

INSTRUCTIONS

FOR OPERATING THE



Magne recorder PT7-P

3 CHANNEL RECORDING/PLAYBACK AMPLIFIER

Caution

THIS INSTRUMENT OPERATES ON 110-125 VOLT, 60 (OR 50) CYCLE AC ONLY. CONNECTING IT TO THE WRONG POWER SOURCE MAY PERMANENTLY DAMAGE THE EQUIPMENT.

Warning

FOR YOUR PROTECTION, DISCONNECT THE AC POWER SOURCE FROM THE AMPLIFIER BEFORE TOUCHING ANY INSIDE PORTION OF EITHER THE BASIC MECHANISM OR AMPLIFIER.

DESCRIPTION

The Magne recorder PT-7P amplifier is designed to provide two functions in conjunction with the Magne recorder PT63 or PT7 Series recorder mechanism—that of making a recording and that of reproducing such a recording. The amplifier contains a separate recording amplifier, reproducing amplifier, and a single power supply for both. Circuitry for recording and playback includes the necessary compensation to provide an essentially flat frequency response from the tape from 50 to 15,000 cycles per second.

The unit is housed in a leatherette covered case equipped with a carrying handle for portability. Front and rear of case are removable for access to controls and connections.

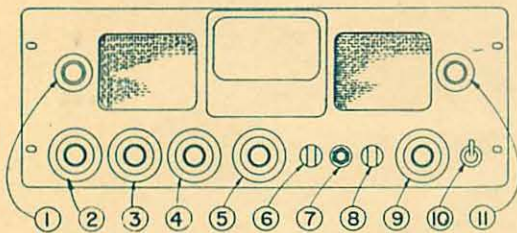
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CONTROLS:

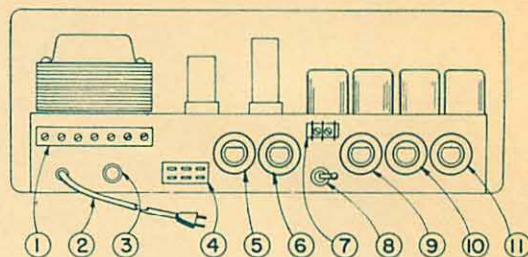
PANEL OF PT7-P



1. Record/Playback Switch
2. #1 Mike Gain Control
3. #2 Mike Gain Control
4. #3 and Bridge Gain Control
5. Master Gain (Rec. Amplifier)
6. Equalizer Switch
7. Headphone Monitor Jack
8. Meter Switch (Rec-Bias-Playbk)
9. Playback Gain Control
10. On-Off Power Switch
11. Speaker Volume Control

CONNECTIONS:

REAR OF PT7-P



1. Output Terminal Strip
2. Power Cord—117 volt AC
3. Fuse
4. Recorder Power Receptacle
5. Record Head Receptacle
6. Playback Head Receptacle
7. Bridge Input
8. Switch for Bridge & #3 Mike
9. #3 Microphone Input
10. #2 Microphone Input
11. #1 Microphone Input

The dimensions of the PT7-P are 7" high x 19" wide. The weight of the complete unit mounted in a portable carrying case is 32 lbs. If the PT7-P amplifier is removed from its case, it may be mounted directly in a standard 19 inch rack panel.

PREPARING TO OPERATE

Note: Operating instructions for the PT7-A or PT63-A are contained in a separate book which will be found with the drive unit.

CONNECTIONS:

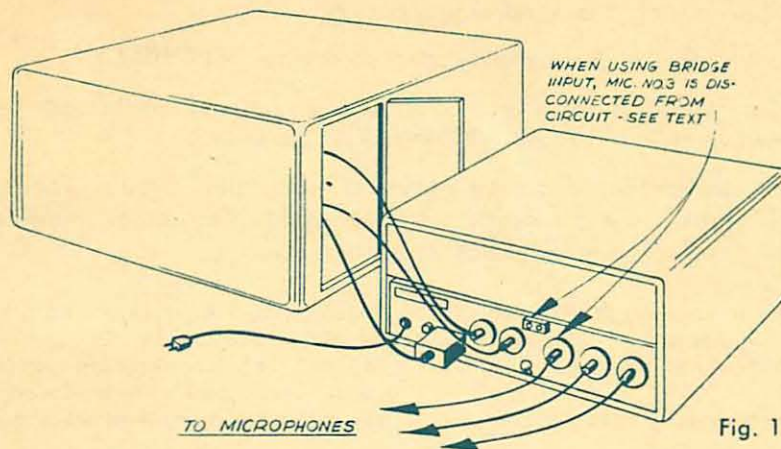
Three interconnecting cables are provided for connecting the PT7-P to the PT63 or PT7 basic recorder mechanism. Two audio cables are used; one for connection to the recording head and the other for connection to the playback head. The third cable is used to carry power to the drive mechanism.

1. Remove the front and rear covers from both the PT7-P case and the recorder mechanism case.

Note: It will probably be necessary to remove the recorder mechanism from its carrying case to make the connections originally. After once putting the cables in place, leave them attached to the recorder mechanism and always disconnect them at the amplifier. The cables can be folded into the rear of the recorder mechanism case when not in use.

2. Plug the three cables found in the amplifier case into the matching receptacle on the rear of the PT63 basic recorder mechanism. The PT7 basic recorder mechanism has these cords permanently attached to it at the factory.
3. Plug the two smallest, or audio cables from the recorder mechanism into the indicated three pin Cannon receptacles on the amplifier.
4. Plug the power-control, or larger, cable from the recorder mechanism into the six-hole rectangular receptacle marked "RECORDER" on the rear of the amplifier.
5. Plug the power cord into a 117 volt, 60 cycle, AC source and turn on the amplifier.

When connections have been completed, system should appear as shown below in figure 1. Recorder mechanism and amplifier should be returned to their portable cases.



Note: Set the two units side by side with the amplifier preferably to the left. If they are stacked one upon the other, excessive hum may result because of the extremely high gain of the amplifiers.

OPERATION

TO MAKE A RECORDING:

Having set up the ~~PT63~~^{PT7-P} amplifier with the basic recorder unit as indicated above, a number of steps should be followed.

1. To make a recording, a suitable input must be connected to the recording amplifier. This may be done by use of any one, or all, of the bridging or microphone inputs. The microphone inputs normally are shipped for use with 30-50 ohm microphones. However, the input transformer is provided with a tapped primary so that 250 ohm microphones may be used. Refer to schematic for proper wires to change.
2. Set the equalizer switch at either 7.5 or 15 inch position, depending upon which speed is going to be used on the recorder mechanism.
3. Set the meter switch to "R". This connects the meter circuit to the recording amplifier output where it will read the recording level.
4. Set the Record-Playback switch to "RECORD." This energizes the circuit feeding the oscillator plate supply to the recorder mechanism as well as connecting the output of the recording amplifier to the equalizer circuit.
5. Set the switch on the recorder mechanism to "FORWARD" to put the tape in motion.
6. Adjust the recording gain control to accommodate the input signal.
7. The signal being recorded may be heard at the headphone jack with a suitable pair of headphones when the meter switch is in the "R" position. If the meter switch is in the "P" position, the signal as reproduced from the tape will be heard. If the meter switch is in the "B" position, no signal will be heard since this position only permits reading, on the meter, the bias level being applied to the record head.

Note: A feed at 600 ohms, -4DBM appears at the "Record Out—600 Ohm" terminals on the rear of the unit. This may be used to feed auxiliary equipment.

TO REPRODUCE A RECORDING:

As described previously, a recording may be heard, as it is being made, at the output of the playback amplifier during the recording process.

1. To reproduce *only*, set the Record-Playback switch to "PLAYBACK."
2. Set the previously recorded tape in motion on the recorder mechanism by turning the Rewind-Stop-Forward switch to the "FORWARD" position.
3. Two gain controls are provided on the playback amplifier circuit. The one marked "Playback gain" controls the playback amplifier gain. The other marked "Speaker Vol" controls the level of the playback speaker only.

Note: It is not necessary to consider the position of the equalizer switch as it is only in the circuit when the recording is actually being made.

An external speaker also may be used by con-

necting it to the terminal board at the rear of the PT7-P. Connect to "G" (ground) and either "4" or "16" (speaker impedance in ohms). A "zero" level, 600 ohm balanced line output is also available as marked on terminal board.

GENERAL INFORMATION

RECORDING AMPLIFIER

The recording amplifier utilizes conventional resistance coupled circuits with the following tubes: 5879 input stage, 5879 voltage amplifier, 12AU7 amplifier and phase inverter, and 12AU7 output amplifier.

Input to the recording amplifier may be made at any of the microphone inputs or the bridging input. Channel 3 is provided with a switch which allows the use of this input for either the microphone or bridge input. A balanced attenuator is provided between the bridge input and input transformer to adjust both the impedance and the level of this circuit. This balanced input will connect to a telephone line satisfactorily.

The microphone input transformer may be connected for either 30/50 or 250 ohms by means of a tapped primary. The units are normally wired for 50 ohms when shipped.

The input transformers feed directly into the amplifier stages, assuring the maximum signal-to-noise ratio. The output of the input stages is fed to individual ladder-type attenuators especially designed for operation in the plate circuit of these tubes. The output of the mixer is fed to the voltage amplifier and then through the remainder of the unit.

The output of the recording amplifier is fed through the recording "off-on" switch to either

of the two equalizers. The output is also fed to the meter circuit and the headphone jack. A 600 ohm output directly from the recording amplifier used to feed a telephone line or other load is also provided between this output and the amplifier to prevent interaction of the two loads.

PLAYBACK AMPLIFIER:

The reproducing amplifier utilizes the following tube lineup: 5879 1st amplifier, 5879 2nd amplifier, 12AX7 3rd amplifier and phase inverter, and two 6AQ5's in push-pull for the power output stage. Two feedback loops are used in the reproducing amplifier: the first one is around the first amplifier stage (5879) and consists of a 0.0025 mica condenser and two 47,000 ohm 5% resistors. These values are chosen to compensate for the frequency vs. output characteristics of the head and input transformer combination. The second feedback loop is found feeding from the secondary of the output transformer to the first section of the 12AX7. This serves the purpose of providing desirable characteristics for the output stage. A tuned circuit is provided which limits the response of the playback amplifier at the bias frequency of 55 to 60 kilocycles. This is an iron core slug tuned unit and is found in the cathode circuit of the third amplifier stage.

POWER SUPPLY:

A self-contained power supply rectifier furnishes the high voltage for the anode supply, the 6.3 volts AC for some heater circuits and the 12 volts DC for the input tube heater circuits. A low voltage rectifier is used to furnish direct current to a filter arrangement which, in turn, feeds the heaters of both amplifier input tubes as well as output stage driver tubes. This well filtered direct current supply leads to very low hum level in both the recording and playback amplifiers. The heaters of the 6AQ5 output tubes, as well as the 12AU7 stage used as the output of the recording amplifier, are fed from the alternating current supply. The high voltage power rectifier feeds through a resistance-capacitance filter network and other decoupling filters to the plates of the several amplifier tubes.

METER AND METER SWITCH:

A VU meter with its associated circuit is provided with a three-position switch marked "B", "R", and "P", indicating Bias, Record and Playback readings on the meter.

"B"—Bias:

In position "B" the meter is connected through a calibrating rheostat to the record head signal coil and thus will read the bias voltage developed across this coil. The normal voltage read across this circuit is approximately 15 volts at a frequency of 55 to 60 kilocycles. The meter on the Magnecorder PT7-P should read "zero" at this voltage. A change of bias level over the range from minus 1.5 DB to plus 1.5 DB has been found to cause no serious change in recording characteristics.

"R"—Record:

In position "R" the meter reads the recording audio level. Only generalities may be given regarding the proper operation of the recording meter for best results, but in general, it should show peaks of zero level approximately once

each 5 to 30 seconds, depending upon the program material. Only rarely should the meter be allowed to swing over zero and then only for a short period of time, if best results are to be had in the recording. The meter will not be damaged by a continuous overload amounting to twice the normal full scale reading.

"P"—Playback:

In position "P", the meter is connected to read the level out. A "zero" level reading on the meter indicates a level of plus 4 DBM available at the 600 ohm output.

HEADPHONE JACK:

It should be noted that the headphone jack is connected in parallel with the meter switch and consequently the signal fed to a pair of phones connected here will be the same as that being read on the meter. In "B" position where the meter is reading the bias level, no signal is fed to the headphone jack. Connecting the headphone jack to an external amplifier will make possible an "A-B" test on an external loud speaker.

SPECIAL ADJUSTMENTS

BIAS FREQUENCY TRAP CIRCUITS:

When first placing a unit in operation, it may be desirable to adjust the trap circuits for maximum rejection of the bias frequency:

With no tape in the mechanical unit and no input to the recording amplifier, but with all other connections normal, set the record-playback switch to Record and the control switch of the recorder to Forward so the bias oscillator is energized. Set the meter switch to "P" (Playback) and adjust the playback amplifier trap circuit for minimum meter deflection. It should be below -20 . If no deflection can be found, additional bias pickup may be provided by raising head shields. The trap in the meter circuit is adjusted similarly with the meter switch set on "R" (Record).

METER CIRCUITS:

PT7-P

If the meter on the Magnecorder ~~PT7-P~~ does not read "zero" when the meter switch is in "B" position adjust the meter sensitivity.

The meter circuit is provided with a rheostat to adjust the sensitivity of the meter when reading the bias voltage. The normal potential fed from the recording coil is approximately 15 volts. The rheostat should be adjusted to read "zero" at this voltage. Of course, it will be necessary to adjust the circuit at the bias frequency which requires the use of a meter suitable for this work. A change of bias level over the range from minus 1.5 DB to plus 1.5 DB has been found to cause no serious change in recording characteristic.

MAINTENANCE

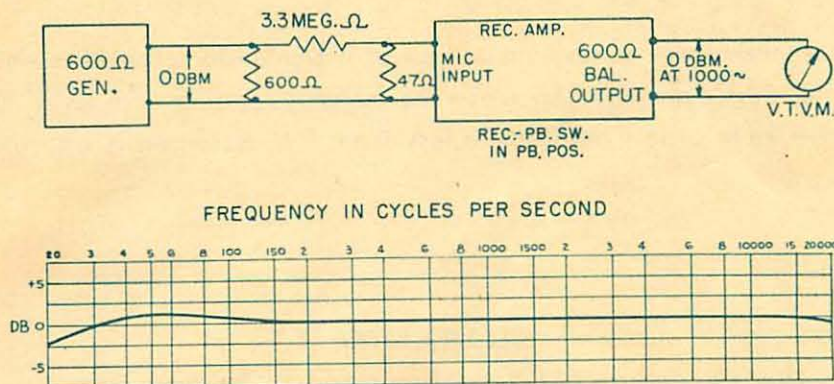


Fig. 2

RECORDING AMPLIFIER:

A gain vs. frequency characteristic of the recording amplifier is shown in Figure 2. The noise output from the recording amplifier should not exceed 25 millivolts for anyone

(MAINTENANCE Cont'd.)

channel. Both of these measurements should be made with maximum gain in the recording amplifier while reading the voltage across the 600 ohm output with the record-playback switch set on playback. A sensitive vacuum tube voltmeter should be used for the noise level measurements. To achieve the lowest noise it is necessary that the microphone input be both shielded and terminated. For this purpose the best arrangement consists of a Cannon plug with the terminating resistor, which may be of any value between 47 and 68 ohms, contained inside the plug housing.

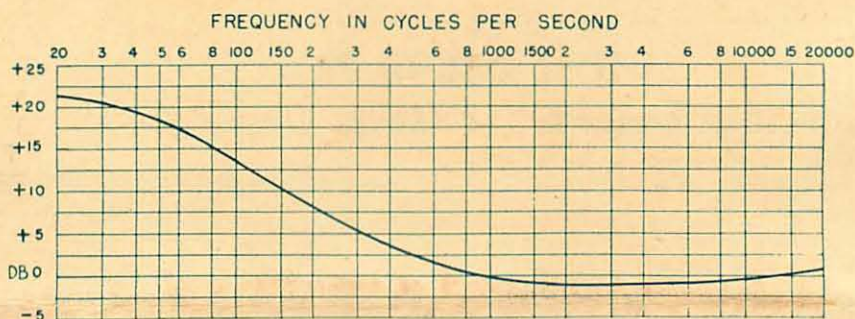
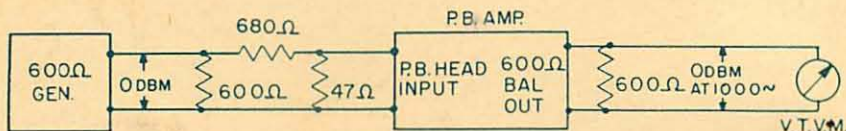


Fig. 3

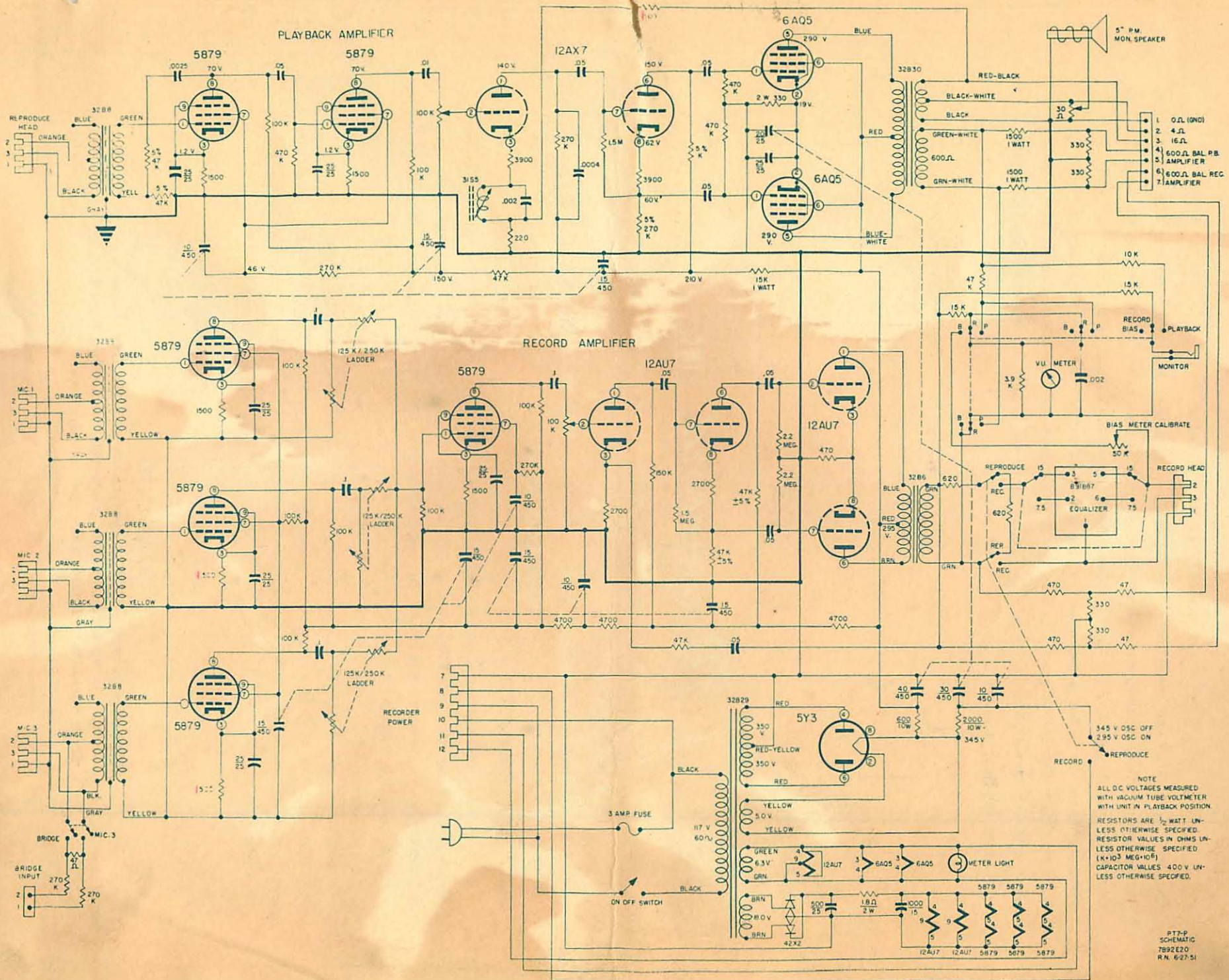
PLAYBACK AMPLIFIER:

A gain vs. frequency characteristic of the playback amplifier is shown in Figure 3. The noise output from this amplifier should not exceed 20 millivolts with maximum gain and a termination applied to the input as outlined above. This voltage must also be measured using a sensitive vacuum tube voltmeter.

The playback amplifier will furnish an output of 6 DBM, (DB referred to one milliwatt in 600 ohms) at the 600 ohm terminals when the meter is reading zero level. The maximum level which is available at this output with less than 1% distortion is approximately plus 12 DBM.

GUARANTEE

The Magnecord PT7-P is guaranteed to be free from defects in workmanship and materials (excepting tubes) for a period of 90 days from date of purchase.



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