

PT6-A INSTRUCTION MANUAL



**SALES OFFICE AND FACTORY
225 WEST OHIO STREET
CHICAGO 10, ILL.**

OPERATING PROCEDURE FOR FAST FORWARD IN PT6-AH RECORDER MECHANISM

With the recorder set up in the normal operating condition and threaded with tape, set the control knob to STOP. Depressing the high speed knob clockwise to the right will start the main drive motor and engage the intermediate rubber drive wheel between the motor shaft and hub of the takeup shaft clutch. This will cause the right hand spool to rotate clockwise, thus winding the tape forward. Total forward winding time of 7" spool is approximately three minutes.

If high speed forward lever is depressed while the mechanism is driving the tape in the normal forward manner, the high speed overdrive will be engaged and place an undue strain on the tape between the capstan and take-up reel. It will be noted that this speeds up the tape only slightly. This causes no harm mechanically but the program material speeded up will sound peculiar.

Copyright 1949, Magnecord, Inc.

PT6-A

INSTRUCTION MANUAL

DESCRIPTION:

The Magnecorder PT6-A is a tape recording mechanism designed for use in combination with the amplifiers and other units of the PT6 Series. It consists of a tape transport mechanism, erase head, record-reproduce head, bias oscillator and control switch, assembled into a single unit.

Filament current and plate current for the bias oscillator tube must be supplied by an external source if the PT6-A is not used in conjunction with one of the PT6 Series amplifiers.

STANDARD EQUIPMENT:

Every PT6-A unit is supplied with one type 12AU7 tube already mounted in its socket. This is the bias oscillator. Two sets of capstan-pressure roller combinations are furnished with each unit; one set for operation at 15 inches per second, the other for 7½ inches per second. One set is in place on the front panel, the other set is contained in a shipping bag. The capstans are provided with tapered holes to mate with the tapered capstan shaft on the front panel. The large capstan and small pressure roller combination provides for the higher tape speed.

INSTALLATION:

Four knurled-head screws in the corners of the front panel of the PT6-A mount it in its portable case or the Magnecorder rack amplifiers or rack panels designed for use with the PT6-A unit.

PREPARING THE PT6-A FOR OPERATION:

The PT6-A motors and oscillator tube receive their power through the male Jones connector on the rear of the unit. See schematic for terminal designation. Motor operating power, oscillator filament power and plate supply voltage are supplied by the Magnecorder PT6 Series amplifiers. The female Cannon connector on the

rear of the PT6-A is connected to the record-reproduce head. See schematic.

(1) Make sure the oscillator tube located in the rear and at the right side is secure in its socket.

(2) Set the control knob (1 in Fig. 1) to "STOP".

(3) Make sure the correct capstan and pressure roller (2 & 10 in Fig. 1) are in place and that the knurled retaining screws are screwed down firmly. The small (7½"/sec) capstan operates with the large rubber covered pressure roller. Make sure that the tapered hole in the capstan and the tapered shaped capstan shaft are completely free of dirt or foreign particles before installing the capstan.

OPERATION:

(Operator facing front panel)

→ Note: Warped supply and/or take-up reels may interfere with the movement of the tape thus producing wows and flutter. The flanges of the warped reels should be straightened by bending them outwards and applying heat so that the plastic will soften and retain its new shape. ←

(1) Place the empty reel on the take-up spindle (3 in Fig. 1). Before a reel can be installed on the spindle it is necessary to remove the reel retainer by pushing it toward the unit and turning slightly counter-clockwise until the pins are released from the slots. Place the empty reel on the take-up spindle (3 in Fig. 1). Put the reel retainer on the shaft and push in until the 3 pins are in contact with the spindle. Make sure that the pins go down the slots in the end of the spindle and then turn the retainer slightly clockwise until it is locked in place.

(2) Place a loaded reel of tape on the supply spindle (5 in Fig. 1). The reel should be oriented so that the tape will unwind as the reel rotates clockwise. Tape should come off top of spool with coated, or dull side down.

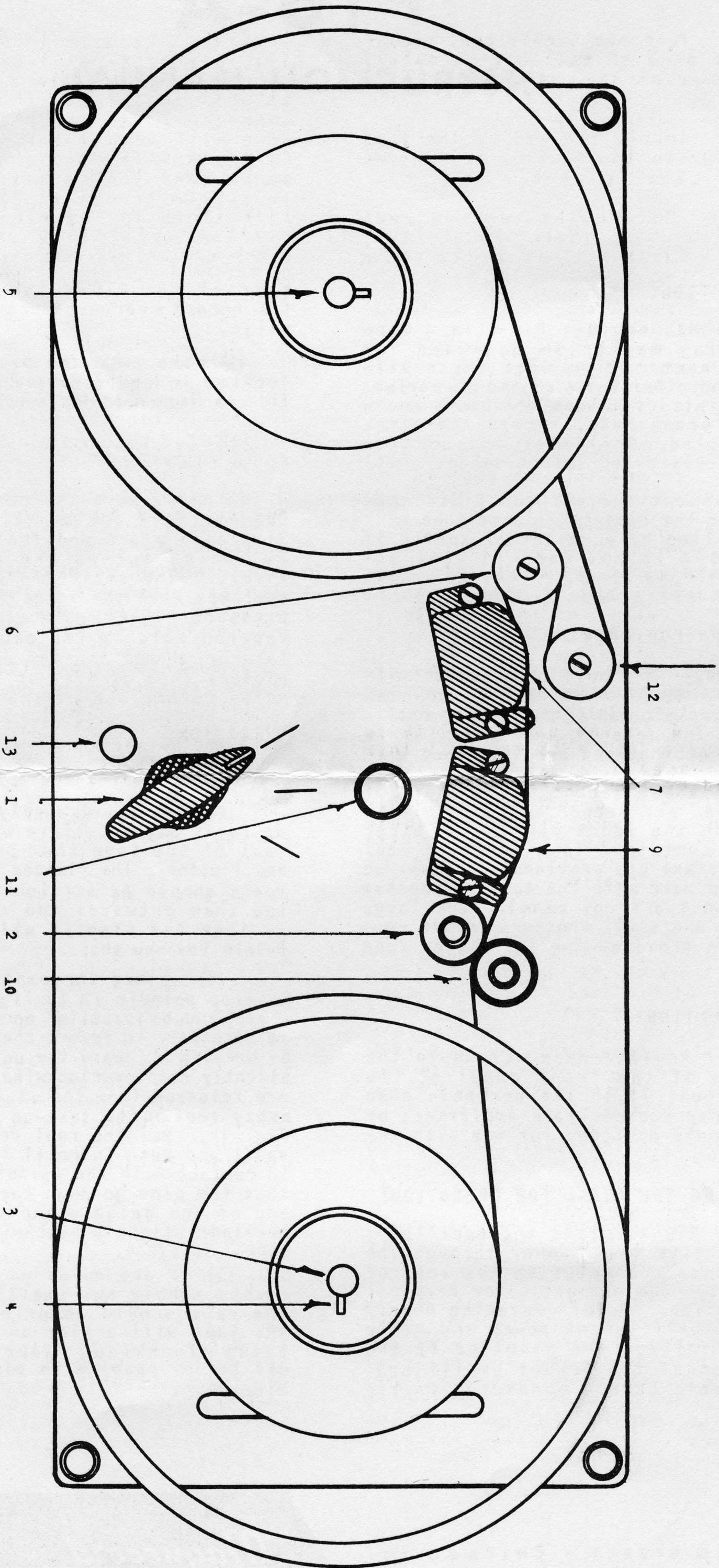


FIGURE 1

(3) Turn the supply reel clockwise by hand so that approximately 18 inches of tape or leader will unwind.

(4) Insert the end of the tape or leader in the slot on the inside of the take-up reel.

(5) Rotate the take-up reel clockwise until there are at least two full turns of tape on the reel.

(6) Slip the tape into its normal travel path; under the idler (6 in Fig. 1); over the erase head (7 in Fig. 1); over record-reproduce head (9 in Fig. 1); between capstan (2 in Fig. 1) and pressure roller (10 in Fig. 1).

(7) Rotate take-up reel to remove slack.

(8) Connect the unit to the Magrecorder PT6 amplifier. Note: If the PT6-A is to be used with some other amplifier, 117 volt 60 cycle AC must be supplied to the motors; and filament power at 6.3 volts .3 amperes and plate supply of 300 volts at 40 ma must be supplied to the oscillator tube. See schematic.

(9) Turn the control knob to "FORWARD". This puts the unit into forward operation at a speed determined by the capstan being used. If the tape does not move smoothly between the capstan and pressure roller, lift the pressure roller slightly to permit the tape to align itself properly.

(10) To rewind the tape, turn the control knob to "STOP", then place tape over lift bar so that the tape is lifted clear of the heads. Turn the control knob to "REWIND". The rewind mechanism, driven by a shaded pole motor, will completely rewind 1200 feet of tape (full 7½" reel) in approximately 40 seconds. The loaded reel will rotate at an increasingly higher speed as the tape is transferred back to the supply reel during rewind. The control knob may be turned to "STOP" at any time during rewind without danger of tape throw. Be sure that the tape is lowered to its normal position on the heads before attempting to record or reproduce.

Note: The control knob should never be turned quickly from "REWIND" to "FORWARD". If it is desired to reverse the direction of the tape travel from rewind to forward the knob must be turned to "STOP" and the tape allowed to come to a complete halt. Then the knob may be turned to "FORWARD".

(11) The bias indicator light (11 in Fig. 1) will glow when the oscillator tube plate supply voltage is applied through the Jones male connector. If the PT6-A is being used with any of the Magnecord PT6 Series amplifiers, the light will go on when the amplifier Selector Switch is turned to "RECORD". An inter-lock in the PT6-A will turn off the oscillator and the lamp whenever the PT6-A control is turned to "STOP" or "REWIND". See schematic.

SIGNAL INPUT:

It is necessary that the audio signal be suitably equalized both in recording and playback. Correct pre-emphasis and post-emphasis is supplied in the Magnecorder PT6 Series recording amplifiers by means of built-in circuits.

EQUALIZATION:

If the PT6-A, Basic Recorder Mechanism is to be used with some other amplifier, the curves shown in Figures 2 and 3 will be of value in the design of proper equalizers. Figure 2 shows the desired frequency response for the signal current fed into the recording head (pre-emphasis). Figure 3 shows the desired frequency response of the amplifier that is fed by the reproduce head (post-emphasis). The combination of these characteristics will yield a substantially flat response at the output of the playback amplifier from 40 to 15,000 cycles with a tape speed of 15" per second. To obtain essentially flat response from 50 to 7500 cps using 7½" per second tape speed it is necessary to use Magnecord plug-in equalizer designed specifically for slower speed.

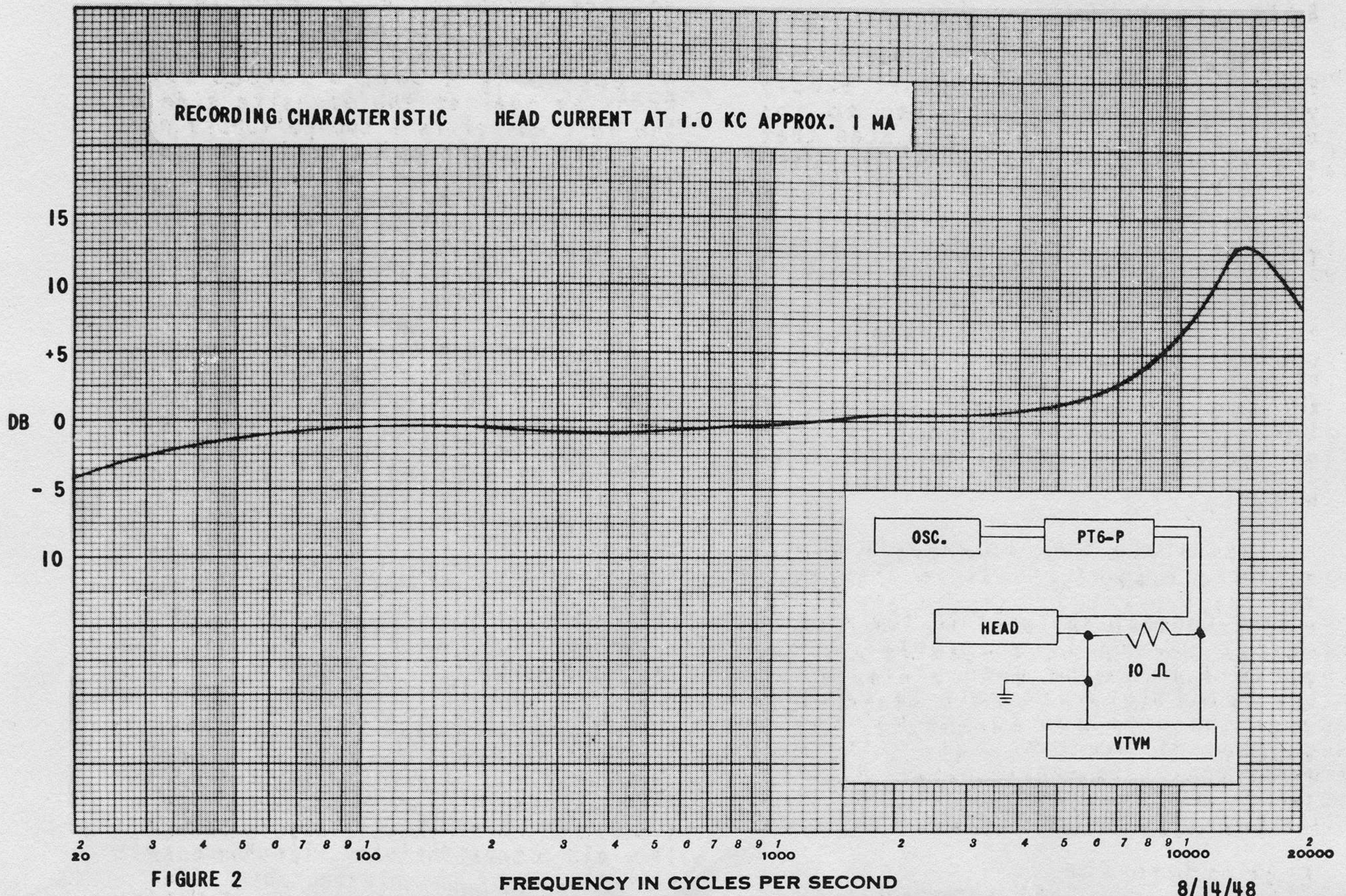
IMPEDANCE MATCHING:

When the head is used for reproducing purposes it should work into a transformer of 60 ohms input impedance. When the head is used for recording it should have a maximum current of approximately one milliamperes in its coils. This current should be developed through a resistor of approximately 600 ohms in series with the head. This resistor makes the head circuit effectively a resistive load.

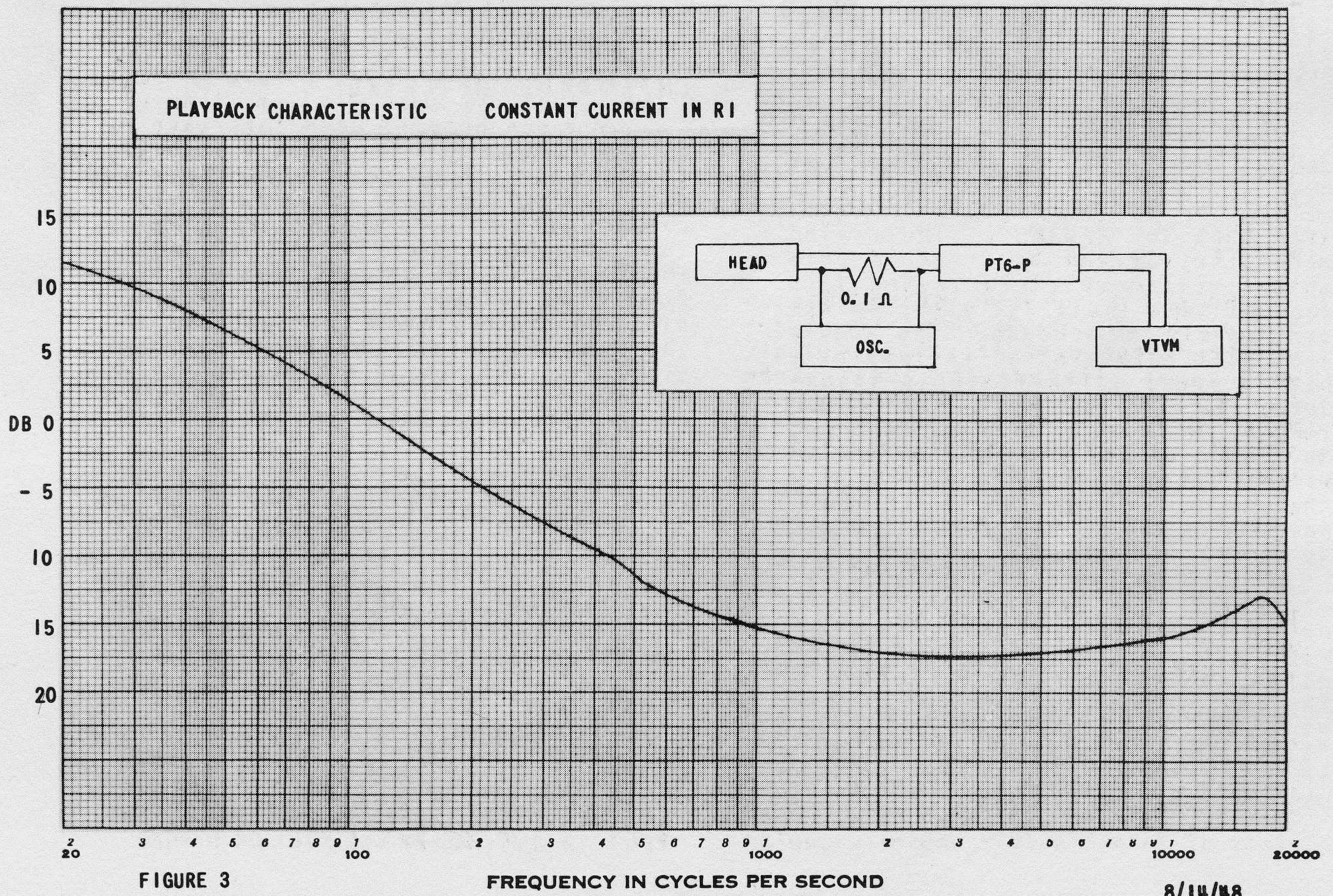
OSCILLATOR CURRENT SUPPLY:

Filament and plate current for the 12AU7 tube are supplied by Magnecorder PT6 Series amplifiers. If another amplifier is to be used a source of filament power of 6.3 volts at 0.3 amperes and plate power of 300 volts at 40 milliamperes must be supplied.

Note: The PT6-A is normally connected for 6.3 volts at 0.3 amperes for the oscillator tube heater. However, the connections to the tube may be changed for operation from 12.6 volts at 0.15 amperes. Refer to schematic.



MAGNETIC TAPE RECORDING AMPLIFIER CHARACTERISTIC



MAGNETIC TAPE PLAYBACK AMPLIFIER CHARACTERISTIC

BIAS INDICATOR:

The bias indicator lamp (II in Fig. 1) will glow when plate supply voltage is being supplied to the oscillator tube. This indicates that any previous recording on the tape is being erased and a new recording may be made.

TERMINAL DESIGNATIONS:

All electrical connections are made to the Jones male and Cannon female connectors located in the rear of the PT6-A. Signal circuits are fed through the Cannon connector, and power is fed through the Jones connector. See schematic for terminal designations.

MAINTENANCE:

The PT6-A Basic Recorder Mechanism is ruggedly built to withstand the requirements of studio and field use. Maintenance is of a minor nature and should the unit require any repairs due to accident or misuse, it should be returned to the distributor from whom it was purchased. When writing in regard to the unit, the type number, serial number shown on the license notice and also the date of purchase should be mentioned.

ELECTRICAL:

The 12AU7 oscillator tube should be checked occasionally.

MECHANICAL:

All bearings in the PT6-A are either of the self-oiling type or the wick-fed type. The unit is properly lubricated before it leaves the factory and should not require any further lubrication for at least six months. Information on lubrication is supplied in the PT6 Series Service Notes.

Note: It is imperative that no oil be allowed to accumulate on any of the rubber covered idlers as this will cause slippage and impair tape speed regulation. A soft cloth moistened with carbon tetrachloride should be used to remove any oil from the idlers.

CLUTCH ADJUSTMENTS:

Tape tension is maintained by two friction clutches. Their correct adjustment causes the tape to move from one reel to the other in either direction without throwing or stalling.

The clutches are located on the rear ends of the supply reel spindle and the take-up reel spindle. The supply reel spindle clutch is located at the right (facing the rear of the unit) and consists of an oiled felt washer pressing

against a knurled disc which is free to rotate in a clockwise direction but prevented from turning in the opposite direction by a spring loaded pawl. Pressing against the opposite side of the felt washer is a sponge rubber pad. A split, knurled adjustment ring bears against the sponge rubber pad and is locked in place by means of a set screw. The set screw must be backed off before the adjustment ring can be turned. Rotating the adjustment ring clockwise increases the clutch friction.

The supply reel spindle clutch adjustment should maintain a drag as the supply reel rotates when the PT6-A is in forward operation. This drag should be sufficient to stop the supply reel without permitting the tape to loop or throw when the control switch is turned from "FORWARD" to "STOP". The amount of friction should be the minimum necessary to accomplish this.

Too much clutch friction will increase the tape drag to a point at which the tape speed will be below normal.

The take-up reel friction clutch is located on the left side (facing the rear). This is similar in appearance to the other clutch but employs no pawl. It is also necessary to back off the set screw before adjusting this clutch.

The take-up reel spindle friction clutch couples the spindle to the synchronous motor drive when the control knob is set to "FORWARD" and acts as a brake on the take-up reel when the control knob is set to "STOP". The clutch adjustment should provide sufficient friction for the take-up reel and capstan to move the tape at normal speed forward when the take-up reel is almost completely full and the supply reel nearly empty. It should also provide sufficient braking to maintain tape tension and prohibit tape throw when the control switch is turned to "STOP" after the take-up reel has been rotating at high speed during rewind. The split knurled ring should be adjusted to provide the minimum clutch friction to accomplish these two functions. About 5 inch oz. for each clutch is correct friction.

OILING THE CLUTCH FELTS:

The felt washers have been oil treated at the factory to provide the correct amount of slippage. It may be necessary to give each felt washer (supply spindle and take up spindle) one drop of high quality sewing machine oil after several months of use.

CAUTION:

(DO NOT OVER-OIL THE CLUTCH FELTS AS THIS MAY CAUSE OIL TO BE THROWN ON NEARBY IDLERS CAUSING SLIPPAGE IN THE DRIVE SYSTEM. ONE DROP PER FELT IS SUFFICIENT.)

CLEANING THE HEADS:

It is necessary that the portions of the erase head and the record-reproduce head which come into contact with the tape be kept free of dust, grease and foreign matter, or the frequency response characteristics will suffer. They should be cleaned with a soft cloth slightly moistened with carbon tetrachloride C.P. after every five hours of operation.

Note: Do not attempt to apply carbon tetrachloride to any part of the PT6-A when loaded reels are in place as the tape is soluble in carbon tetrachloride and will be ruined if it comes in contact with the solution. After using carbon tetrachloride

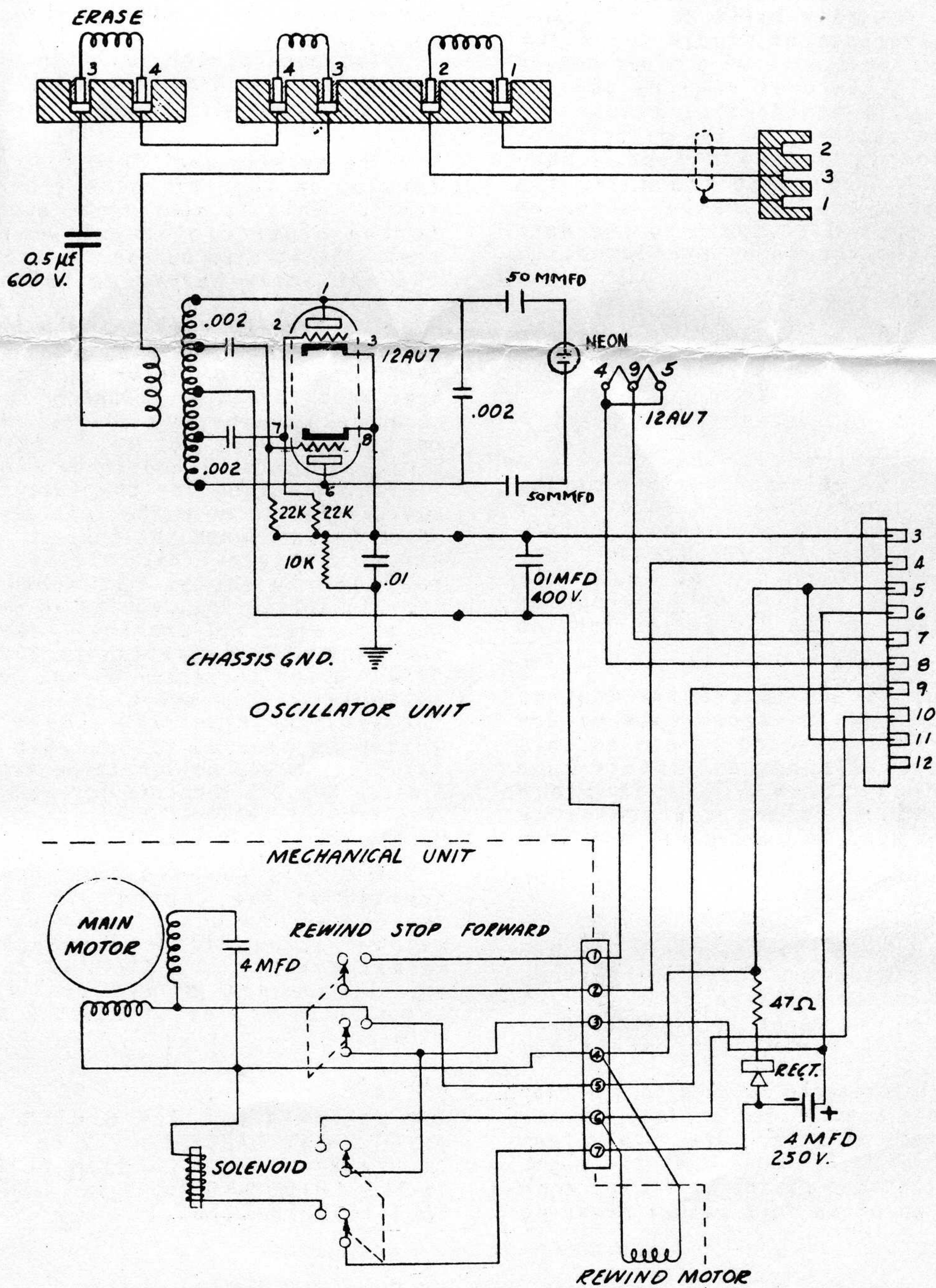
make sure the heads are completely dry before threading tape and be sure none of the solution is transferred to the tape from the fingers.

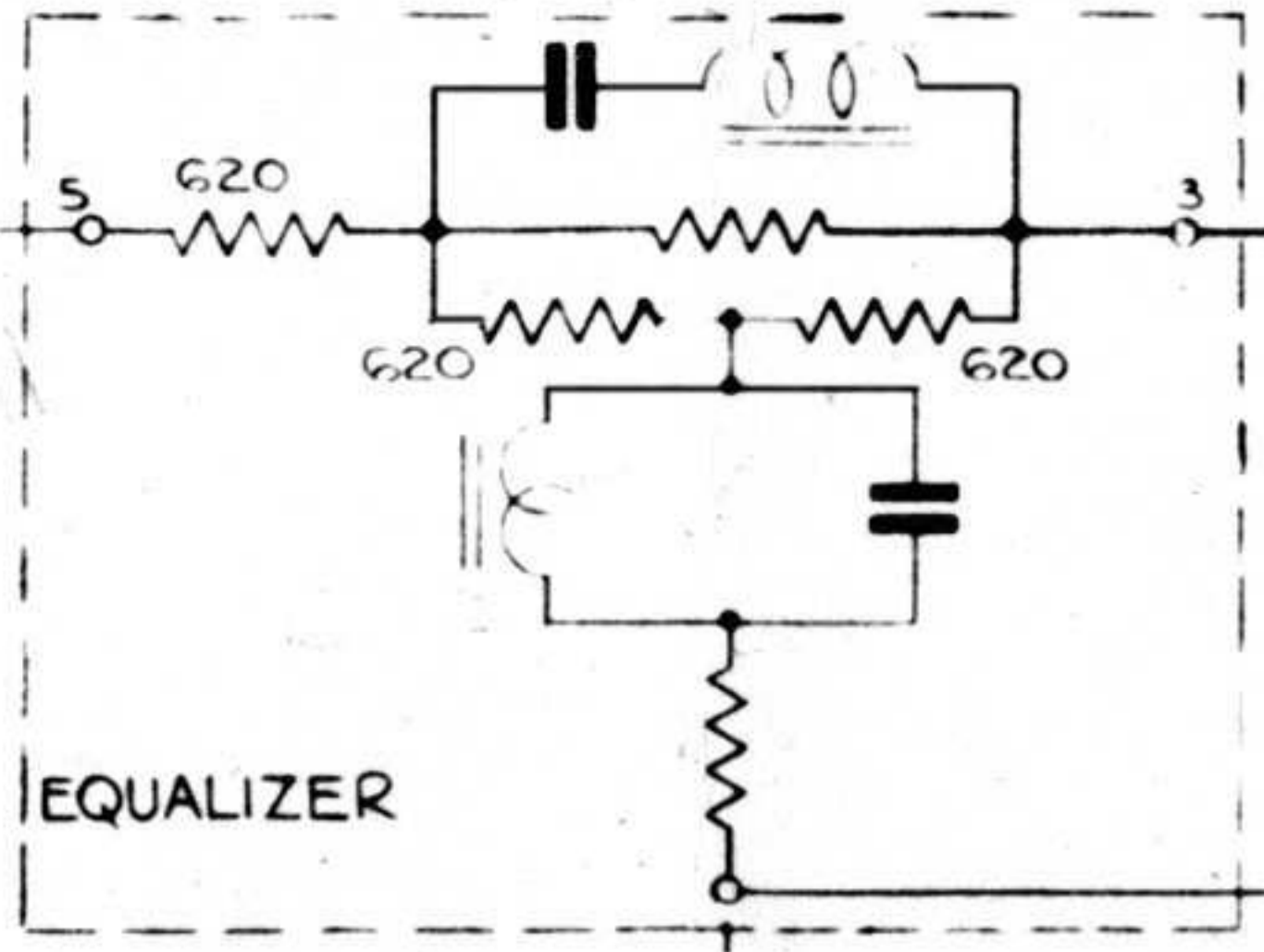
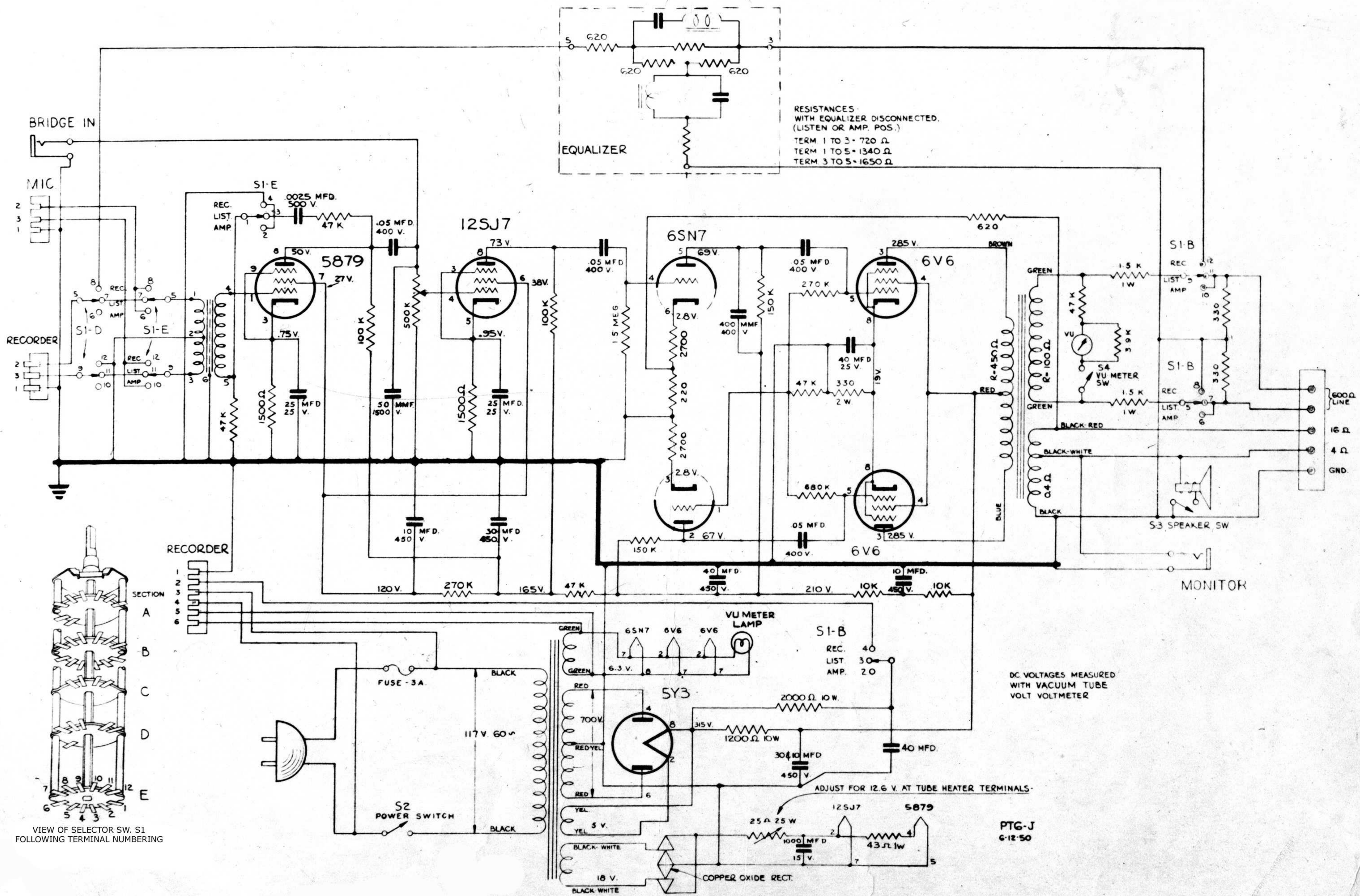
HEAD REPLACEMENT:

Replacement erase or record-reproduce heads may be obtained from the distributor from whom the unit was purchased provided the worn heads are returned at the same time.

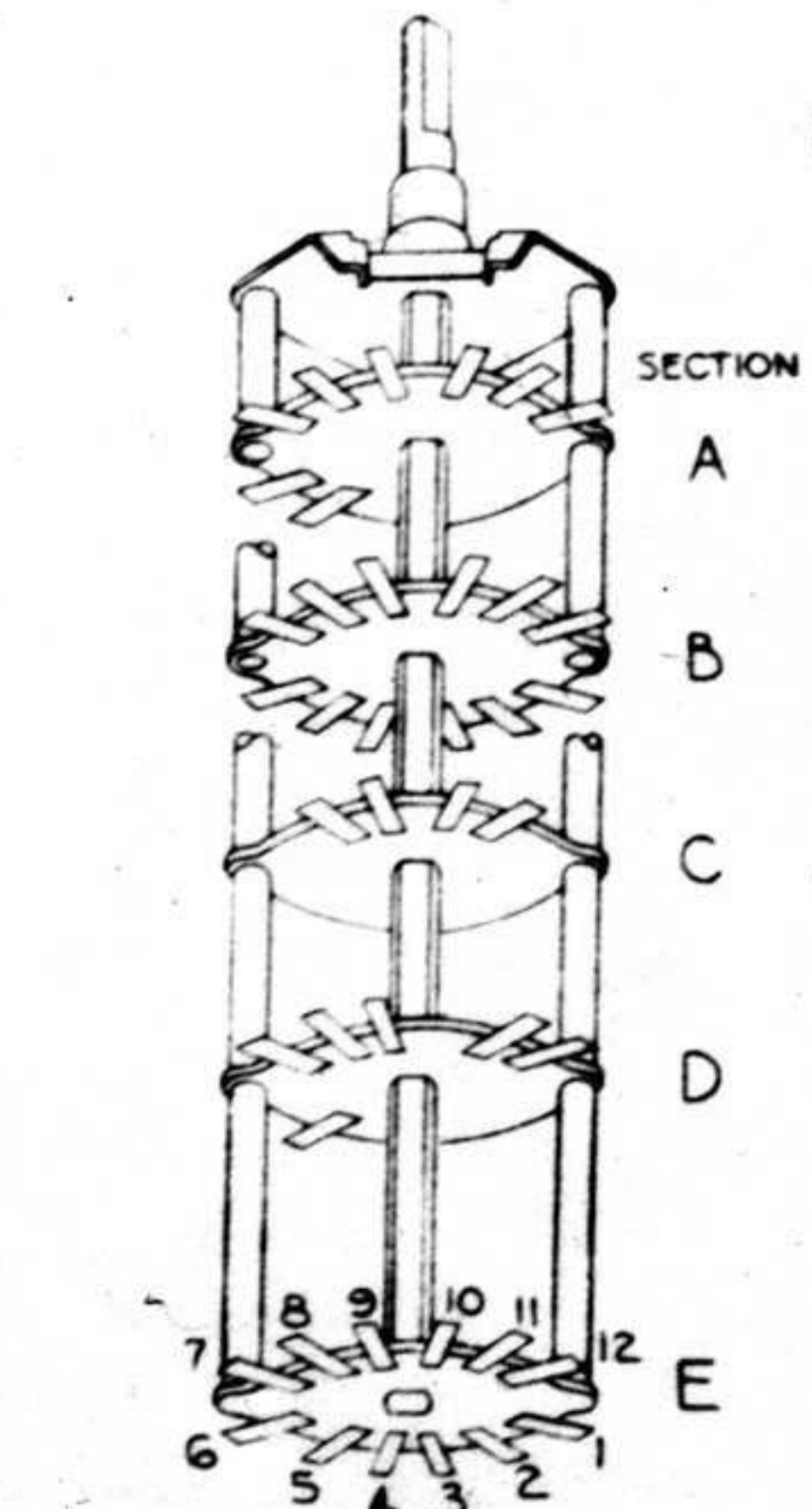
GUARANTEE:

The Magnecord PT6-A is guaranteed to be free of defects in workmanship and materials (excepting tubes) for a period of 90 days from date of purchase.





RESISTANCES WITH EQUALIZER DISCONNECTED. (LISTEN OR AMP. POS.)
 TERM 1 TO 3 = 720 Ω
 TERM 1 TO 5 = 1340 Ω
 TERM 3 TO 5 = 1650 Ω



VIEW OF SELECTOR SW. S1 FOLLOWING TERMINAL NUMBERING

DC VOLTAGES MEASURED WITH VACUUM TUBE VOLT VOLTMMETER

PTG-J
6-12-50