaning any rubber driving surface.

CAUTION: To prevent scratching the head pole pieces, never use a metal tool when cleaning.

LUBRICATION

1. All the wiping surfaces of mechanical linkages should be free of dirt and foreign material and be lubricated with a very light grease. This lubricant should be at point of friction only and wiped clean from other surfaces.

2. All pulleys, rollers, and rotating shafts should be cleaned with a dry soft cloth and lubricated with 1 drop of #10 or 20 motor oil.

CAUTION: When oiling any bearing on which a rubber part is mounted, or part using a belt, apply only one small drop of oil. Oil and grease must be kept off all rubber idlers, belts and periphery of flywheel and off parts that might transfer oil or grease to them. Be sure no oil is on the portion of capstan extending above baseplate.

TROUBLES AND REMEDIES

Take-Up Reel Support (8) Will Not Take Up Tape In Play, Record, Or Fast Forward-

1. Fast forward spring (65) disconnected or broken.

2. Take-up belt (73) may be too loose. Adjust as described under "Fast Forward Adjustment".

3. Set screw in forward pulley (72) may be loose, allowing pulley to turn on its shaft. Tighten set screw.

4. Set screw in clutch plate (9) may be loose. Tighten set screw.

5. Check take-up belt (73) and associated pulleys for oil or grease. If necessary, clean with a petroleum solvent.

Recorder Will Not Rewind Tape-

1. Rewind spring (64) disconnected or broken.

2. Rewind belt (67) improperly adjusted. Adjust as described under "Rewind Belt Adjustment".

3. Set screw in rewind pulley (68) loose, allowing pulley to turn on its shaft. Tighten set screw.

4. Check rewind belt (67) and associated pulleys for oil or grease. If necessary, clean with a petroleum solvent.

Tape Spills Or Throws Loops When Recorder Is Placed In "Stop" Position-

1. Brake spring (11) disconnected or broken.

2. Brake assembly (12) improperly adjusted. Adjust as described under "Brake Adjustments".

Wow And Flutter (Record Or Play Back)-

In analyzing the source of wow, it is helpful to observe whether the rate of wow coincides with the period of rotation of the capstan, pressure roller, or speed roller.

1. Check the capstan (29) bearings to see that they are a free-running fit, but not loose. Both shaft and nylon bearing surfaces must be perfectly smooth. Dirt or grit will cause motion-modulation of the tape

and result in a rough-type flutter. Play can sometimes be taken up (if not excessive) by loosening and shifting the top capstan support (23). Clean up shaft and bearing with absorbent tissue, smooth up and use one drop of light oil on re-assembly.

2. Oil thrown onto driving surfaces will cause poor drive, resulting in wow and flutter. Driving surfaces are motor pulley, speed slide rollers (37), (38), or (39), flywheel and capstan (29), and pressure roller (22). Clean with a soft absorbent tissue or cloth lightly dipped in a naptha-type thinner. Do not soak. Severe wow at capstan speed may be do to a bent capstan shaft.

3. If flutter is high at a particular speed, check speed roller. Observe roller as unit operates, roller must spin smoothly, in a plane parallel to plane of flywheel rotation, and without vibration. If speed roller climbs on shaft, motor may be tilted excessively (check motor mounts) or speed slide may be warped (replace). Vibrating speed slide may be due to a bad speed roller (check shaft fit and concentricity). Damper springs (point "D" Figure 2) must press lightly on slides, just enough to hold in position, but not so hard as to cause excessive friction and interfere with freedom of sliding action. See "Speed Slide Cam And Damper Adjustment".

4. If the motor is out of balance and vibrates excessively it will cause flutter at approximately motor speed (29 C. P. S.). This may be due to a bent motor shaft or fan or due to a slightly bent or eccentric motor pulley. A bad or vibrating belt can also cause motor vibration.

5. The capstan pressure roller (22) can cause wow at its rotational speed. Check for clean bearing surfaces, clean roller O. D. and be sure operation is smooth. Pressure roller (22) must engage against capstan surface squarely and uniformly. Check for smoothness of end-thrust washers. Replace roller, if necessary.

6. A vibrating take-up reel support (8) can also reflect flutter into the machine thru tape or belts. If this is the case, replace the take-up reel support.

A vibrating reel support may also be caused by:

A. A bent clutch plate shaft (Item 9, Fig. 6B). If bent, replace.

B. A rough or uneven clutch surface (9), particularly if the take-up reel bearing fit is too free. To check clutch felt surface, remove the take-up reel support (8) and run machine in play position while holding a broad-bladed tool close to the felt surface to observe vertical motion.

It is difficult to face off the felt clutch surface by hand, therefore, replace the clutch and the take-up reel bearing (34), if necessary.

When the machine appears to function properly, hold the take-up reel support (8) above clutch plate (9) and run unit in play position. Lower the take-up reel support lightly against the clutch, only very slight vibration should be felt.

METHODS OF NOISE REDUCTION

1. Noisy drive idler bracket (55). If the drive idler bracket rattles against the baseplate, glue a piece of varnished cambric cloth on top of the bracket to prevent metal-to-metal contact. Light grease applied to the bracket and pivot will also help reduce noise.

2. Take-up reel support (8) noise. Place machine in run position without using tape. Lower the take-up reel support lightly against clutch plate (9), only very slight vibration should be felt. If vibration is excessive, replace clutch plate assembly (9).

3. Excessive take-up belt (73) noise. If the take-up belt is rubbing the bottom flange of the motor pulley, bend pulley bracket (71) slightly toward baseplate. If belt is riding high on motor pulley, bend down slightly.

4. Noisy pulleys. Remove pulleys and clean shafts and bearings carefully. Oil and replace with an extra nylon washer (A-23763P3), if there is sufficient clearance, so as to reduce end play to a minimum.

5. Noisy bearings. Noise caused by dirt and grit in bearings can usually be cured by careful cleaning of both shaft and bearing. If shaft or bearing is slightly scarred try smoothing off roughness with crocus cloth, if badly scarred, replace. Nylon washers help reduce bearing end-noise. Add 1 drop of #10 or 20 oil upon assembly.

6. Noises heard when the volume is turned up (i. e. coming from the loudspeaker) may be due to vibration of the first 12AY7 tube (V1) in the amplifier. This tube may be microphonic and excited into vibration by the motor. Check the motor isolation and try a new 12AY7 tube to effect a cure.

AMPLIFIER TESTS AND REPAIRS

1. Check all tubes, inspect wiring and play-record slide switch (M4) for poor or open connections.

2. Test all five jacks for open or shorted circuits. These jacks must not be grounded.

3. Refer to schematic for all voltage and resistance readings.

4. Test bias oscillator as follows: Connect an A. C. vacuum tube voltmeter across the erase head winding at the play-record-erase head socket. Due to frequency, use unshielded wiring. Place recorder in "Record" position. Voltage should be a minimum of 58 volts.

Check bias and erase frequency with a signal generator and scope. This should be 58 to 63KC.

Check bias voltage across play-record head winding at play-record-erase head socket.

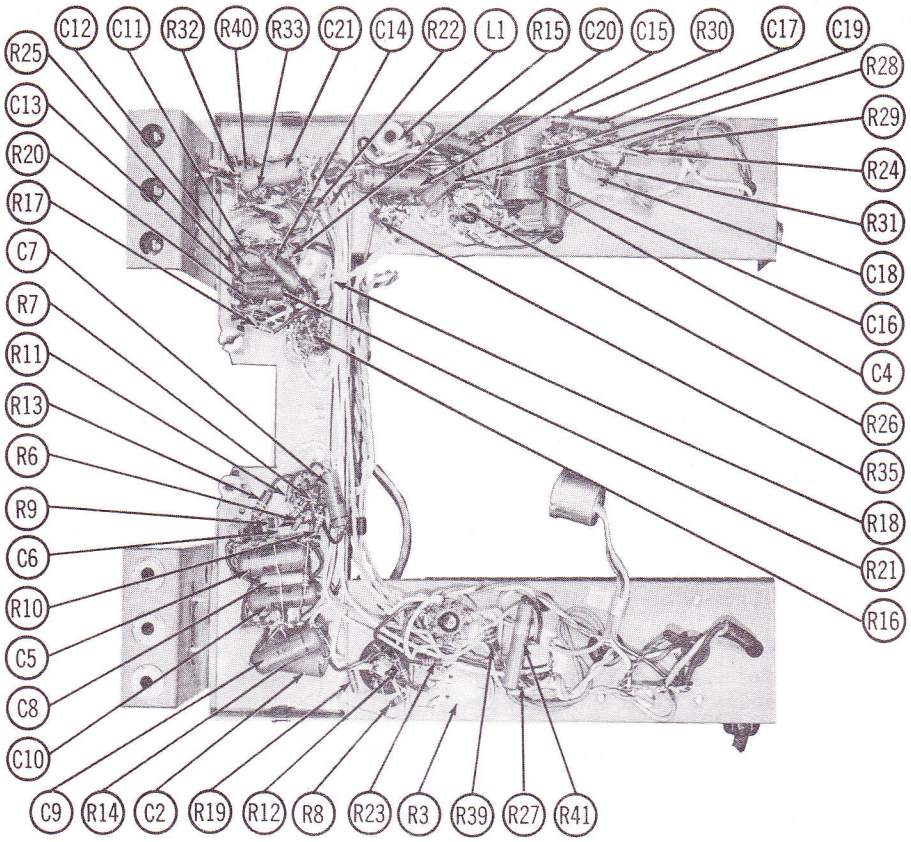
A. At 7 1/2 i. p. s. minimum of 35 volts.

B. At 3 3/4 i. p. s. minimum of 14 volts.

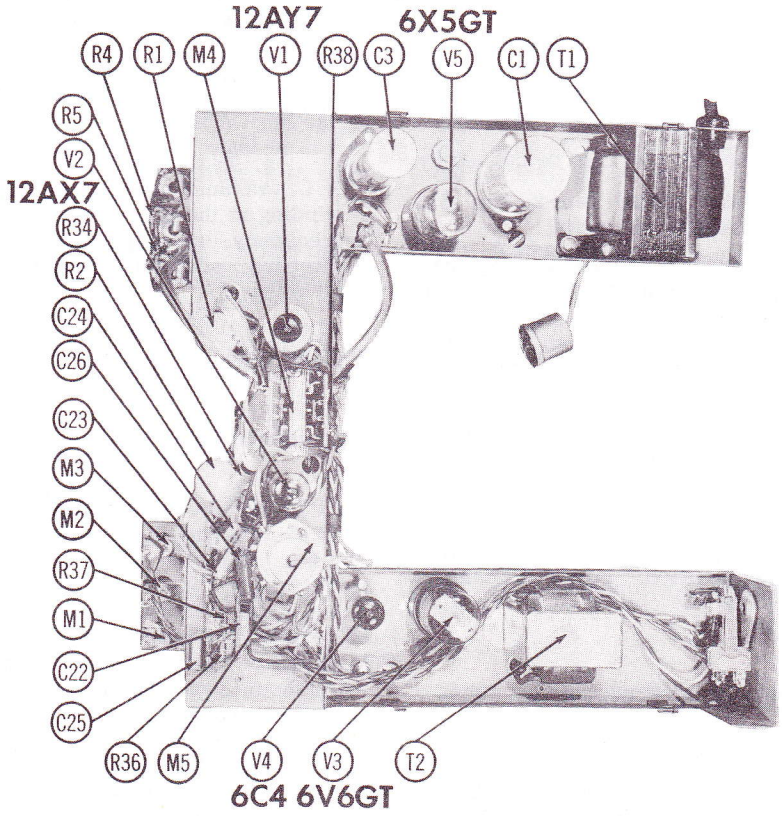
C. At 1 7/8 i. p. s. minimum of 10 volts.

5. The play-record-erase head may be tested for continuity if suspected of being open. The erase winding should be approximately 10 ohms and the play-record winding about 160 ohms.

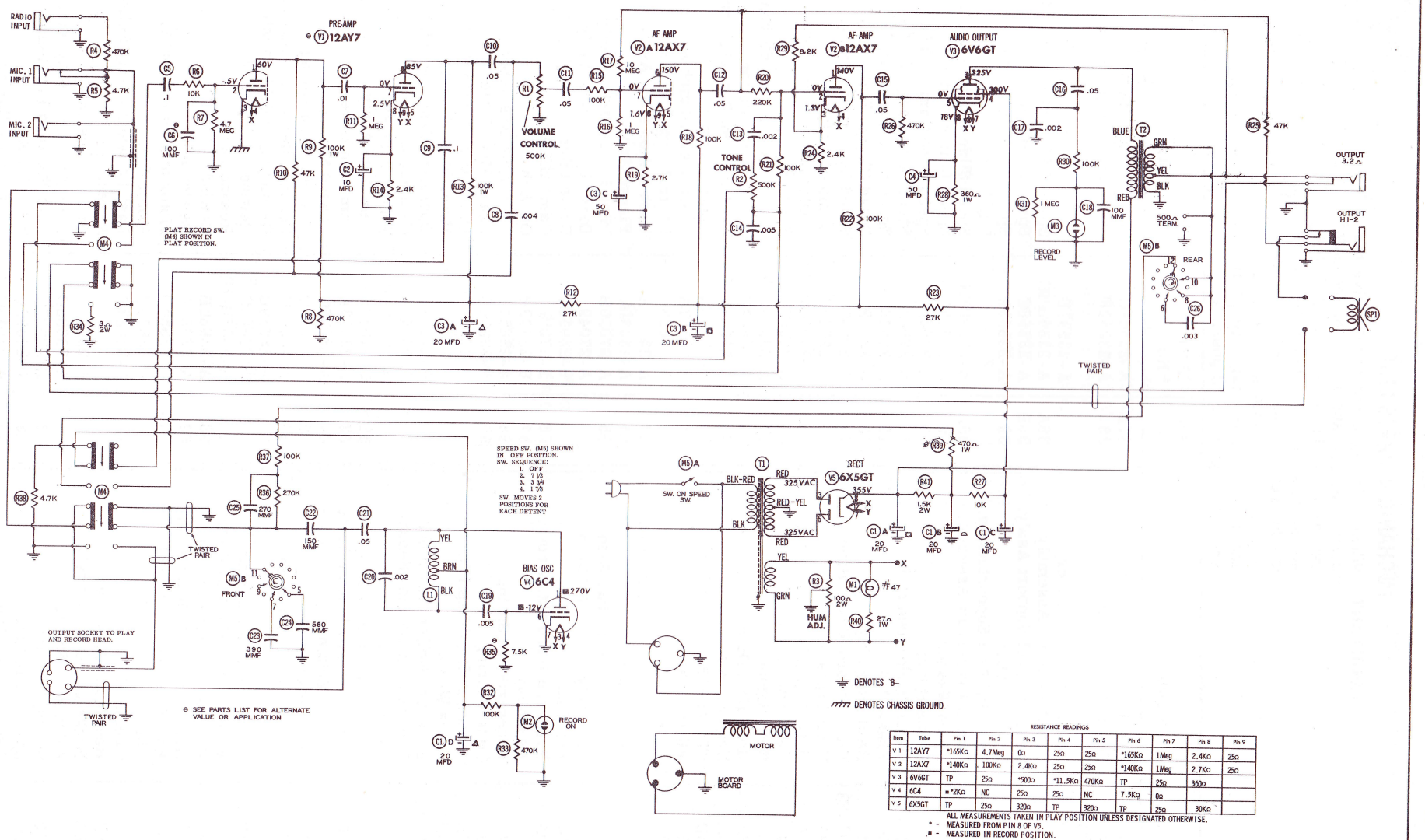
CAUTION: Whenever the head is tested for continuity it will become magnetized to some extent. Therefore, always demagnetize head after testing.



TOP VIEW OF AMPLIFIER.



BOTTOM VIEW OF AMPLIFIER.



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AY7	*165KΩ	4.7Meg	0Ω	25Ω	25Ω	*165KΩ	1Meg	2.4KΩ	25Ω
V 2	12AX7	*140KΩ	100KΩ	2.4KΩ	25Ω	25Ω	*140KΩ	1Meg	2.7KΩ	25Ω
V 3	6V6GT	TP	25Ω	*500Ω	*11.5KΩ	470KΩ	TP	25Ω	360Ω	
V 4	6C4	■ *2KΩ	NC	25Ω	25Ω	NC	7.5KΩ	0Ω		
V 5	6X5GT	TP	25Ω	320Ω	TP	320Ω	TP	25Ω	30KΩ	

ALL MEASUREMENTS TAKEN IN PLAY POSITION UNLESS DESIGNATED OTHERWISE.
* - MEASURED FROM PIN 8 OF V5.
■ - MEASURED IN RECORD POSITION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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MODEL RT-75 SCHEMATIC DIAGRAM.

BELL
MODEL RT-75

MECHANICAL PARTS LIST

IMPORTANT: When ordering parts always give the serial number and model of the unit that parts are being ordered for. The serial number is located on the grille at the rear of the case. It is most important that this number be given and that defective parts be returned when placing order, if possible.

Ref. No.	Part No.	Description
1	A-23628	Speed Control Pointer
2	A-23628	Run and Stop Pointer
3	C-23647D	Head Cover
4	C-23648D	Pressure Roller Cover
5	D-23821A	Top Deck Plate Assembly
6	B-23804J	Take-Up Reel Support Ass'y.
7	A-23763P1B	Nylon Washer
8	B-23805L	Take-Up Reel Support Ass'y.
9	A-23866D	Clutch Plate Shaft Assembly
10	A-23763P1B	Nylon Washer
11	A-23561C	Brake Spring
12	B-23983	Major Brake Assembly
	A-23578	Brake Pad
13	A-23663	Head Assembly
	B-23712(P1)B	Play-Record-Erase Head
	A-23528A	Head Bracket
	A-23530A	Head Adj. Plate
	A-23622	Head Adj. Pivot
	A-23621C	Head Spring
	A-23623A	Head Hold Down
	A-23529A	Head Spacer
14	A-23822D	"Truarc" Retaining Ring
15	A-23636	Fiber Washer
16	A-23659F	Pressure Pad Brkt. Ass'y.
	A-23876E	Play-Record Pressure Pad Arm Assembly
	A-23875E	Erase Pressure Pad Arm Assembly
	A-25331A	Felt Pad
17	A-23660A	Pressure Pad Brkt. Arm Assembly
18	A-23562C	Pressure Pad Spring
19	A-23758	Slide Bearing
20	A-23822D	"Truarc" Retaining Ring
21	A-23763P2B	Nylon Washer
22	A-23518P1E	Pressure Roller Assembly
23	A-24000	Top Capstan Bearing Support Assembly
24	C-23655A	Top Plate Sub-Assembly
25	A-23837D	Record Interlock Shaft Ass'y.
	A-23764	Record Button
26	A-23758B	Slide Bearing
27	A-23657	Capstan Pressure Arm Assembly
28	A-23548C	Pressure Roller Spring
29	A-23790	Flywheel and Capstan Ass'y.
30	A-23515C	Pressure Roller Cam Ass'y.
31		Record Safety Release Cam
32	A-23870	Ball Bearing - Flywheel Thrust
33	A-23761	Cam Shaft
34	A-23681F	Reel Stand Assembly
35	A-23678D	Brake Lever Arm Ass'y.
36	A-23697	Index Arm Spring
	A-23842P3	Spring Damper
37	A-23851E	Speed Slide Roller Assembly - 1 7/8
	A-23536B	Speed Roller (1 7/8)
37A	A-23801P1C	Speed Slide Ass'y. - 1 7/8
37B	A-23558C	Speed Roller Spring
38	A-23852E	Speed Slide Roller Ass'y. - 3 3/4
	A-23537B	Speed Roller (3 3/4 and 7 1/2)
38A	A-23801P1C	Speed Slide Ass'y. - 3 3/4
38B	A-23558C	Speed Roller Spring
39	A-23853E	Speed Slide Roller Ass'y. - 7 1/2
39A	A-23801P2C	Speed Slide Ass'y. - 7 1/2
39B	A-23558C	Speed Roller Spring
40	A-27041	Speed Slide Cam - 1 7/8
41	A-27042	Speed Slide Cam - 3 3/4
42	A-27043	Speed Slide Cam - 7 1/2
43	A-23762	Speed Change Shaft
44	A-23803C	Speed Slide Brkt. Ass'y.
	A-23538C	Damper Spring
45	B-23970F	Control Arm Slide Ass'y.
46	A-23588D	Nut Control
47	A-23568P2E	Control Arm Stop (left hand)
48	A-23642C	Spring (Push Button)
49	A-23568P1E	Control Arm Stop (right hand)
50	A-23772A	Control Arm
51	A-23667A	Control Arm Latch Ass'y.
52	A-23668	Control Arm Stop Ass'y.
53	A-23742A	Push Button Shaft Ass'y.
54	A-23631A	Flange Arm
55	A-27050B	Idler Pulley Drive Ass'y.
	A-27049	Drive Idler Brkt. Ass'y.
	B-23952C	Drive Idler
56	B-27019	Cam, Off Arm
57	B-23733B	Off Arm
58	A-23854	Index Arm Assembly
59	B-23958B	Motor Mtg. Plate
	B-20029P41	Motor Mtg. Grommet
	A-23607A	Motor Mtg. Spacer
60	B-27026	Operating Cam Assembly
61	A-23546D	Cam Spring
	A-23842P1C	Spring Damper
62	B-27029	Cam Arm Ass'y.
63	A-23583A	Cam Arm Lever
64	A-23596C	Rewind Spring
65	A-23597C	Fast Forward Spring
66	A-23860C	Rewind Idler Pulley Ass'y.
	A-23689E	Rewind Idler Brkt. Ass'y.
	A-23883C	Rewind Idler Pulley
67	A-23661P2B	Rewind Belt
68	A-23886B	Rewind Pulley
69	A-23665F	Rewind Idler
70	C-23654G	Motor and Pulley Ass'y.
	A-23634C	Motor Fan
71	A-23862E	Fast Forward - Play Pulley Assembly
	A-23691C	Bracket Assembly
	A-23885D	Fast Forward - Play Idler
72	B-23887C	Fast Forward Belt Pulley
73	A-23662B	Take-Up Belt
74	A-23843C	Idler Return Spring
75	A-27044	Capstan Bottom Bearing Assembly

ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description
V1	12AY7	12AY7, Pre-Amplifier
V2	12AX7	12AX7, AF Amplifier
V3	6V6GT	6V6GT, Audio Output
V4	6C4	6C4, Bias Osc.
V5	6X5GT	6X5GT, Rectifier
C1A	B-20048P24	Elect. Cap., 20MFD. @ 450V.
C1B		Elect. Cap., 20MFD. @ 450V.
C1C		Elect. Cap., 20MFD. @ 450V.
C1D		Elect. Cap., 20MFD. @ 450V.
C2	B-20053P5	Elect. Cap., 10MFD. @ 25V.
C3A	B-20048P28	Elect. Cap., 20MFD. @ 450V.
C3B		Elect. Cap., 20MFD. @ 450V.
C3C		Elect. Cap., 50MFD. @ 50V.
C4	B-20053P25	Elect. Cap., 50MFD. @ 50V.
C5	B-20047P98	Cap., .1MFD. @ 200V.
C6♦	B-20049P7	Cap., 100MMF. @ 500V.
C7	B-20047P56	Cap., .01MFD. @ 400V.
C8	B-20047P24	Cap., .004MFD. @ 400V.
C9	B-20047P98	Cap., .1MFD. @ 200V.
C10	B-20047P81	Cap., .05MFD. @ 400V.
C11	B-20047P81	Cap., .05MFD. @ 400V.
C12	B-20047P81	Cap., .05MFD. @ 400V.
C13	B-20047P17	Cap., .002MFD. @ 400V.
C14	B-20047P86	Cap., .005MFD. @ 400V.
C15	B-20047P81	Cap., .05MFD. @ 400V.
C16	B-20047P81	Cap., .05MFD. @ 400V.
C17	B-20047P17	Cap., .002MFD. @ 400V.
C18	B-20049P7	Cap., 100MMF. @ 500V.
C19	B-20047P86	Cap., .005MFD. @ 400V.
C20	B-20047P17	Cap., .002MFD. @ 400V.
C21	B-20047P81	Cap., .05MFD. @ 400V.
C22	B-20049P98	Cap., 150MMF. @ 500V.
C23	B-20049P66	Cap., 390MMF. @ 500V.
C24	B-20049P68	Cap., 560MMF. @ 500V.
C25	B-20049P64	Cap., 270MMF. @ 500V.
C26	B-20047P92	Cap., .003MMF. @ 400V.
R1	B-20066P130	Volume Control, 500KΩ, 1/2 Watt
R2	B-20066P130	Tone Control, 500KΩ, 1/2 Watt
R3	B-20066P72	Hum Adj. Cont., 100Ω, 2 Watt, W.W.
R4		Resistor, 470KΩ, 1/2 Watt
R5		Resistor, 4700Ω, 1/2 Watt
R6		Resistor, 10KΩ, 1/2 Watt
R7		Resistor, 4.7Meg., 1/2 Watt
R8		Resistor, 470KΩ, 1/2 Watt
R9		Resistor, 100KΩ, 1 Watt
R10		Resistor, 47KΩ, 5%, 1/2 Watt
R11		Resistor, 1Meg., 1/2 Watt
R12		Resistor, 27KΩ, 1/2 Watt
R13		Resistor, 100KΩ, 1 Watt
R14		Resistor, 2400Ω, 5%, 1/2 Watt
R15		Resistor, 100KΩ, 1/2 Watt
R16		Resistor, 1Meg., 1/2 Watt
R17		Resistor, 10Meg., 1/2 Watt
R18		Resistor, 100KΩ, 1/2 Watt
R19		Resistor, 2700Ω, 1/2 Watt
R20		Resistor, 220KΩ, 1/2 Watt
R21		Resistor, 100KΩ, 1/2 Watt
R22		Resistor, 100KΩ, 1/2 Watt
R23		Resistor, 27KΩ, 1/2 Watt
R24		Resistor, 2400Ω, 5%, 1/2 Watt
R25		Resistor, 47KΩ, 1/2 Watt
R26		Resistor, 470KΩ, 1/2 Watt
R27		Resistor, 10KΩ, 1/2 Watt
R28		Resistor, 360Ω, 5%, 1 Watt
R29		Resistor, 8200Ω, 1/2 Watt
R30		Resistor, 100KΩ, 1/2 Watt
R31		Resistor, 1Meg., 1/2 Watt
R32		Resistor, 100KΩ, 1/2 Watt
R33		Resistor, 470KΩ, 1/2 Watt
R34		Resistor, 3Ω, 2 Watt
R35*		Resistor, 7500Ω, 5%, 1/2 Watt
R36		Resistor, 270KΩ, 1/2 Watt
R37		Resistor, 100KΩ, 1/2 Watt
R38		Resistor, 4700Ω, 1/2 Watt
R39**		Resistor, 470Ω, 1 Watt
R40		Resistor, 27Ω, 1 Watt
R41		Resistor, 1500Ω, 2 Watt
T1	B-20272	Power Transformer
T2	B-20204	Audio Output Transformer
SP1	B-20111P28	6" x 9" P.M. Speaker, 3.2Ω
L1	B-23704	Bias Osc. Coil
M1		Pilot Light, Type #47
M2		Neon Lamp, NE51 (Record "On")
M3		Neon Lamp, NE51 (Record Level)
M4	B-23705C	Play-Record Switch
M5A	B-20033P7	On-Off Switch
M5B		Speed Equalization Switch

♦ Some Models use a 470MMF. capacitor in this application, part #B-20049P87.

* Some Models use a 10KΩ, 1/2 Watt resistor in this application.

** Some Models use a 1500Ω 1 Watt resistor in this application.