

PT6-JA INSTRUCTION MANUAL



1492

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PT6-JA

INSTRUCTION MANUAL

CAUTION

This instrument operates on 117 volt 60 or 50 cycle AC only. Do not connect to power source before determining that it is correct. Wrong power source may permanently damage the equipment.

WARNING

Disconnect the AC power source from the amplifier before touching any inside portion of either the basic mechanism or amplifier.

DESCRIPTION

The Magnecorder PT6-JA is composed of two parts, housed in separate cases; the Basic Tape Drive Mechanism (PT6-A or PT6-AH) and the Portable Power Amplifier (PT6-J). The two parts are connected together by cable for operation as a tape recording and reproducing system, or, if desired, the amplifier section can be used separately as a public address system.

Two cables interconnect the tape drive mechanism (PT6-A) and the amplifier (PT6-J): one is the power-control cable, while the other is the audio cable.

The 10 prong female end of the power control cable plugs into the rear of the PT6-A while the 6 prong male end plugs into the "RECORDER" receptacle of the amplifier.

The audio cable interconnects the record-reproduce head on the mechanism to the output or input of the amplifier as determined by the setting of the amplifier selector switch. It plugs into Cannon receptacle marked "RECORDER" on rear of amplifier.

While the two cables are normally and primarily considered as accessories to the amplifier (PT6-J), it is suggested that they be left connected to the Recorder Mechanism (PT6-A) when not in use and tucked in the rear compartment of that case, since it is necessary to remove the mechanism from the case to connect the plugs.

The unit is designed to be used on a power source of 117 volt 60 cycle current and requires the following amounts of power.

Reproduce (motor running)	170 watts
Record " "	185 watts
Amplifier alone	80 watts
Motor alone	90 watts

Power for the Mechanism (PT6-A) is furnished through the amplifier (PT6-J). This includes 117 V 60 cycle for the motor, 6.3 V 60 cycle for the oscillator heater, and 300 volt direct current for the oscillator plate circuit.

PREPARING FOR OPERATION

Note: Operation Instructions for the Basic Recorder Mechanism (PT6-A) only are contained in the booklet titled PT6-A which is packed with the Basic Recorder Mechanism.

1. Remove the front cover of the Recorder Mechanism (PT6-A) and both front and back covers of the Amplifier (PT6-J). 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 amplifier.

2. Plug the two cables found in the Amplifier case into the matching receptacles on the rear of the Basic

Recorder Mechanism (PT6-A). It will probably be necessary to remove the mechanism from its carrying case to make these connections originally. After once putting these cables in place it is best to leave them attached to the Recorder Mechanism (PT6-A) and always disconnect them at the amplifier when not in use. These cables can be folded into the rear of the Recorder Mechanism carrying case when the PT6-JA is not in use.

3. Plug the audio, or smallest, cable from the Recorder Mechanism into the three pin, circular receptacle marked "RECORDER" at the rear of the Amplifier.

4. Plug the power-control, or larger, cable from the Recorder Mechanism into the six hole rectangular receptacle marked "RECORDER" at the rear of the Amplifier.

5. Plug in the power cord to a 117 V 60 cycle AC source and turn on amplifier.

MAKING A RECORDING

1. Connect a suitable signal input to the amplifier.

a. Plug in a low impedance microphone equipped with a Cannon Type XL-3-12 plug in the receptacle marked MICROPHONE, or

b. Plug in a high impedance, high level source (such as a radio tuner output) by means of a phone plug, in the jack marked BRIDGE IN.

2. Turn selector switch on the amplifier to the "RECORD" position.

3. Push the VU meter switch in to connect meter.

4. For headphone monitoring, insert plug of phones in the amplifier front panel MONITOR jack. For speaker monitoring, push the speaker switch in to connect the speaker.

5. Vary the volume level with the GAIN control. Turning the control clockwise increases the amplifier gain. The VU meter should move with the program material and should read a peak value of "0" once every few seconds to a minute depending upon the nature of the program being recorded.

REPRODUCING

1. Make interconnections as above.

2. Set the selector switch on the amplifier to the "LISTEN" position.

3. Push the speaker switch IN for ON; pull the meter switch OUT for OFF if volume level on playback makes it necessary to prevent meter damage.

4. Operate the Recorder Mechanism in accordance with the directions given in the PT6-A instruction Manual enclosed in the Recorder Mechanism carrying case.

5. The volume of the reproduced signal will be controlled by the GAIN control.

6. An external speaker may be used by connecting it to the terminal board at the rear of the amplifier. Connect to the ground "G" and either the terminal marked "4" or the terminal marked "16", whichever is closest to the nominal speaker impedance in ohms. Ten watts of audio power are available at this termination.

Note that the small speaker may be disconnected by pulling the speaker switch button "out". Note also that headphones may be used to hear the reproduced program.

7. A "zero level" 600 ohm balanced line output is available at the terminal board on the rear of the amplifier which may be used to feed the reproduced signal to a long telephone (remote) line, or an external power amplifier and speaker, or other recording amplifier for copying, etc. The terminal marked "G" is a circuit and chassis ground.

P. A. SYSTEM

The PT6-J Amplifier alone, without the PT6-A Recorder Mechanism, may be used as a public address amplifier by setting the selector switch to the AMPLIFIER position.

1. Connect the microphone to its input at the rear of the amplifier.

2. Connect an external speaker to the appropriate terminals, as described in the preceding paragraph.

3. The volume level is controlled by the GAIN control.

THE PT6-J AMPLIFIER

The Magnecord PT6-J Amplifier is designed to provide the three separate functions of recording on a PT6-A, reproducing from a PT6-A, and serving as a high quality public address system. The circuitry necessary for the above functions, including the frequency corrective networks for recording and reproducing, are selectable at the turn of a switch.

The unit is housed in a leatherette covered wooden case provided with a carrying handle. Both the front and rear of the case are removable to give access to the various controls. The front panel contains the following controls reading from left to right.

Speaker off-on switch
Main power switch
5" loud speaker

Headphone monitor jack
Gain Control
VU meter
Meter Switch
Record-Listen-Amplifier switch

The rear panel contains the following items reading from left to right.

Microphone connection
Recorder head connection
High level input (Bridge in)
Speaker connections (Gnd, 4, 16 ohm)
600 ohm balanced output
Recorder power connection (6 hole Jones receptacle)
117 V 60 cycle power cord and plug
3 amp fuse holder

A VU meter is provided to read the audio levels used during the various functions. A switch is provided to turn off the meter when its indications are unnecessary. Other features of the amplifier include a loud speaker with its off-on switch, a headphone monitor jack connected across the 4 ohm output and a 600 ohm balanced output for feeding a telephone line.

The maximum apparent voltage gain which can be realized from the amplifier input to the 600 ohm output terminals is approximately 114 decibels. The maximum output at the loud speaker terminals is approximately 10 watts with the frequency response essentially flat from 50 to 15,000 cycles.

THE AMPLIFIER

Reference to the accompanying schematic of the circuit will serve to clarify the following discussion.

The low level input of the amplifier is a well-shielded transformer designed to work from either a low level low impedance microphone or the head of a PT6-A. The first tube is a 12SJ7 used as a pentode connected resistance coupled amplifier. The gain control follows the first tube and is connected to a phone jack for a high level, high impedance input. The output of the gain control is fed to a second 12SJ7 pentode tube which is followed by a 6SN7 self balancing phase inverter feeding the push-pull 6V6 output stage. The output transformer is provided with two separate secondaries one of which is a straight 600 ohm winding and the other with two impedances available at 4 and 16 ohms. The low impedance winding is included in an inverse feedback loop which provides excellent frequency response and a 3 DB regulation on full to no load.

POWER SUPPLY

The self-contained power supply of the PT6-J amplifier furnishes the required type and amount of power to the tubes of the amplifier as well as the oscillator tube in a PT6-A. The unit is designed to work from a 117 V 60 or 50 cycle alternating current source and requires approximately 80 watts. The power transformer is designed particularly for low external

field thus giving a very low hum level. An important feature of the power supply is the copper-oxide rectifier for supplying the 12SJ7 heaters with direct current. This supply is filtered by the 25 ohm resistor used for adjusting the voltage and the 1000 mf 15 volt condenser.

The high voltage supply is provided by the center tapped 700 volt secondary of the transformer and the 5Y3 rectifier tube. A filter consisting of a 40 and 30 microfarad condenser used in conjunction with a 10.5 henry choke smooth out the ripple in the output of the rectifier tube. Further filtering of the high voltage is provided by other filter condensers. Approximately 300 volts at 110 milliamperes is supplied.

Heater power for the 6SN7, the 6V6's, and the oscillator tube in the PT6-A is furnished by a 6.3 volt winding on the power transformer. A 3 ampere fuse is included in the circuit feeding both the amplifier and the PT6-A while the power switch controls the amplifier alone. This is done so the PT6-A may be run without the necessity of energizing the PT6-J.

CIRCUIT WHEN USED AS A RECORDER

When the function selector switch is set on RECORD a signal fed into the microphone input is passed through S1-E (5 - 9) to the input transformer of the amplifier. Passing through the tubes and the output transformer the signal will be fed to the loud speaker, if connected, the VU meter, and through S1-B (5 - 9) to the recording plug-in equalizer which may be for either 7½ inches per second or 15 inches per second. The constants of this unit depend upon the particular equalizer being used but the resistance values shown on the schematic will be the same regardless of the speed for which the unit is designed. Passing through the equalizer the signal will be subjected to frequency correction to compensate for the head in the recording process. The output of the equalizer is connected through S1-D (5 - 9) to the head receptacle. At the same time S1-B (Terminal 1) has connected the high voltage to the PT6-A so the oscillator may be energized for erasing and recording purposes.

CIRCUIT WHEN USED AS A REPRODUCER

In this case the output from a PT6-A record/reproduce head is fed to the input transformer through S1-D and S1-E where it is impressed on the grid of the first 12SJ7. A resistance-capacitance feedback network is connected to the plate circuit of this tube through S1-E (Terminal 1). This constitutes an equalizer to compensate for the inherent frequency response of the PT6-A reproducing characteristic. This circuit allows great amplification for the low frequencies but limits the gain of the stage at high frequencies. Use of the feedback circuit allows re-

duction in the overall noise and distortion generated by the input stage. After passing through the first stage the signal receives further amplification through the remainder of the amplifier and finally appears at the output circuits. With the switch in the "LISTEN" position the signal is fed through an isolating attenuator network to the 600 ohm output terminals. It is, of course, always available at the 4 or 16 ohm output. The ground or common side of the low impedance output constitutes a circuit ground for the entire amplifier and may be used for such purpose. The level read by the VU meter corresponds to approximately + 6 DBM when measured at the 600 ohm output using a 600 ohm termination. It is to be noted that the full power is not available at the 600 ohm output. This is done principally because of the excess power available from the amplifier over that which can normally be fed to conventional telephone lines. If a 600 ohm power output is absolutely necessary, the switching must be modified.

CIRCUIT WHEN USED AS A STRAIGHT AMPLIFIER

Using the PT6-J for straight amplifier purposes, such as public address work, is simply a matter of turning the function selector switch to "AMPLIFIER". In this position the low level microphone input is fed to the input transformer as in recording and the output is fed to the 600 ohm line as in reproducing. Of course, the low impedance output is available as well and can be used to feed a separate loud speaker or speakers for greater coverage. In this case it will be necessary to determine which impedance is to be used because

of the various ways in which the external loud speakers can be connected. Most small loud speakers will work best when connected to the 4 ohm output but some professional types are designed to operate from a 16 ohm output. If maximum power is desired in the external loud speakers the internal unit should be turned off. Microphone used and placement in this type of work are very important to minimize feed-back or howl. In general, no specific rules can be given but rather experiment is always necessary.

MAINTENANCE

All parts used in the construction of the PT6-J amplifier are either fabricated by Magnecord, Inc., or are the highest quality available from recognized sources of radio components.

Tubes should be checked occasionally and if a tube is suspected as a source of noise it should be replaced regardless of tube tester indications.

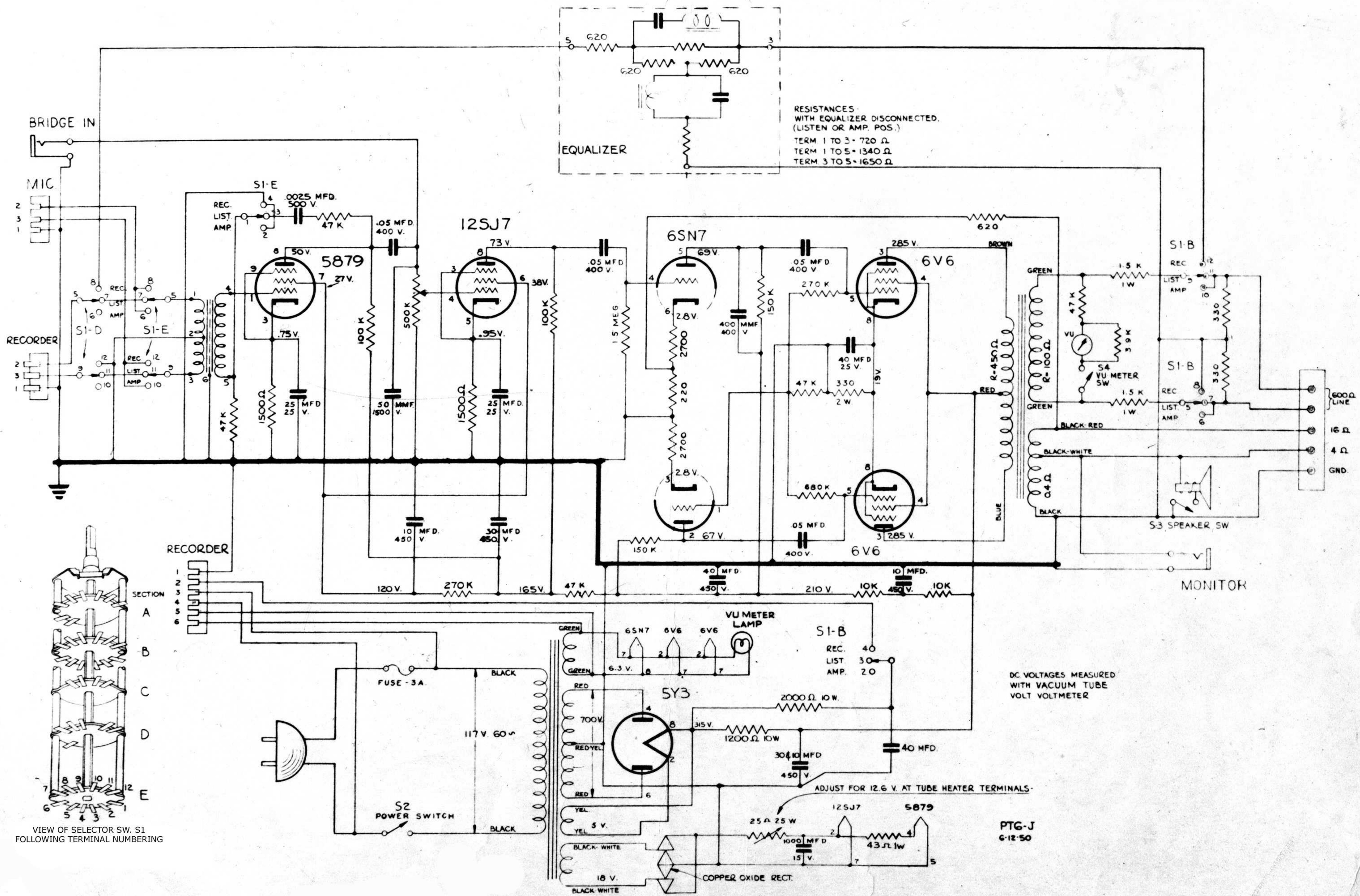
Any other component replacements should be accomplished by technically competent personnel.

If the PT6-J is damaged through accident or misuse, it should be returned to the distributor from whom it was purchased for servicing.

When writing to the factory regarding the unit, it is necessary that the serial number be given for best results.

GUARANTEE

Guaranteed to be free from defects in material or labor (excepting tubes) for a period of 90 days from date of purchase.



VIEW OF SELECTOR SW. S1 FOLLOWING TERMINAL NUMBERING

PTG-J
6-12-50