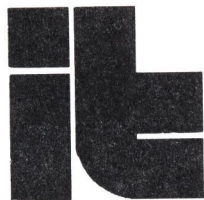


INSTRUCTION BOOK

SP AND W P SERIES

REPRODUCERS

INTERNATIONAL TAPETRONICS CORPORATION



INTERNATIONAL TAPETRONICS CORPORATION

2425 South Main Street Bloomington, Illinois 61701 Telephone: 309-828-1381

ADDENDUM

SUBJECT: MOTOR ON-OFF CONTROL SWITCH

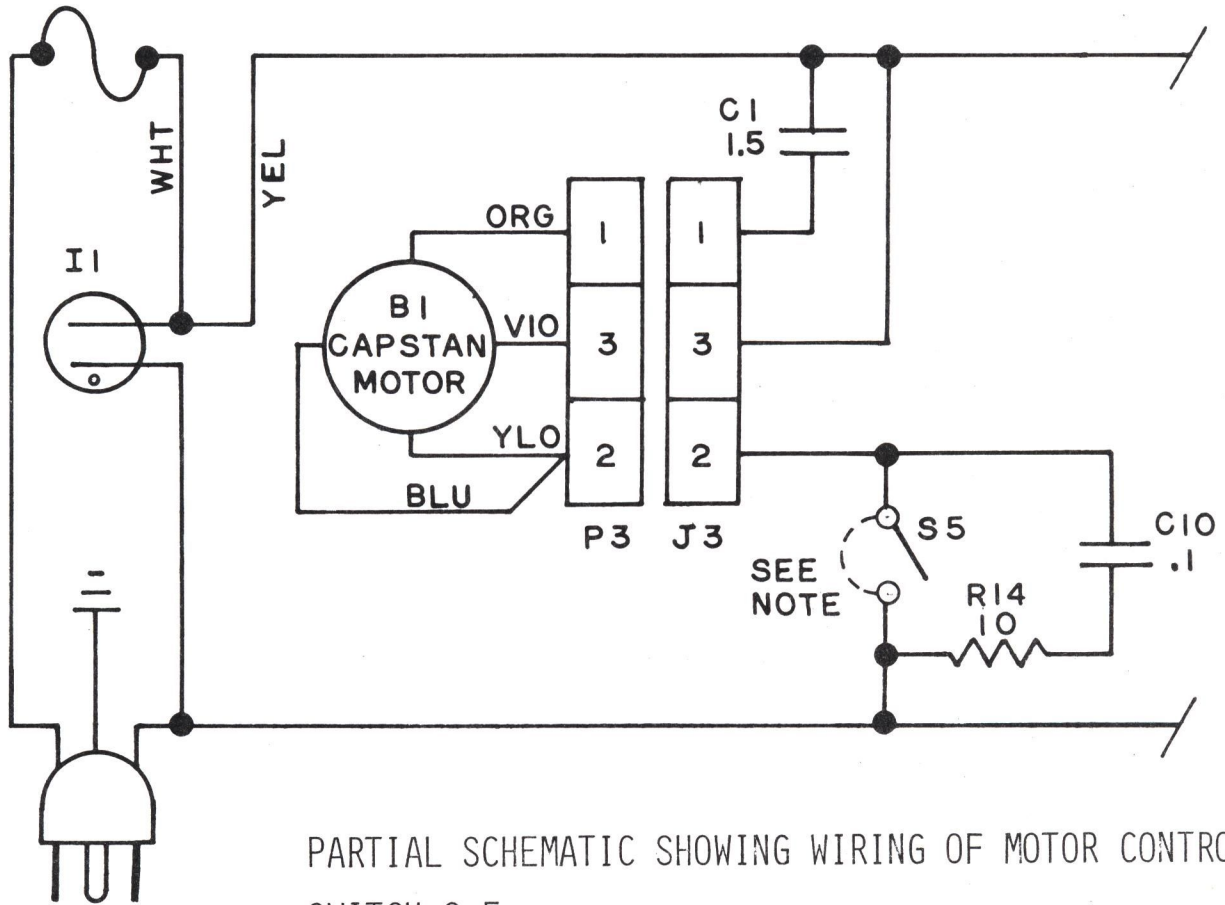
TWO CARTRIDGE-SENSING MICRO SWITCHES ARE INSTALLED ON ALL SINGLE DECK CARTRIDGE MACHINES. THE SWITCH LOCATED NEAREST THE DECK, WHEN UTILIZED, WILL SERVE AS AN ON/OFF SWITCH FOR THE CAPSTAN MOTOR.

IT IS THE CUSTOMER'S OPTION AS TO WHETHER THIS SWITCH IS ACTUALLY USED. AS SUPPLIED FROM THE FACTORY, A STRAP ACROSS THE SWITCH NEGATES THE ACTION OF THE SWITCH AND CAUSES THE MOTOR TO RUN CONTINUOUSLY (AS LONG AS AC IS APPLIED TO THE MACHINE.) THIS MODE OF OPERATION WOULD BE RECOMMENDED FOR MOST INSTALLATIONS. THE MOTOR IS DESIGNED FOR CONTINUOUS DUTY OPERATION, AND THE INSTRUMENTATION-TYPE BEARINGS IN THE MOTOR WILL LAST LONGER IF THEY ARE NOT SUBJECTED TO THE STRESSES OF FREQUENT EXPANSION AND CONTRACTION CAUSED BY STARTING AND STOPPING THE MOTOR. HAVING THE MOTOR RUN CONTINUOUSLY OFFERS A SECOND ADVANTAGE IN THAT A CARTRIDGE CAN BE STARTED INSTANTLY AFTER BEING PLACED IN THE MACHINE WITHOUT HAVING TO WAIT THE FEW SECONDS IT TAKES FOR THE MOTOR TO COME UP TO SPEED.

IN THOSE INSTALLATIONS WHERE THE CARTRIDGE MACHINE IS NOT FREQUENTLY USED, OR WHERE THE MACHINE BUILDS UP SUBSTANTIAL HEAT BECAUSE OF POOR VENTILATION OR HIGH AMBIENT TEMPERATURE, IT MAY BE DESIRABLE TO ALLOW THE MOTOR TO REMAIN OFF WHEN A CARTRIDGE IS NOT IN PLACE. THIS MAY BE ACCOMPLISHED BY REMOVING THE STRAP THAT IS ACROSS THE TERMINALS OF THE MOTOR CONTROL MICRO SWITCH.

NOTE: It is normal for a frequently used machine to feel quite warm to touch. Both the motor and the solenoid will generate heat when frequently or continuously used. This is normal and does not represent a problem. Only if the machine is boxed in (receiving little or no ventilation) or the ambient temperature is quite high, should the operating temperature be considered a possible problem.

F 2
1 A.
SLO-BLO



PARTIAL SCHEMATIC SHOWING WIRING OF MOTOR CONTROL SWITCH S-5

NOTE: As supplied from the factory, switch S-5 is strapped to cause the motor to run continuously.

PARTIAL PARTS LIST
(For Motor Control Switch)

Symbol	Stock Number	Description
C10	686-0001-000	Capacitor, .1 mfd., 500 v.
R14	626-0215-000	Resistor, 10 ohm, ½ watt
S5	392-0001-000	Switch, Micro (cartridge sensing)

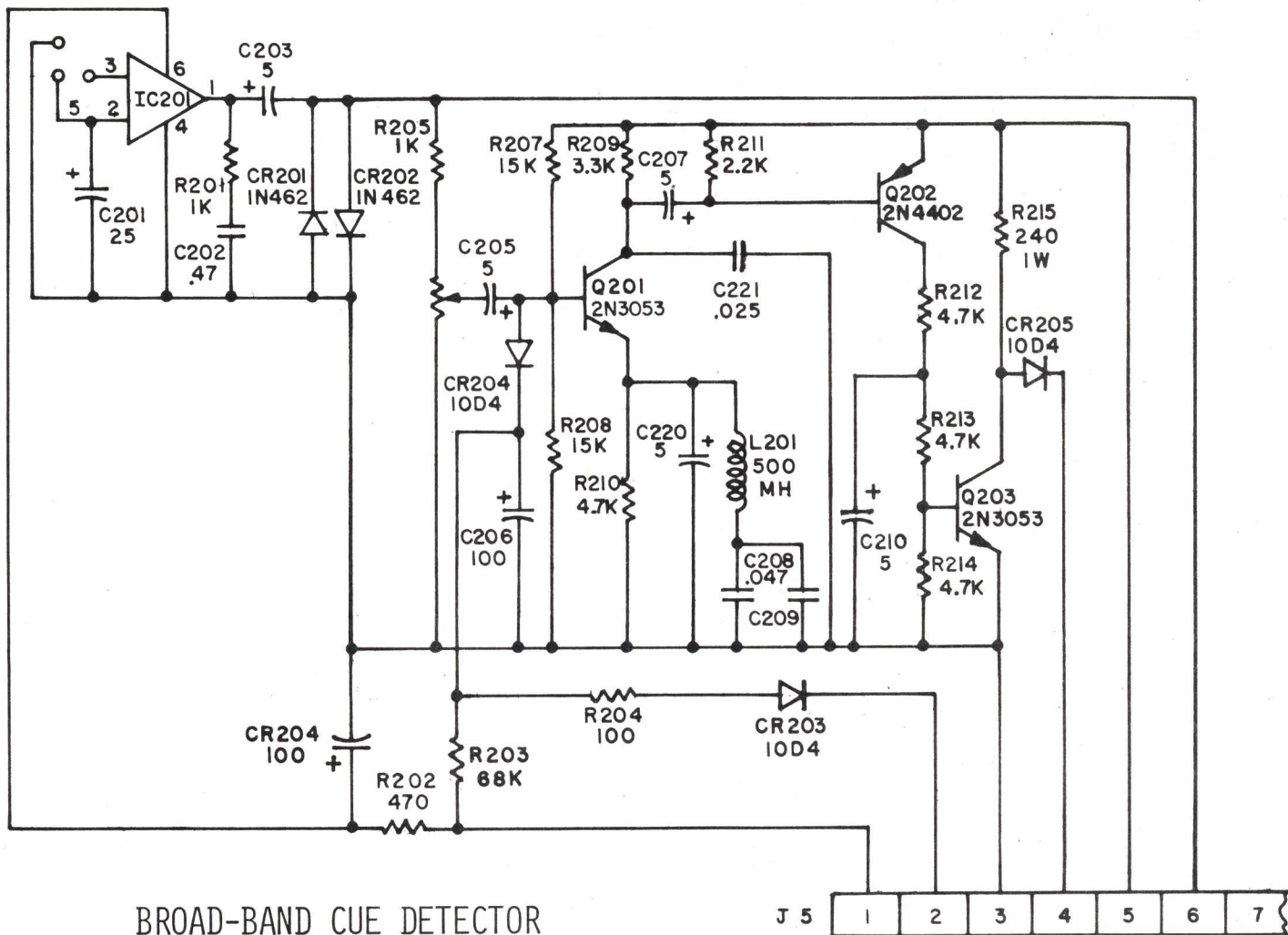
ADDENDUM

SUBJECT: BROAD BAND STOP CUE DETECTOR

THE CURRENT NAB STANDARDS SPECIFY THAT THE STOP CUE TONE OSCILLATOR IN A CARTRIDGE RECORDER GENERATE A TONE WITHIN 75 Hz OF 1 kHz (925 Hz TO 1075 Hz). HOWEVER, MANY OLDER CARTRIDGE RECORDERS PRODUCE A STOP CUE TONE THAT IS WELL OUTSIDE THESE TOLERANCES. (IT IS NOT UNCOMMON FOR AN OLDER RECORDER TO PRODUCE A STOP CUE TONE AS LOW AS 700 Hz OR AS HIGH AS 1200 Hz.)

A BROAD-BAND STOP CUE DETECTOR IS SUPPLIED IN ITC SINGLE CUE TONE MACHINES. THIS BROAD-BAND DETECTOR WILL PASS A WIDE RANGE OF FREQUENCIES WHICH PERMITS PROPER CUEING OF CARTRIDGES RECORDED ON OLDER MACHINES. THE BROAD-BAND CHARACTERISTICS WILL CAUSE NO PROBLEM AS LONG AS ONLY SINGLE CUE TONE OPERATION IS USED. (THE STOP CUE TONE DETECTOR ON A THREE CUE TONE MACHINE IS DESIGNED FOR THE NARROW BAND PASS MODE--1 kHz \pm 75 Hz.)

Note: The broad-band detector can be changed to the narrow band pass mode (1 kHz \pm 75 Hz) by removing the white wire strap that is on the top of the detector PC card. In addition, it may be necessary to increase the gain of the detector by turning the sensitivity control clockwise. (The detector has about 10 db less gain in the narrow band mode.)



Note: Two capacitors have been added to the standard (narrow-band) detector to create the broad-band detector. The capacitors are:

Symbol	Stock Number	Description
C220	696-0114-000	Capacitor, Electrolytic, 5 mfd., 25 vdc.
C221	686-0002-000	Capacitor, Ceramic, .025 mfd., 100 v.

SECTION I

GENERAL DESCRIPTION

SP & WP SERIES REPRODUCER

Tapetronics magnetic cartridge Reproducers are designed to meet or exceed the NAB standards for cartridge tape recording and reproducing. The SP and WP series reproducers are available in either monophonic or stereophonic configurations. All reproducers are furnished with primary (1 kHz) cue capabilities while the secondary (150 Hz) and tertiary (8 kHz) cue detectors are optional.

The SP series is designed to function exclusively as a reproducer and accepts both the NAB type A and NAB type B cartridges. The WP series accepts the NAB types A, B and C cartridges and can be used alone as a reproducer or with a RA series Recording Amplifier to function as a Master Recorder/Reproducer.

Solid-state electronics amplify the signals provided by laminated all-metal face heads and supply an NAB equalized signal to the output transformer. Upon the conclusion of the audio, the Reproducer continues to advance the tape until a 1 kHz primary cue tone is detected, whereupon the 1 kHz cue detector stops the tape drive mechanism.

Secondary Cue Tone (150 Hz) Relay contacts, when the machine is so equipped, can be used for such functions as the indication of the "end-of-message". This is necessary in automated systems to start the next machine and can be useful in live operations to keep the operator "on cue" for inserts, tags, or the beginning of the next material. The presence of the secondary cue tone is indicated by the brightening of the front panel and remote "Run" (Start) Lamps.

The Tertiary Cue Tone (8 kHz) Relay, also optional, can be used to supply digital information in automated systems or for auxiliary switching such as the control of slide projectors in television. Presence of the tertiary cue tone is indicated by the illumination of the front panel and remote "Ready" (Stop) Lamps.

The printed circuit electronics include the latest silicon solid-state diodes, transistors, and integrated circuits. The series regulated power supply is an integrated circuit in a plug-in TO-3 case.

The cue tone detectors utilize reliable L-C networks and provide relay contact output information. The program amplifiers have NAB equalization and transformer coupled outputs.

Several other features improve the ease and reliability of operation and serviceability. The Tapetronics Reproducer is fully operative when partially or fully removed from its slide-out case to facilitate cleaning, maintenance and adjustment. Locking connectors are supplied for audio output and remote control. Socket connectors for head cables provide plug-in connection at the head and at the cue tone and audio amplifiers. A full-swing pressure roller is connected to the actuating solenoid by a mechanically simple chain linkage with a screw adjustment for pressure roller/capstan pressure. Air damping of the solenoid is adjustable with a needle valve. The direct-capstan, 450 RPM, hysteresis synchronous drive motor with an electrolyzed shaft provides optimum tape drive. Provision is made for full remote control including indicating lamps.

SECTION 2

SPECIFICATIONS

SP & WP SERIES REPRODUCER

- Power: 117 volts AC, 60 Hz, 70 watts (Other voltage and frequency variations are available on special order.)
- Tape Speed: 7½ inches per second (direct drive hysteresis synchronous motor with electrolyzed shaft and class seven instrument-type permanently lubricated ball bearings.)
- Wow and Flutter: 0.2% or less
- Timing Accuracy: 0.1% or better
- Audio Output: +15 dBm before clipping; normally +5 dBm; 600 ohms, balanced (may be strapped for 150 ohms)
- Distortion: 2% or less, record to playback at 0 VU record level
- Noise: 55 dB or better below reference of 400 Hz at 3% THD, monophonic
50 dB or better below reference of 400 Hz at 3% THD, stereophonic
- Cross Talk Between Channels: Better than 50 dB at 1 kHz
- Frequency Response: ±2 dB from 50 to 15,000 Hz
- Equalization: NAB (adjustable to compensate for head wear and other factors)
- Cue Signals: NAB primary cue, 1 kHz, standard; secondary cue, 150 Hz, and tertiary cue, 8 kHz, optional. External information when tone sensed, furnished as relay contact closure.
- Playback Time: SP Series; 2 seconds to 16 minutes, NAB size A and B cartridges. WP Series; 2 seconds to 31 minutes, NAB size A, B, and C cartridges.
- Start Time: 0.1 second
- Stop Time: 0.1 second
- Ambient Temperature: 55 degrees C, maximum
- Remote Control: All controls and indicators

Mounting: All units supplied ready for table top mounting.
Hardware for 19 inch rack mounting is optional.

Dimensions: SP Series: 8-3/4" width, 5-1/4" height (add 3/8"
for rubber feet), 12" depth.
WP Series: 17-5/8" width, 5-1/4" height (add 3/8"
for rubber feet), 12" depth.

Weight: SP Series: 23 pounds
WP Series: 26 pounds

Head Configuration: NAB (provided with reproduce head only.)

SECTION 3

UNPACKING

SP & WP SERIES REPRODUCER

Remove the Tapetronics Reproducer from the shipping carton and inspect the unit for damage. Claims for shipping damage must be promptly filed by you, the receiver. All packing material must be retained if a claim is to be filed.

SECTION 4

INSTALLATION AND OPERATION

SP & WP SERIES REPRODUCER

Tapetronics Reproducers are supplied in cases prepared for table top mounting. Adapter angle brackets and hardware for mounting in a 19 inch equipment rack are supplied on an optional basis.

To provide adequate ventilation in rack installations, spacing between Reproducers and other equipment should be from 1-3/4" to 3-1/2" depending on the temperature inside the closed rack.

External Connections -- Control

Remote Control connections are provided on the fifteen pin socket, J1. A mating plug is supplied for this purpose and terminal information is provided in Figure I. Ground switching is employed for all remote control functions. Normally open, momentary action switches are utilized for both the remote START and STOP functions. A sample remote control schematic is shown in Figure II.

External Connections -- Audio

Audio connections are made on the six pin socket, J2 and a mating plug is supplied. Terminal information is provided in Figure I. The impedance of the audio output is normally 600 ohms. A 150 ohm output can be achieved by changing the transformer wires on connector J2 as noted on the schematic diagram. In stereo systems, proper phasing of the audio connections must be observed.

Control Switches and Indicators

- POWER** The Power Indicator Lamp shows that the Tapetronics Reproducer is connected to an AC power source. The capstan motor runs continuously while power is supplied. (Should a power switch be required, the Power Indicator Lamp may be replaced with a switch as shown on the schematic diagram.)
- CARTRIDGE** The Cartridge Sensing Micro Switch provides a "Ready" indication to the Reproducer's control circuit and illuminates the indicator lamp in the Stop Switch. The Cartridge Switch must be operated in order for the Reproducer to be started.
- START** The Start Switch is used to energize the Reproducer's pressure roller solenoid and put the tape in motion. The indicator lamp in the Start Switch shows that the machine is in a "Run" condition.
- STOP** The Stop Switch can be pressed to stop the tape drive system. (Remember that unless a cartridge stops automatically, it will not be properly cued for the next play.) The indicator lamp in the Stop Switch shows that a cartridge has been properly loaded and the machine is "Ready" to be started.

Operating Procedure

To play a tape cartridge:

- a. Insert a properly recorded tape cartridge into the right-hand side of the cartridge slot.
- b. Check to see that the Ready Lamp (Stop Switch) is illuminated, indicating that the cartridge has been properly inserted and that the Reproducer is "Ready" for operation.
- c. Press the Start Switch momentarily. The tape drive system will be started, and tape motion will continue until the primary (1 kHz) cue tone automatically stops the machine or until the Stop Switch is pressed.

SECTION 5

ELECTRICAL ADJUSTMENTS

SP & WP SERIES REPRODUCER

The various electrical controls listed below are adjusted at the factory to provide optimum operation of the Tapetronics Reproducer. At the time of installation, the only control which may require adjustment is Program Level.

A good maintenance schedule will include periodic checks (weekly or monthly depending upon operational requirements) of the machine's electronics, but always remember to check the adjustment of and demagnetize heads first. Small adjustments of the electronic controls may be required to compensate for normal head wear, but large adjustments may indicate the need for head replacement or further testing.

Program Level: The output level of the program amplifier(s) is factory adjusted for 0 dBm. R111 is the control for mono reproducers and the left channel of stereo units. R130 controls the right channel of stereo machines. See Figure III for the position of these controls.

Program Equalization: Equalization of the program amplifier(s) is factory adjusted to conform with the NAB equalization curve. The equalization control(s) may be used to compensate for head wear and for small variations in heads when replacement is required. The equalization control for mono and the left channel of stereo units is R105 while R124 is the control for the right channel of stereo reproducers. The equalization control(s) should be adjusted to

provide the smoothest possible response during the reproduction of a frequency response test cartridge.

Primary (1 kHz) Cue Sensitivity: The sensitivity of the 1 kHz Primary Cue Detector is increased by turning R206 clockwise. This control is normally set to respond to a 1 kHz tone 12 dB below the NAB level for this tone.

Secondary (150 Hz) Cue Sensitivity: Turning R227 clockwise increases the sensitivity of the Secondary (150 Hz) Cue Detector and is normally adjusted to respond to a 150 Hz tone 12 dB below the NAB level for this tone.

Tertiary (8 kHz) Cue Sensitivity: To increase the sensitivity of the Tertiary (8 kHz) Cue Detector, turn R217 clockwise. Normal adjustment will allow the 8 kHz Detector to respond to a tone 12 dB below the NAB level for this tone.

SECTION 6

HEAD INSTALLATION AND ADJUSTMENTS

SP & WP SERIES REPRODUCER

The head and track configuration of the Tapetronics Reproducer is in accordance with the NAB standards.

The magnetic tape head nearest the capstan shaft is head A, the reproducing head. Head B in the SP series and independent WP series is a "dummy" which is installed simply to maintain constant tension on the tape and minimize wow and flutter. On the WP series, head B is a recording head when the Reproducer is connected to an RA series Recording Amplifier.

On mono machines, the upper track is the program channel and the lower track is the cue channel. On stereo units, the upper track is the left program channel, the center track is the right program channel, and the lower track is the cue channel.

Installation: The Tapetronics Reproducers utilize the no-mount type heads to provide quick and easy installation.

1. Loosen the two screws in the head mounting strap.
2. Remove the old head and insert a new one. (The side of the head with the printing on it should be positioned up.)
3. Align the rear edge of the head case so that it is even with the rear edge of the head mounting strap.

4. Tighten the screws in the head mounting strap.
5. Push on the head socket with the notched end of the socket up.

Height Adjustment: See Figure III for the location of the adjustment screws mentioned below:

1. Loosen the Lock Screw (L) by turning it counter-clockwise approximately four complete turns.
2. COURSE HEIGHT - Adjust the Front Height Screw (FH) until the top of the upper head track (pole piece) is 9/16 inch above the deck surface.
3. COURSE ZENITH - Adjust the Rear Height Screw (RH) until the face of the head is perpendicular with the surface of the deck. Rest one edge of a metal rule (or any gauge known to be square) on the deck surface and move it against the face of the head. When perpendicularity has been achieved, no space will be visible between the face of the head and the "square".
4. FINE HEIGHT AND ZENITH - This adjustment is facilitated by using a strip of white "leader" tape or a piece of recording tape from which the oxide has been removed. (Shellac thinner, flux remover or a similar solvent will loosen the oxide which can then be wiped off the transparent base.)

- a. Position the transparent tape across the face of the heads as the tape would be positioned if a cartridge was being played. Check to see that the tape is not being distorted (wrinkled) where it makes contact with the tape guides and attach it to one of the tape guide support blocks with adhesive tape to free one hand for adjustments.
- b. Alternately adjust height screws FH and RH to position the top of the upper head track (pole piece) so that it is even with the upper edge of the tape, and to position the bottom of the lower head track (pole piece) so that it is even with the lower edge of the tape. Screws FH and RH should be adjusted by equal amounts in the same direction.
- c. Recheck the zenith (perpendicularity) of the head as instructed in step 3 above.
- d. Remove the transparent tape.

Azimuth Adjustment:

1. Insert a test cartridge with a 15 kHz Azimuth alignment tone.
2. Meter the output of the Reproducer and adjust Azimuth screw A of the reproducing head for maximum output level.
3. Tighten Lock Screw L.

The Tapetronics Tape Cartridge Reproducer has been designed to provide reliable, rugged mechanics which require a minimum of simplified adjustments. The adjustments should be made in the order listed below.

Capstan Shaft (Motor) Position: While the adjustment procedure outlined below will normally be required only if the motor has been removed, a check for proper positioning of the capstan should be a part of the regular maintenance schedule.

1. Remove the rubber pressure roller and place the steel capstan alignment tool (optionally available from Tapetronics) on the pressure roller shaft.
2. Loosen the motor mounting screws and manually press the steel capstan alignment tool against the capstan shaft.
3. Push the capstan shaft toward the head assembly while squeezing the steel tool and the capstan shaft together. (The steel tool must lie flat against the capstan shaft to make the pressure roller shaft parallel with the capstan shaft.)
4. Tighten the motor mounting screws and recheck the adjustment.
5. Replace the rubber pressure roller on its shaft. The steel washer goes on the bottom and the nylon washer goes on the top just under the "C" clamp.

Pressure Roller/Capstan Pressure - Course Solenoid Adjustment: This adjustment is made at the factory and should not normally have to be repeated unless a parts replacement has been made in the solenoid linkage assembly. (See Figure III for parts location.)

1. Loosen the clevis locknut and run it up "finger" tight on the clevis.
2. Rotate the solenoid plunger until about eight threads (approximately 1/4 inch) show between the locknut and plunger.
3. Loosen the screws in the cross-shaft clamp and energize the solenoid.
4. Manually bring the pressure roller up against the capstan shaft and press it until the rubber is depressed approximately 1/32 inch where it makes contact with the capstan shaft.
5. Tighten the screws in the cross-shaft clamp.

Pressure Roller/Capstan Pressure - Fine Solenoid Adjustment: This adjustment will normally be required only after parts replacement; but for best results, a check of the pressure roller/capstan pressure should be on the maintenance schedule.

1. Loosen the clevis locknut and rotate the solenoid plunger until about four threads (approximately 1/8 inch) show between the locknut and plunger. Energize the solenoid.
2. Using the "go - no go" pressure roller compression tool, (optionally available from Tapetronics) check the distance between the capstan shaft and the pressure

roller shaft. (The tool should advance to the "step" and stop.)

3. To increase the pressure, rotate the solenoid plunger so that it penetrates deeper into the solenoid (clockwise as viewed from the front panel). This will increase the pull of the solenoid on the plunger and, therefore, the pressure roller/capstan pressure.
4. To decrease the pressure, rotate the plunger counter-clockwise as viewed from the front panel.
5. Tighten the clevis locknut when the proper pressure has been achieved. (If proper adjustment cannot be obtained, complete the course adjustment outlined above before repeating the fine adjustment.)

Solenoid Damping: The air damping of the solenoid is controlled by the adjustment of the set screw at the rear end of the solenoid seat. The speed of the solenoid operation is proportional to the speed at which air is allowed to move through the small hole on the underside of the solenoid seat. The noise of the solenoid operation shares the same relationship.

1. Loosen the locknut on the Solenoid Damping Set Screw.
2. Turn the Damping Screw clockwise to reduce, or counter-clockwise to increase the speed of the solenoid operation.
3. Check the adjustment by inserting a cartridge and starting the Reproducer. Repeat the adjustment as required.
4. Tighten the locknut.

Symbol		Description
<u>CHASSIS</u>		
B1	451-0001-010	Motor, Capstan, 450 RPM, 110 V., 60 Hz (43H66)
	451-0002-010	Motor, Capstan, 450 RPM, 220 V., 60 Hz (43H68)
C1	683-0001-000	Capacitor, 1.5 mfd, 370 V.
C2	698-0002-000	Capacitor, 150 mfd, 250 V.
C3	698-0001-000	Capacitor, 1000 mfd, 50 V.
C4	698-0001-000	Capacitor, 1000 mfd, 50 V.
C5	696-0078-000	Capacitor, 100 mfd, 12 V. (WP Series Only)
CR1	575-0004-000	Diode, 1N3255
CR2	575-0004-000	Diode, 1N3255
CR3	575-0004-000	Diode, 1N3255
CR4	575-0004-000	Diode, 1N3255
CR5	575-0004-000	Diode, 1N3255
CR6	575-0003-000	Diode, 1N3254
CR7	575-0003-000	Diode, 1N3254
CR8	575-0003-000	Diode, 1N3254
CR9	575-0003-000	Diode, 1N3254 (WP Series Only)
F1	417-0001-000	Fuse, 1/2 ampere, 3AG
F2	417-0002-000	Fuse, 1 ampere, slow-blow, 3AG
I1	415-0002-000	Power Indicator, 110 V.
I2	415-0001-000	Lamp, #327, 28 V.
I3	415-0001-000	Lamp, #327, 28 V.
IC1	605-0001-000	Integrated Circuit, Series Regulated Power Supply, 25 VDC, 1 amp, Bendix BN4104
J1	380-0004-000	Socket, 15 pin (Control)
J2	380-0003-000	Socket, 6 pin (Audio)
J3	380-0001-000	Socket, 3 pin (Motor)
J4	380-0002-000	Socket, 12 pin Card Edge (Program)
J5	380-0002-000	Socket, 12 pin Card Edge (Cue)
K1	480-0001-000	Relay, 4PDT, 24 V. (1 kHz)
K2	480-0001-000	Relay, 4PDT, 24 V. (150 Hz)
K3	480-0001-000	Relay, 4PDT, 24 V. (8 kHz)
L1	477-0003-002	Solenoid, 110 Volt DC
L2	504-0002-000	Head, Reproduce, Nortronics PB2H7KNO, Mono
	504-0004-000	Head, Reproduce, Nortronics PB3Q7KNO, Stereo
L3	504-0001-000	Head, Dummy, Nortronics BL2NO

Symbol		Description
P1	378-0003-000	Plug, 15 pin (Control)
P2	378-0002-000	Plug, 6 pin (Audio)
P3	378-0001-000	Plug, 3 pin (Motor)
R1	628-0158-000	Resistor, 100 ohm, 10 watt
R2	626-0407-000	Resistor, 4.7 ohm, 1 watt
R3	626-0439-000	Resistor, 100 ohm, 1 watt
R4	626-0239-000	Resistor, 100 ohm, 1/2 watt
R5	626-0239-000	Resistor, 100 ohm, 1/2 watt
R6	626-0239-000	Resistor, 100 ohm, 1/2 watt
R7	626-0239-000	Resistor, 100 ohm, 1/2 watt
R8	626-0231-000	Resistor, 47 ohm, 1/2 watt (WP Series Only)
S1	392-0001-000	Switch, Micro (Cartridge Sensing)
S2	391-0002-000	Switch, Push-Button (start)
S3	391-0002-000	Switch, Push-Button (stop)
T1	526-0001-000	Transformer, Power, SP Series (AM-5029)
	526-0002-000	Transformer, Power, WP Series (AM-4991)
T2	532-0001-000	Transformer, Audio (AM-4990)
T3	532-0001-000	Transformer, Audio (stereo only)
Misc.	433-0001-000	Cord, AC Power
Misc.	418-0001-000	Holder, Fuse
Misc.	507-0001-010	Head Lead Assembly, mono play
Misc.	507-0002-010	Head Lead Assembly, stereo play left
Misc.	507-0003-010	Head Lead Assembly, stereo play cue
Misc.	507-0004-010	Head Lead Assembly, stereo play right
Misc.	507-0001-000	Head Lead Assembly, mono record (WP Series Only)
Misc.	507-0002-000	Head Lead Assembly, stereo record left (WP Only)
Misc.	507-0003-000	Head Lead Assembly, stereo record cue (WP Only)
Misc.	507-0004-000	Head Lead Assembly, stereo record right (WP Only)
Misc.	487-0001-000	Sockets, relay
Misc.	613-0002-000	Socket, TD-3 Transistor (for ICI)

PROGRAM REPRODUCE AMPLIFIER CARD

C101	696-0124-000	Capacitor, 100 mfd, 25 V.
C102	696-0114-000	Capacitor, 5 mfd, 25 V.
C103	677-0001-000	Capacitor, 100 pfd, 300 V.
C104	681-0048-000	Capacitor, .015 mfd, 200 V.
C105	696-0117-000	Capacitor, 10 mfd, 25 V.
C106	696-0124-000	Capacitor, 100 mfd, 25 V.
C107	696-0117-000	Capacitor, 10 mfd, 25 V.
C108	696-0117-000	Capacitor, 10 mfd, 25 V.
C109	696-0117-000	Capacitor, 10 mfd, 25 V.
C110	696-0124-000	Capacitor, 100 mfd, 25 V. (stereo only)
C111	696-0114-000	Capacitor, 5 mfd, 25 V. (stereo only)
C112	677-0001-000	Capacitor, 100 pfd, 300 V. (stereo only)
C113	681-0048-000	Capacitor, .015 mfd, 200 V. (stereo only)
C114	696-0117-000	Capacitor, 10 mfd, 25 V. (stereo only)
C115	696-0124-000	Capacitor, 100 mfd, 25 V. (stereo only)

Symbol		Description
Cl16	696-0117-000	Capacitor, 10 mfd, 25 V. (stereo only)
Cl17	696-0117-000	Capacitor, 10 mfd, 25 V. (stereo only)
Cl18	696-0117-000	Capacitor, 10 mfd, 25 V. (stereo only)
Q101	590-0002-000	Transistor, 2N3242A
Q102	590-0002-000	Transistor, 2N3242A
Q103	590-0002-000	Transistor, 2N3242A
Q104	590-0001-000	Transistor, 2N3053
Q105	590-0002-000	Transistor, 2N3242A (stereo only)
Q106	590-0002-000	Transistor, 2N3242A (stereo only)
Q107	590-0002-000	Transistor, 2N3242A (stereo only)
Q108	590-0002-000	Transistor, 2N3053 (stereo only)
R101	626-0311-000	Resistor, 100 K ohm, 1/2 watt, 5%
R102	626-0295-000	Resistor, 22 K ohm, 1/2 watt, 5%
R103	626-0239-000	Resistor, 100 ohm, 1/2 watt, 5%
R104	626-0269-000	Resistor, 1.8 K ohm, 1/2 watt, 5%
R105	636-0002-000	Resistor, variable, 10 K ohm, 1/4 watt, (L. Equal)
R106	626-0271-000	Resistor, 2.2 K ohm, 1/2 watt, 5%
R107	626-0239-000	Resistor, 100 ohm, 1/2 watt, 5%
R108	626-0271-000	Resistor, 2.2 K ohm, 1/2 watt, 5%
R109	626-0259-000	Resistor, 680 ohm, 1/2 watt, 5%
R110	626-0283-000	Resistor, 6.8 K ohm, 1/2 watt, 5%
R111	636-0002-000	Resistor, variable, 10 K ohm, 1/4 watt (L. Level)
R112	626-0307-000	Resistor, 68 K ohm, 1/2 watt, 5%
R113	626-0287-000	Resistor, 10 K ohm, 1/2 watt, 5%
R114	626-0271-000	Resistor, 2.2 K ohm, 1/2 watt, 5%
R115	626-0251-000	Resistor, 330 ohm, 1/2 watt, 5%
R116	626-0299-000	Resistor, 33 K ohm, 1/2 watt, 5%
R117	626-0287-000	Resistor, 10 K ohm, 1/2 watt, 5%
R118	626-0259-000	Resistor, 680 ohm, 1/2 watt, 5%
R119	626-0231-000	Resistor, 47 ohm, 1/2 watt, 5%
R120	626-0311-000	Resistor, 100 K ohm, 1/2 watt, 5% (stereo only)
R121	626-0295-000	Resistor, 22 K ohm, 1/2 watt, 5% (stereo only)
R122	626-0239-000	Resistor, 100 ohm, 1/2 watt, 5% (stereo only)
R123	626-0269-000	Resistor, 1.8 K ohm, 1/2 watt, 5% (stereo only)
R124	636-0002-000	Resistor, variable, 10 K ohm, 1/4 watt (Right Equal.) (stereo only)
R125	626-0271-000	Resistor, 2.2 K ohm, 1/2 watt, 5% (stereo only)
R126	626-0239-000	Resistor, 100 ohm, 1/2 watt, 5% (stereo only)
R127	626-0271-000	Resistor, 2.2 K ohm, 1/2 watt, 5% (stereo only)
R128	626-0259-000	Resistor, 680 ohm, 1/2 watt, 5% (stereo only)
R129	626-0283-000	Resistor, 6.8 K ohm, 1/2 watt, 5% (stereo only)
R130	636-0002-000	Resistor, variable, 10 K ohm, 1/4 watt (Right Level) (stereo only)
R131	626-0307-000	Resistor, 68 K ohm, 1/2 watt, 5% (stereo only)
R132	626-0287-000	Resistor, 10 K ohm, 1/2 watt, 5% (stereo only)
R133	626-0271-000	Resistor, 2.2 K ohm, 1/2 watt, 5% (stereo only)
R134	626-0251-000	Resistor, 330 ohm, 1/2 watt, 5% (stereo only)

Symbol		Description
R135	626-0299-000	Resistor, 33 K ohm, 1/2 watt, 5% (stereo only)
R136	626-0287-000	Resistor, 10 K ohm, 1/2 watt, 5% (stereo only)
R137	626-0259-000	Resistor, 680 ohm, 1/2 watt, 5% (stereo only)
R138	626-0231-000	Resistor, 47 ohm, 1/2 watt, 5% (stereo only)

CUE TONE DETECTOR CARD

C201	696-0012-000	Capacitor, 25 mfd, 3 V.
C202	694-0001-000	Capacitor, .47 mfd, 50 V.
C203	696-0114-000	Capacitor, 5 mfd, 25 V.
C204	696-0124-000	Capacitor, 100 mfd, 25 V.
C205	696-0114-000	Capacitor, 5 mfd, 25 V.
C206	696-0124-000	Capacitor, 100 mfd, 25 V.
C207	696-0114-000	Capacitor, 5 mfd, 25 V.
C208	681-0054-000	Capacitor, .047 mfd, 200 V.
C209		Capacitor, Selected to tune the detector to 1 kHz
C210	696-0114-000	Capacitor, 5 mfd, 25 V.
C211	696-0114-000	Capacitor, 5 mfd, 25 V. (8 kHz)
C212	696-0114-000	Capacitor, 5 mfd, 25 V. (8 kHz)
C213	681-0058-000	Capacitor, .068 mfd, 200 V. (8 kHz)
C214		Capacitor, Selected to tune the detector to 8 kHz
C215	696-0114-000	Capacitor, 5 mfd, 25 V. (8 kHz)
C216	696-0114-000	Capacitor, 5 mfd, 25 V. (150 Hz)
C217	696-0114-000	Capacitor, 5 mfd, 25 V. (150 Hz)
C218	685-0003-000	Capacitor, 2.2 mfd, 250 V. (150 Hz)
C219	696-0117-000	Capacitor, 10 mfd, 25 V. (150 Hz)
CR201	575-0002-000	Diode, 1N462
CR202	575-0002-000	Diode, 1N462
CR203	575-0005-000	Diode, 10D4 or 1N2070
CR204	575-0005-000	Diode, 10D4 or 1N2070
CR205	575-0005-000	Diode, 10D4 or 1N2070
CR206	575-0005-000	Diode, 10D4 or 1N2070 (8 kHz)
CR207	575-0005-000	Diode, 10D4 or 1N2070 (150 Hz)
IC201	606-0001-000	Integrated Circuit, Preamplifier, Mallory MIC0101D
L201	511-0002-000	Inductor, toroid, 500 mh
L202	511-0001-000	Inductor, toroid, 5 mh (8 kHz)
L203	511-0002-000	Inductor, toroid, 500 mh (150 Hz)
Q201	590-0001-000	Transistor, 2N3053
Q202	590-0003-000	Transistor, 2N4402
Q203	590-0001-000	Transistor, 2N3053
Q204	590-0001-000	Transistor, 2N3053 (8 kHz)

Symbol		Description
Q205	590-0003-000	Transistor, 2N4402 (8 kHz)
Q206	590-0001-000	Transistor, 2N3053 (8 kHz)
Q207	590-0001-000	Transistor, 2N3053 (150 Hz)
Q208	590-0003-000	Transistor, 2N4402 (150 Hz)
Q209	590-0001-000	Transistor, 2N3053 (150 Hz)
R201	626-0263-000	Resistor, 1 K ohm, 1/2 watt, 5%
R202	626-0255-000	Resistor, 470 ohm, 1/2 watt, 5%
R203	626-0283-000	Resistor, 68 K ohm, 1/2 watt, 5%
R204	626-0239-000	Resistor, 100 ohm, 1/2 watt, 5%
R205	626-0263-000	Resistor, 1 K ohm, 1/2 watt, 5%
R206	636-0002-000	Resistor, variable, 10 K ohm, 1/4 watt, (1 kHz Sensitivity)
R207	626-0291-000	Resistor, 15 K ohm, 1/2 watt, 5%
R208	626-0291-000	Resistor, 15 K ohm, 1/2 watt, 5%
R209	626-0275-000	Resistor, 3.3 K ohm, 1/2 watt, 5%
R210	626-0279-000	Resistor, 4.7 K ohm, 1/2 watt, 5%
R211	626-0271-000	Resistor, 2.2 K ohm, 1/2 watt, 5%
R212	626-0279-000	Resistor, 4.7 K ohm, 1/2 watt, 5%
R213	626-0279-000	Resistor, 4.7 K ohm, 1/2 watt, 5%
R214	626-0279-000	Resistor, 4.7 K ohm, 1/2 watt, 5%
R215		Resistor, 270 ohm, 1 watt, 10%
R216	626-0291-000	Resistor, 15 K ohm, 1/2 watt, 5% (8 kHz)
R217	636-0002-000	Resistor, variable, 10 K ohm, 1/4 watt (8 kHz Sensitivity)
R218	626-0291-000	Resistor, 15 K ohm, 1/2 watt, 5% (8 kHz)
R219	626-0291-000	Resistor, 15 K ohm, 1/2 watt, 5% (8 kHz)
R220	626-0275-000	Resistor, 3.3 K ohm, 1/2 watt, 5% (8 kHz)
R221	626-0279-000	Resistor, 4.7 K ohm, 1/2 watt, 5% (8 kHz)
R222	626-0271-000	Resistor, 2.2 K ohm, 1/2 watt, 5% (8 kHz)
R223	626-0279-000	Resistor, 4.7 K ohm, 1/2 watt, 5% (8 kHz)
R224	626-0279-000	Resistor, 4.7 K ohm, 1/2 watt, 5% (8 kHz)
R225	626-0279-000	Resistor, 4.7 K ohm, 1/2 watt, 5% (8 kHz)
R226	626-0239-000	Resistor, 100 ohm, 1/2 watt, 5% (150 Hz)
R227	636-0002-000	Resistor, variable, 10 K ohm, 1/4 watt (150 Hz Sensitivity)
R228	626-0291-000	Resistor, 15 K ohm, 1/2 watt, 5% (150 Hz)
R229	626-0291-000	Resistor, 15 K ohm, 1/2 watt, 5% (150 Hz)
R230	626-0275-000	Resistor, 3.3 K ohm, 1/2 watt, 5% (150 Hz)
R231	626-0279-000	Resistor, 4.7 K ohm, 1/2 watt, 5% (150 Hz)
R232	626-0271-000	Resistor, 2.2 K ohm, 1/2 watt, 5% (150 Hz)
R233	626-0279-000	Resistor, 4.7 K ohm, 1/2 watt, 5% (150 Hz)
R234	626-0279-000	Resistor, 4.7 K ohm, 1/2 watt, 5% (150 Hz)
R235	626-0279-000	Resistor, 4.7 K ohm, 1/2 watt, 5% (150 Hz)

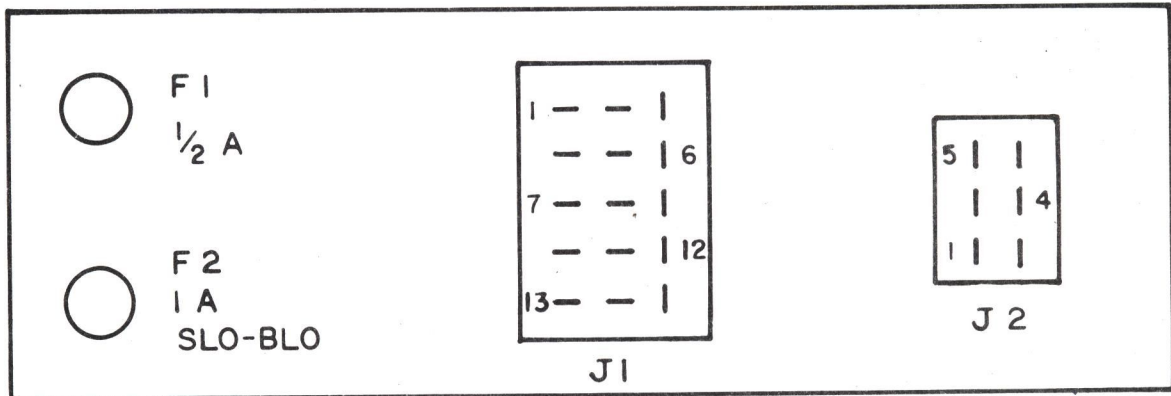


FIGURE 1
 REAR CHASSIS
 SP & WP SERIES REPRODUCERS

EXTERNAL CONNECTIONS

CONNECTOR J 1

<u>Terminal</u>	<u>Function</u>	
1	Ground	
2	Remote Start (Run Ground)) Normally Open Switch
3	Remote Start (Ready Ground)	
4	Remote Stop (Ready Ground)) Normally Open Switch
5	Remote Stop (Stop Ground)	
6	Remote Run Lamp Ground	
7	Remote Ready Lamp Ground	
8	+24 Volts	
9	No Connection	
10 - 11	Secondary Cue Relay Contacts (Normally Open)	
12 - 13	Tertiary Cue Relay Contacts (Normally Open)	
14 - 15	Cue Audio - Unbalanced Audio Output from Cue Pre-amplifier; High Impedance (Terminate with 10K ohms or greater)	

CONNECTOR J 2

1	Monophonic (left channel stereo) Shield (Ground)
3	Monophonic (left channel stereo) Audio Output +
5	Monophonic (left channel stereo) Audio Output -
2	Right Channel Stereo Shield (Ground)
4	Right Channel Stereo Audio Output +
6	Right Channel Stereo Audio Output -

A-11259-R

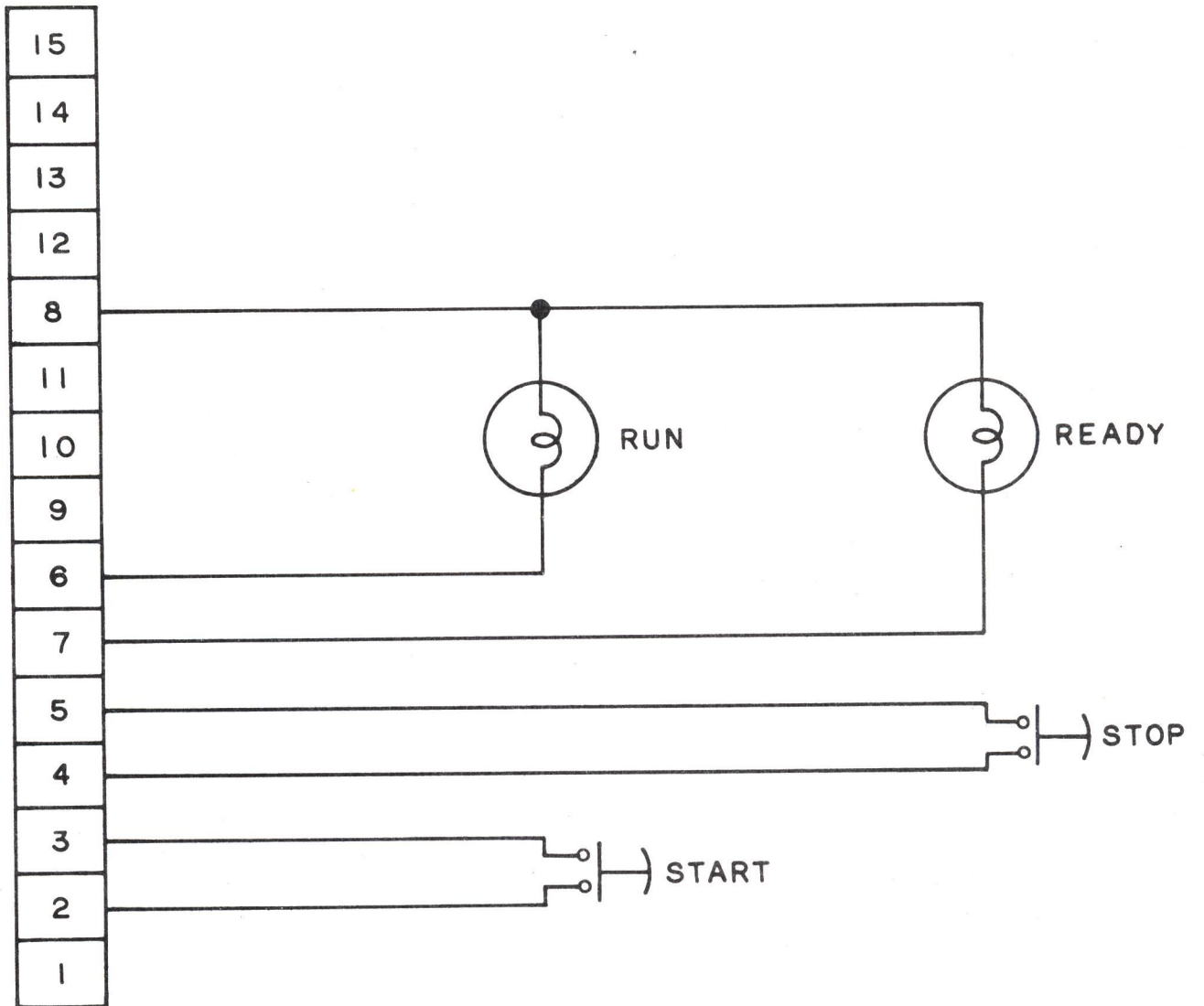


FIGURE II

SAMPLE REMOTE CONTROL SCHEMATIC

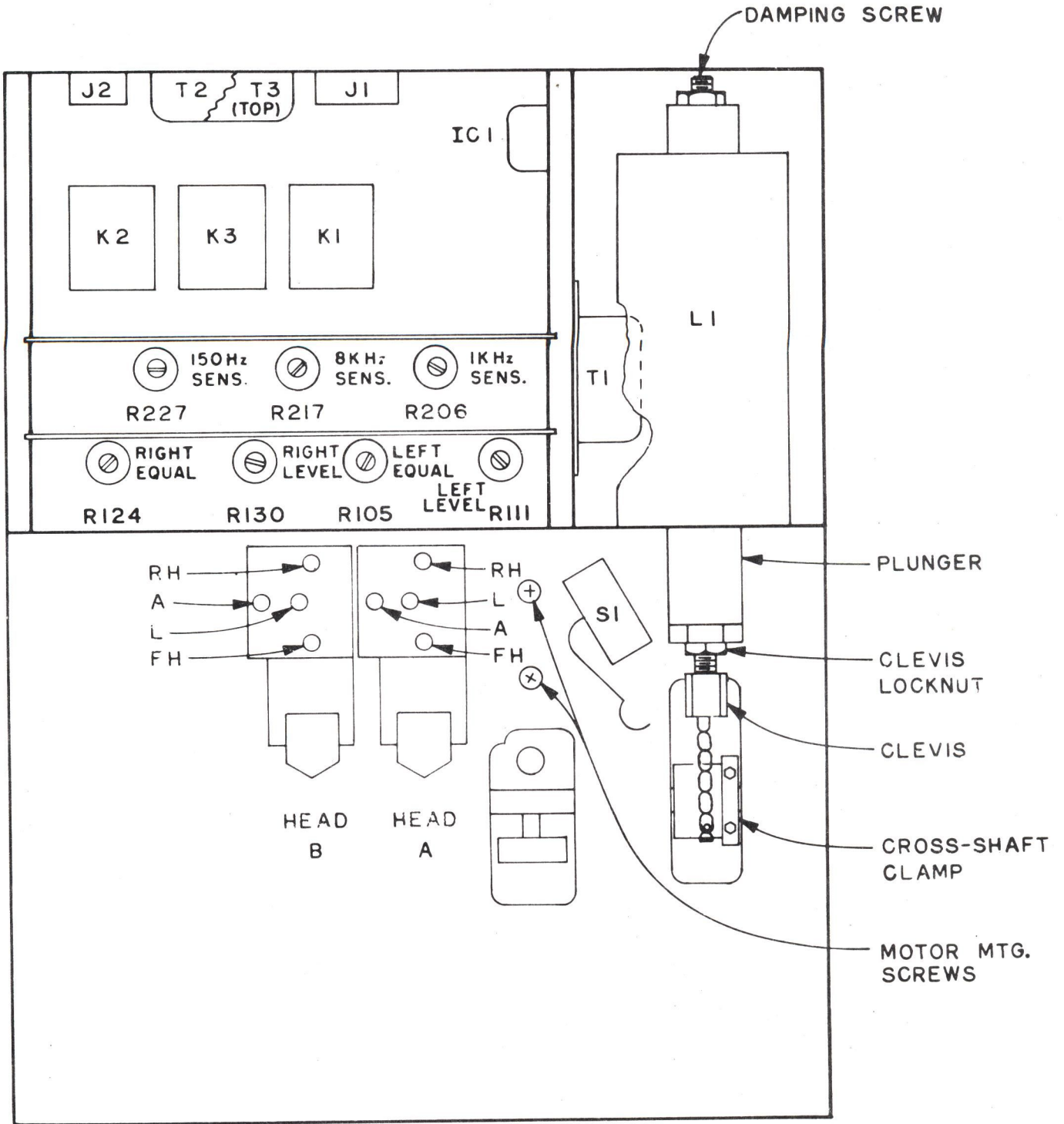
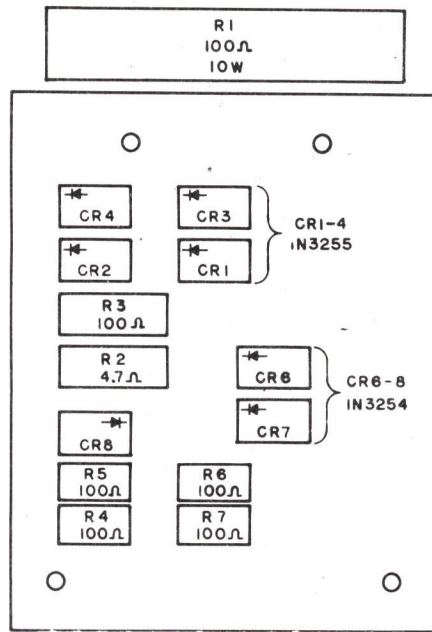
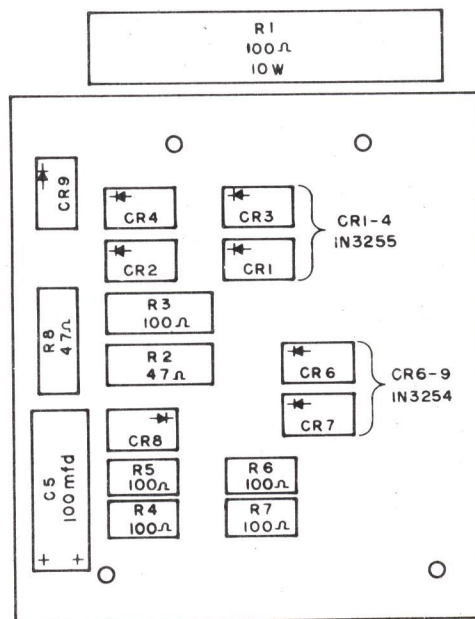


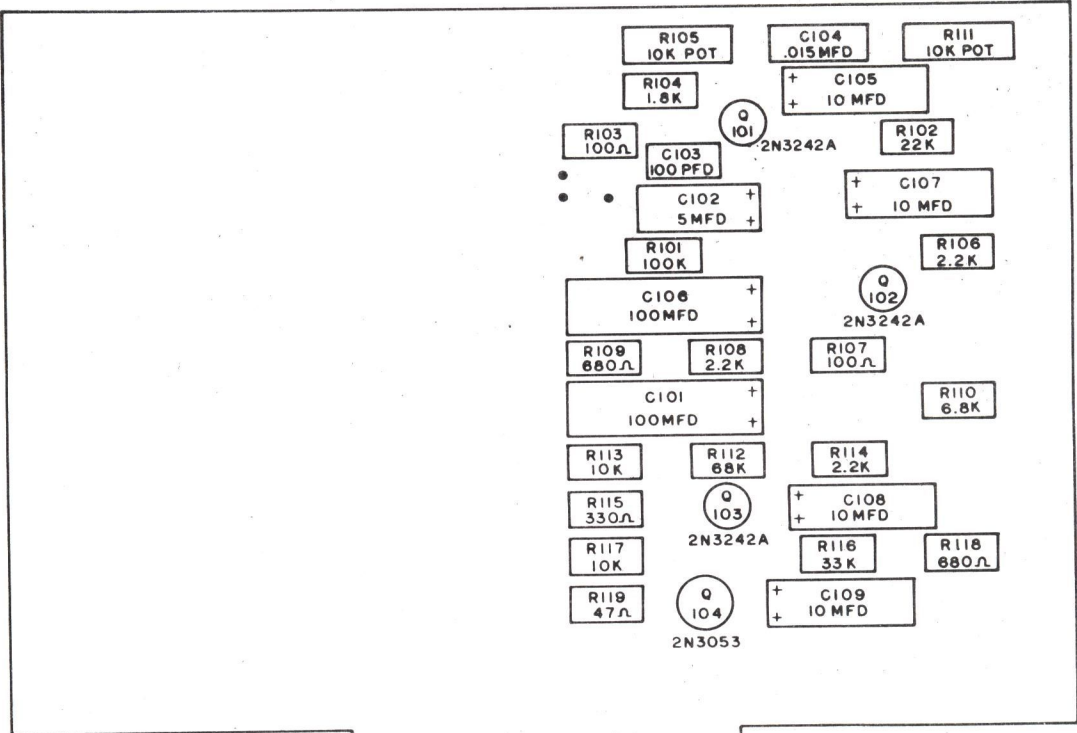
FIGURE III
 SP SERIES, TOP VIEW



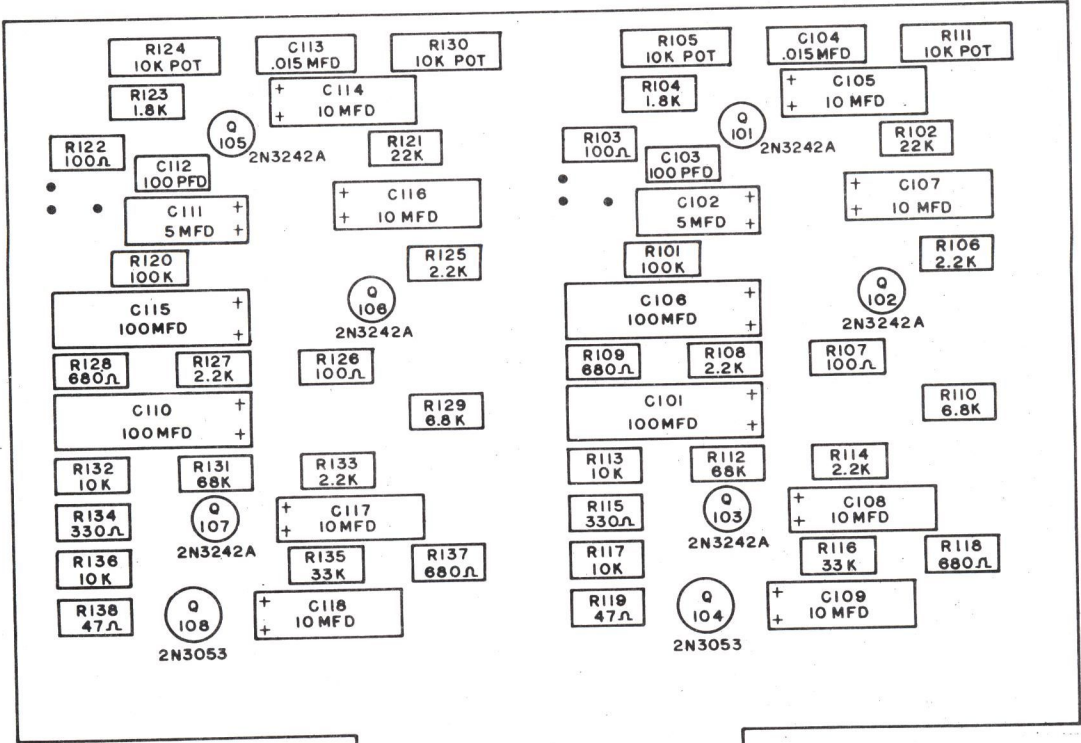
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CHASSIS UTILITY CARD
SP SERIES REPRODUCER



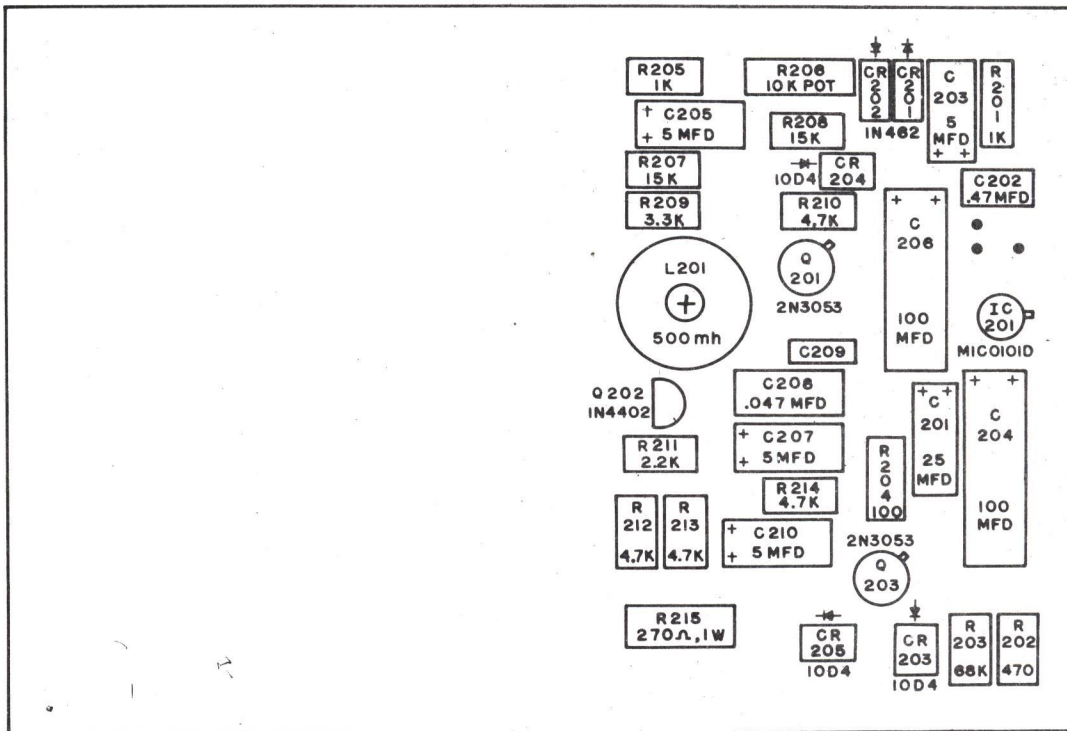
831-0004-004
CHASSIS UTILITY CARD
WP SERIES REPRODUCER



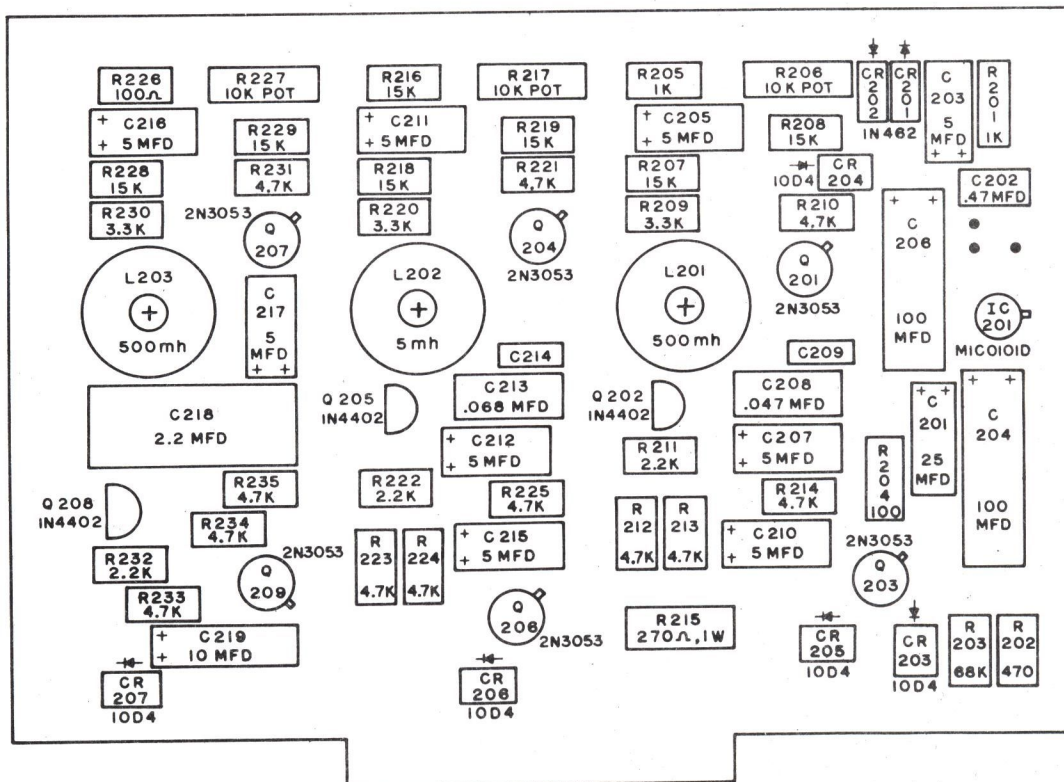
831-0002-003
MONOPHONIC PROGRAM
AMPLIFIER CARD



831-0002-013
STEREOPHONIC PROGRAM
AMPLIFIER CARD

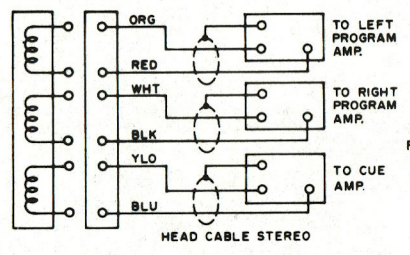


831-0003-003
1 kHz CUE
DETECTOR CARD

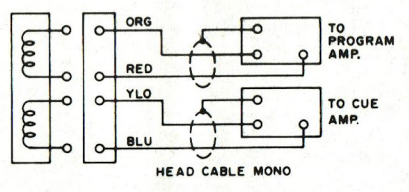


831-0003-013
1 kHz, 150 Hz, 8 kHz
CUE DETECTOR CARD

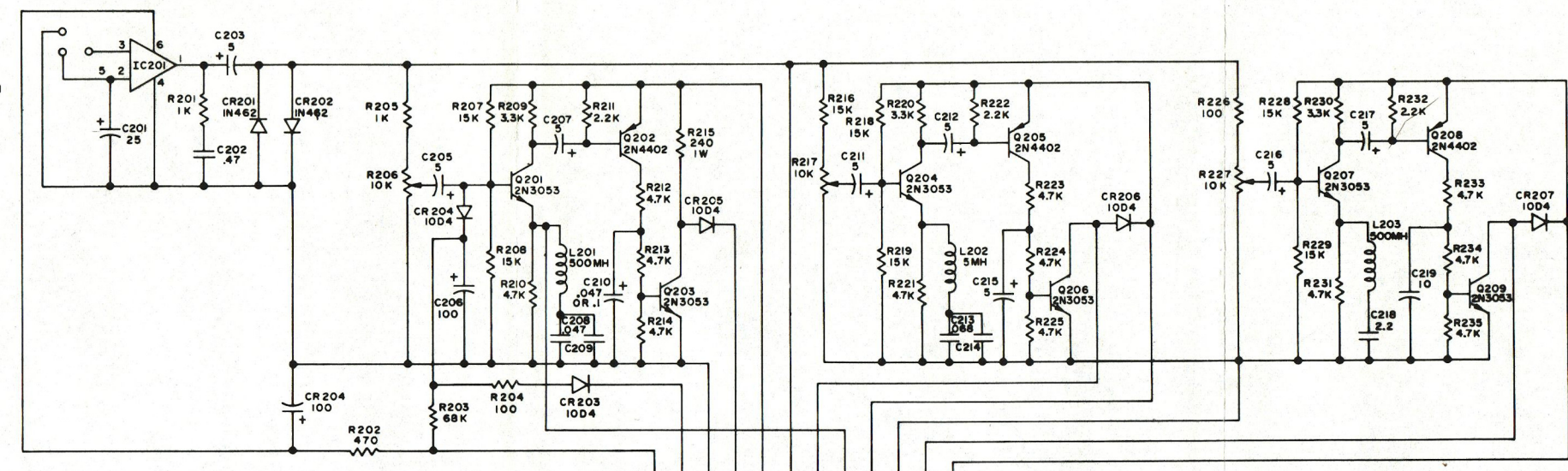
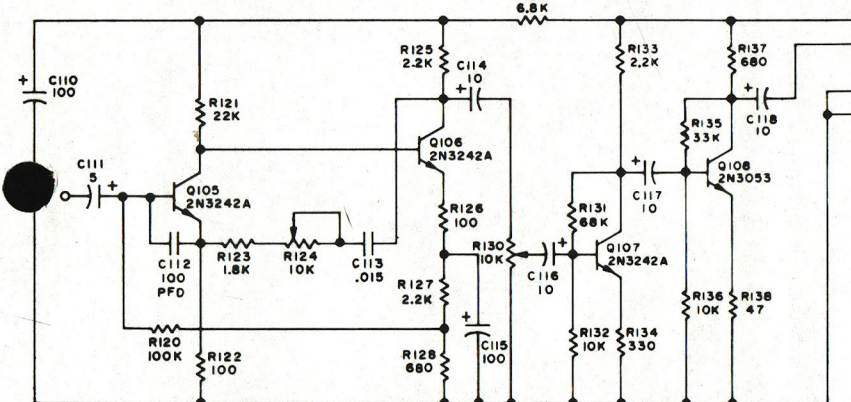
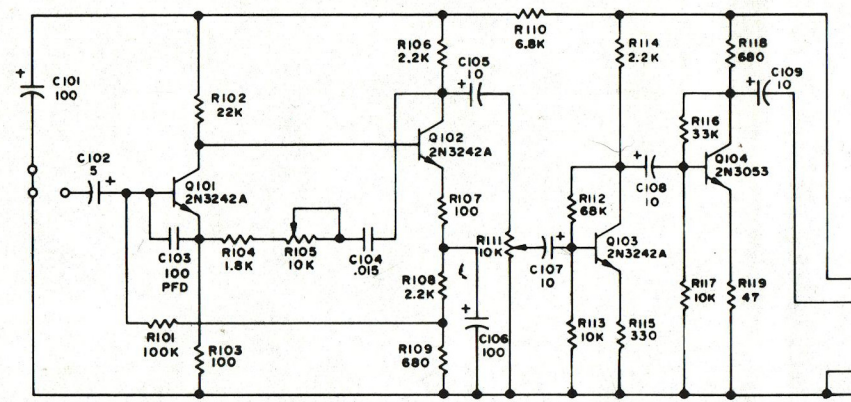
STEREO REPRODUCE HEAD PB 307K



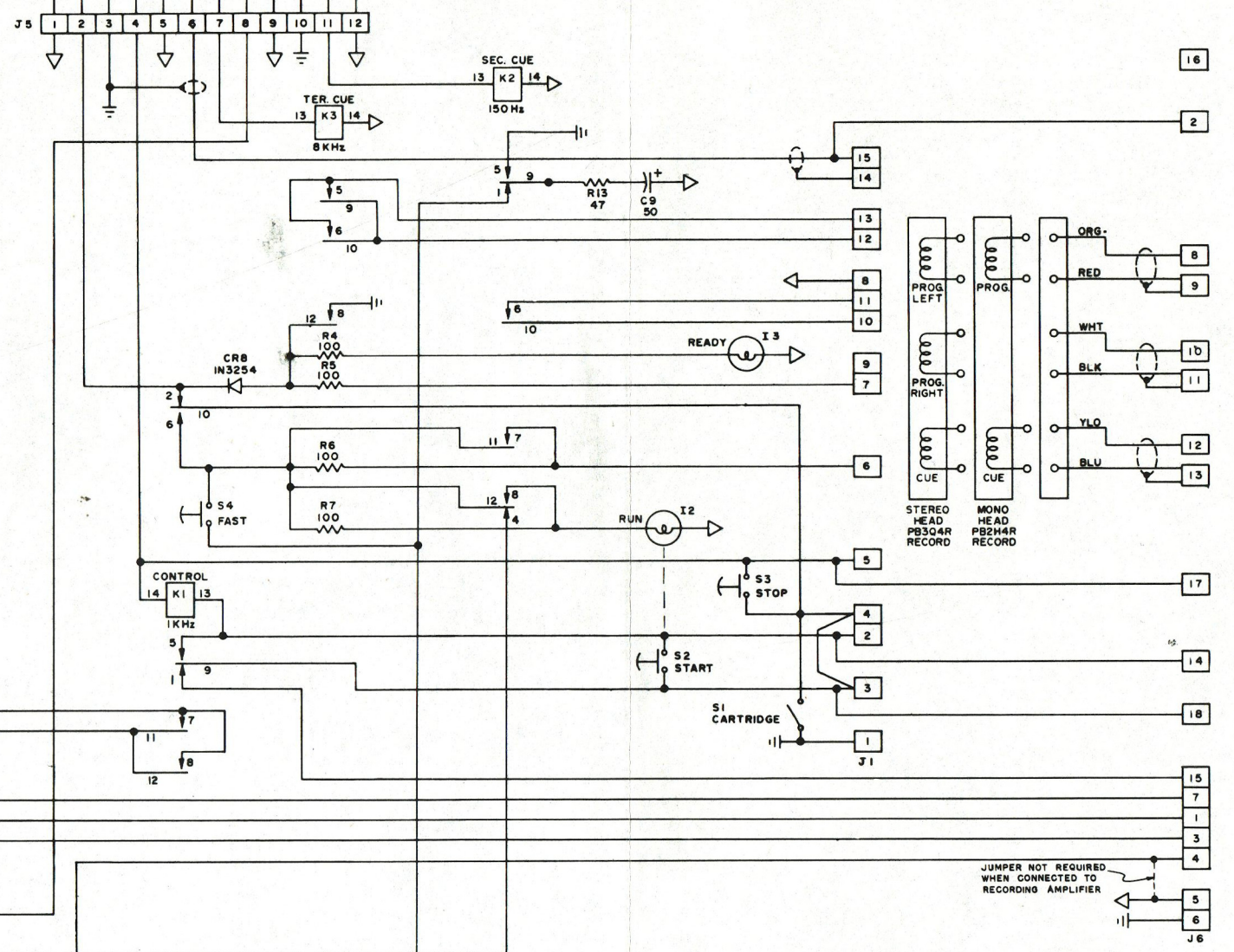
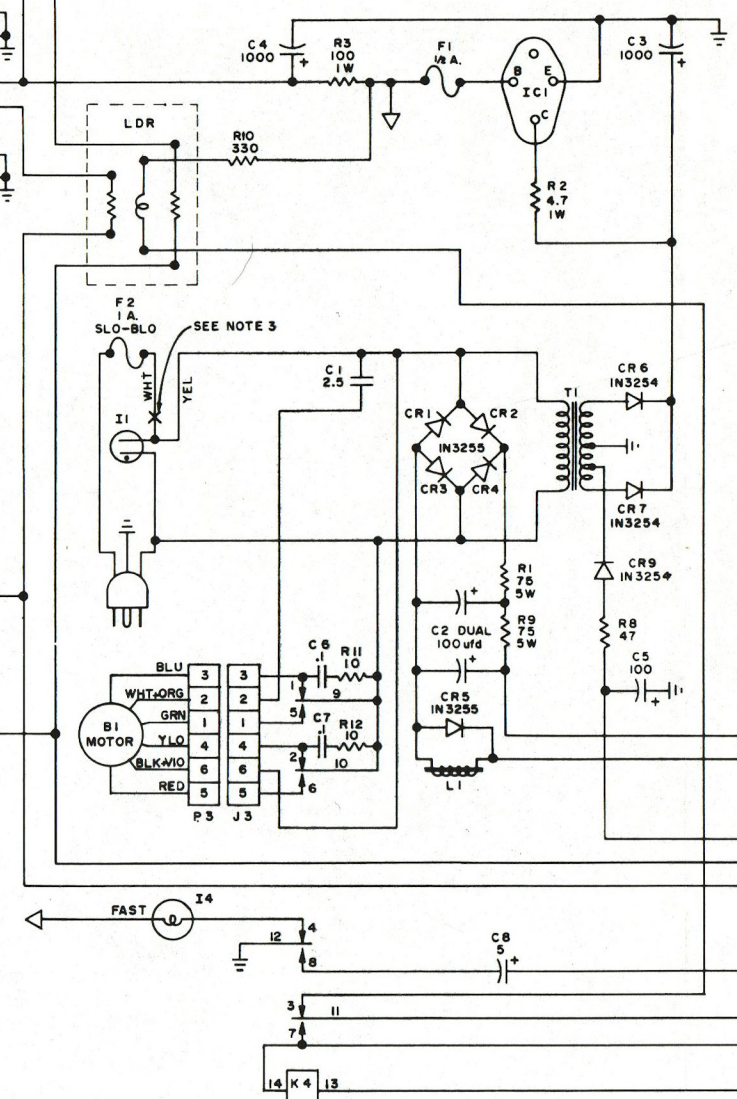
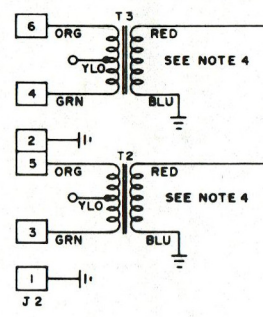
MONO REPRODUCE HEAD PB 2H7K



EQUALIZED PRE AMP AND LIMITER 3 TONE CUE CARD 1KHz SECTION 8KHz SECTION 150Hz SECTION



- NOTES:
1. ALL RESISTORS 1/2 W. UNLESS OTHERWISE SPECIFIED.
 2. ALL CAPACITORS SHOWN IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
 3. POWER LIGHT MAY BE REPLACED WITH POWER SWITCH - INSERT SWITCH AT POINT X.
 4. NORMALLY WIRED FOR 600Ω OUTPUT - FOR 150Ω, REPLACE ORANGE WIRE WITH YELLOW WIRE.
 5. FUSE HOLDERS, RELAY, TRANSISTOR AND IC SOCKETS NOT SHOWN ON SCHEMATIC.
 6. ALL POINTS MARKED → ARE CONNECTED TOGETHER AND ARE AT +25V.



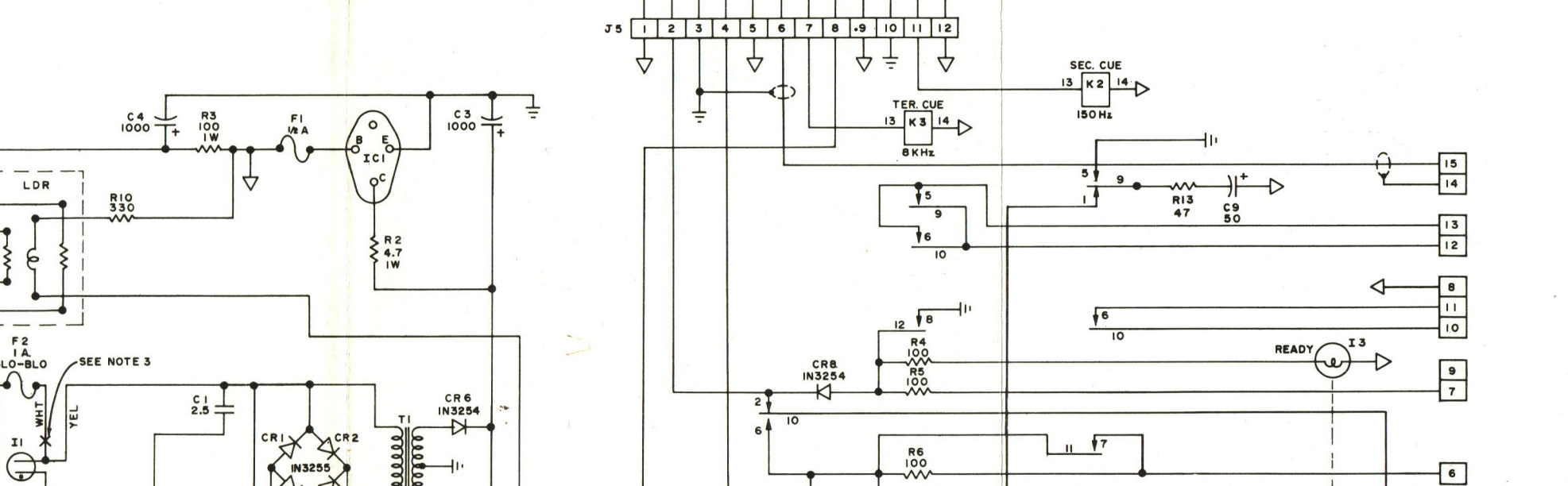
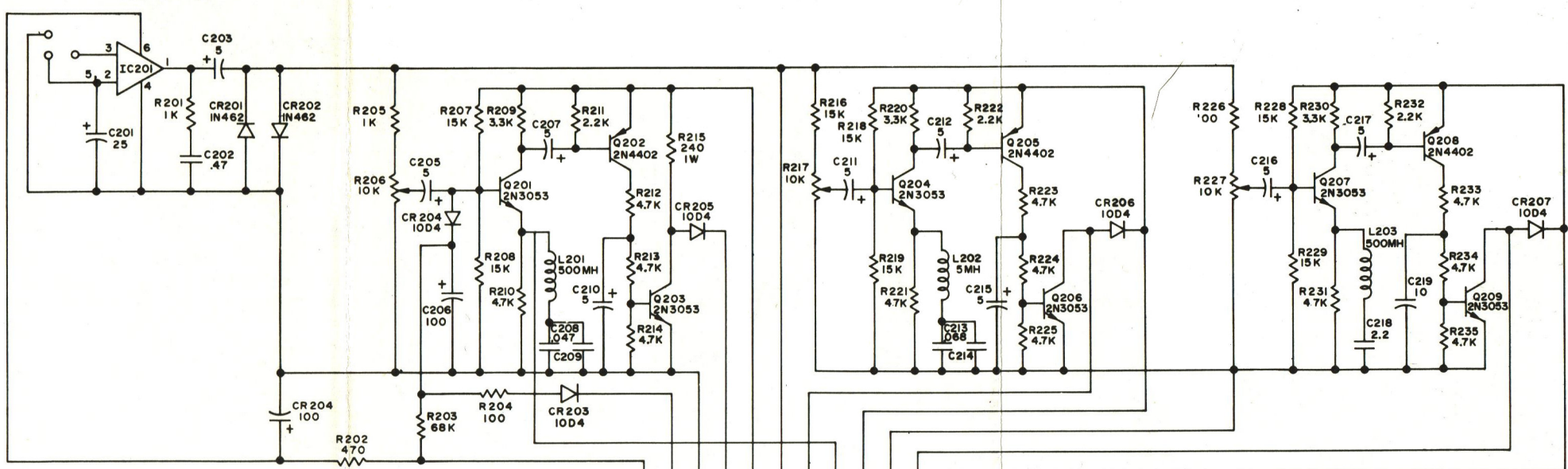
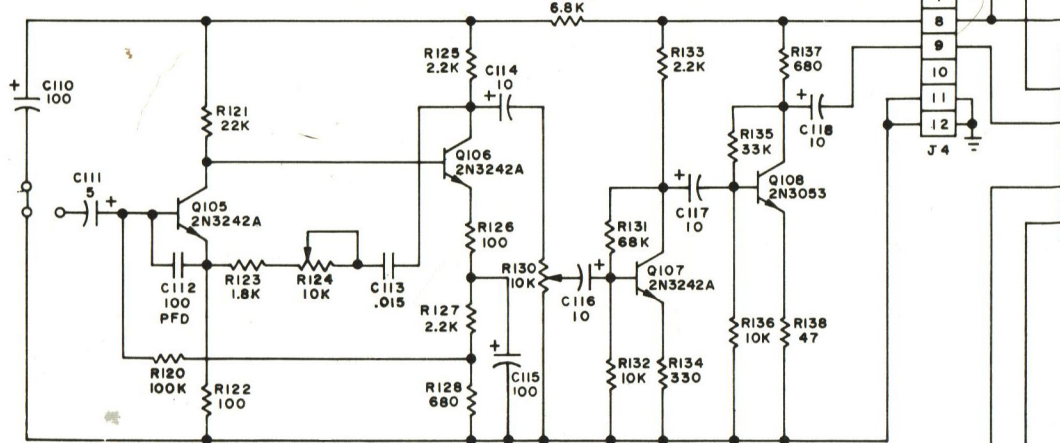
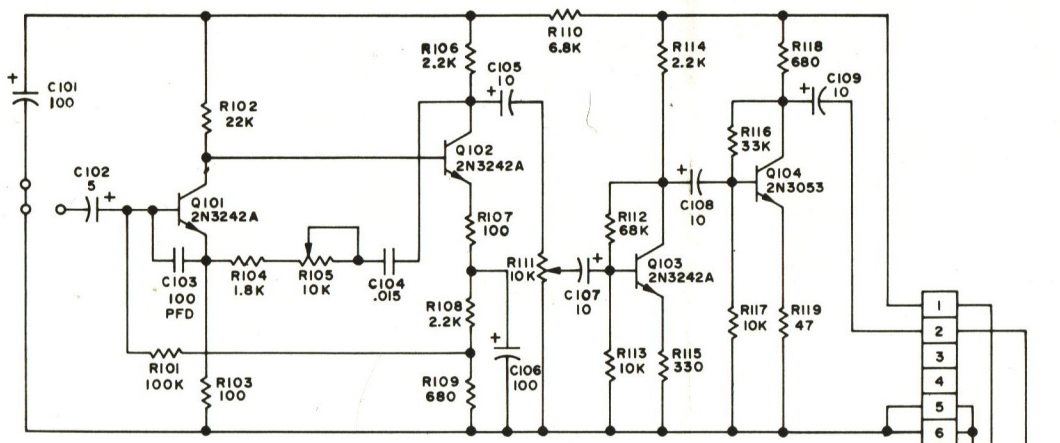
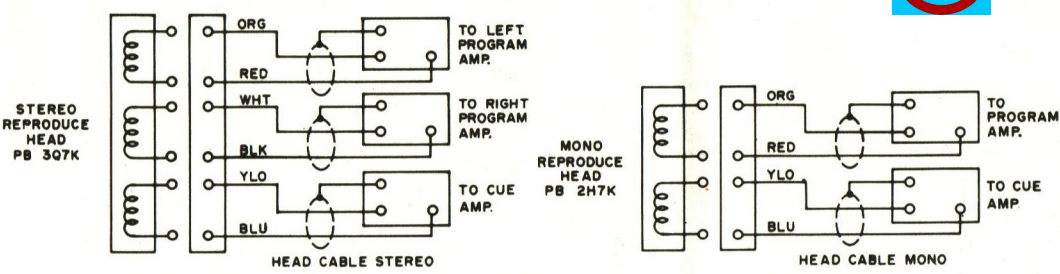
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TITLE SCHEMATIC, WP SERIES HIGH SPEED CUE	
INTERNATIONAL TAPETRONICS CORPORATION BLOOMINGTON, ILLINOIS 61701	893-0005-002
DRAWING NUMBER	REV.

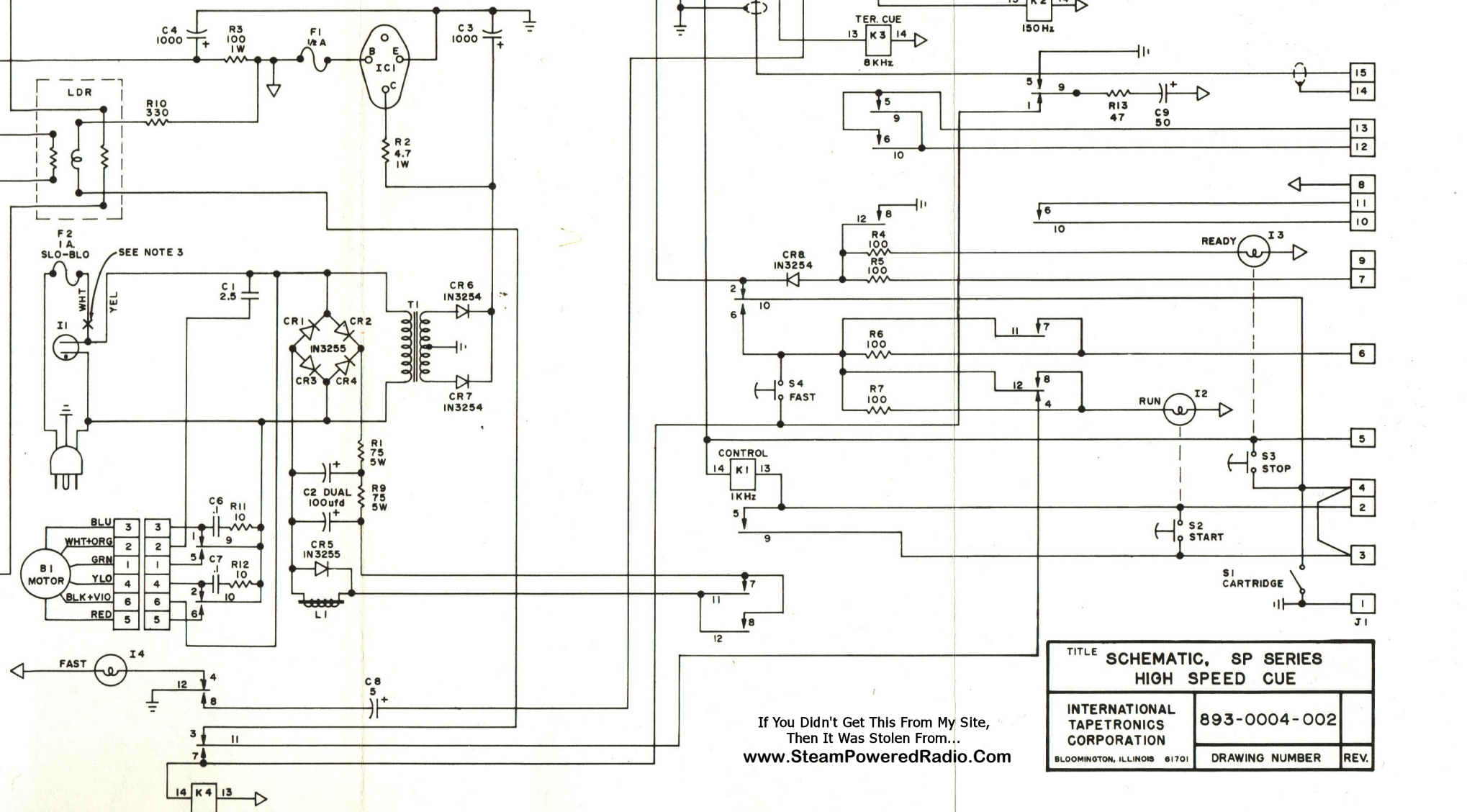
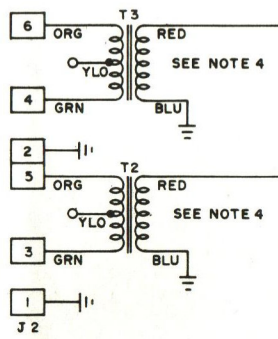


3 TONE CUE CARD

EQUALIZED PRE AMP AND LIMITER 1KHz SECTION 8KHz SECTION 150Hz SECTION

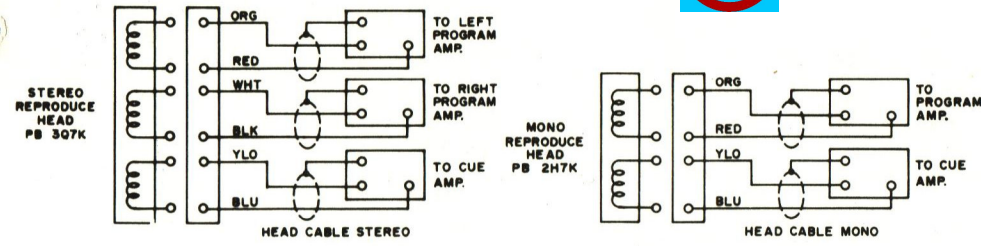


- NOTES:
1. ALL RESISTORS 1/2 W. UNLESS OTHERWISE SPECIFIED.
 2. ALL CAPACITORS SHOWN IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
 3. POWER LIGHT MAY BE REPLACED WITH POWER SWITCH - INSERT SWITCH AT POINT X.
 4. NORMALLY WIRED FOR 600Ω OUTPUT - FOR 150Ω, REPLACE ORANGE WIRE WITH YELLOW WIRE.
 5. FUSE HOLDERS, RELAY, TRANSISTOR AND IC SOCKETS NOT SHOWN ON SCHEMATIC.
 6. ALL POINTS MARKED → ARE CONNECTED TOGETHER AND ARE AT +25V.

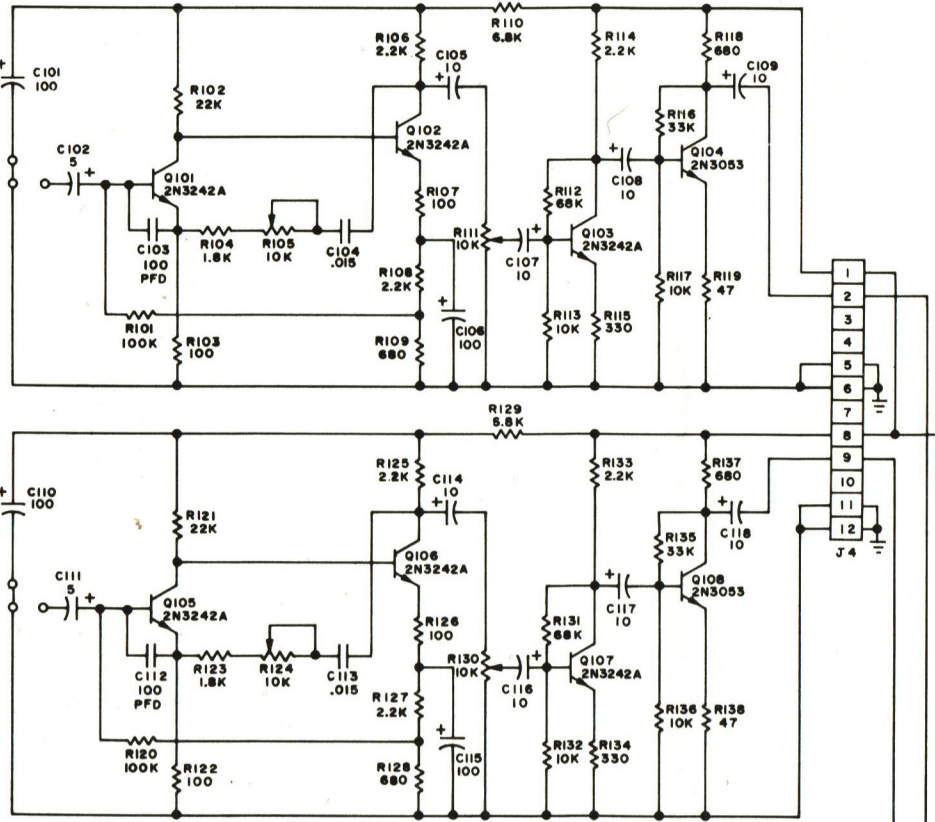
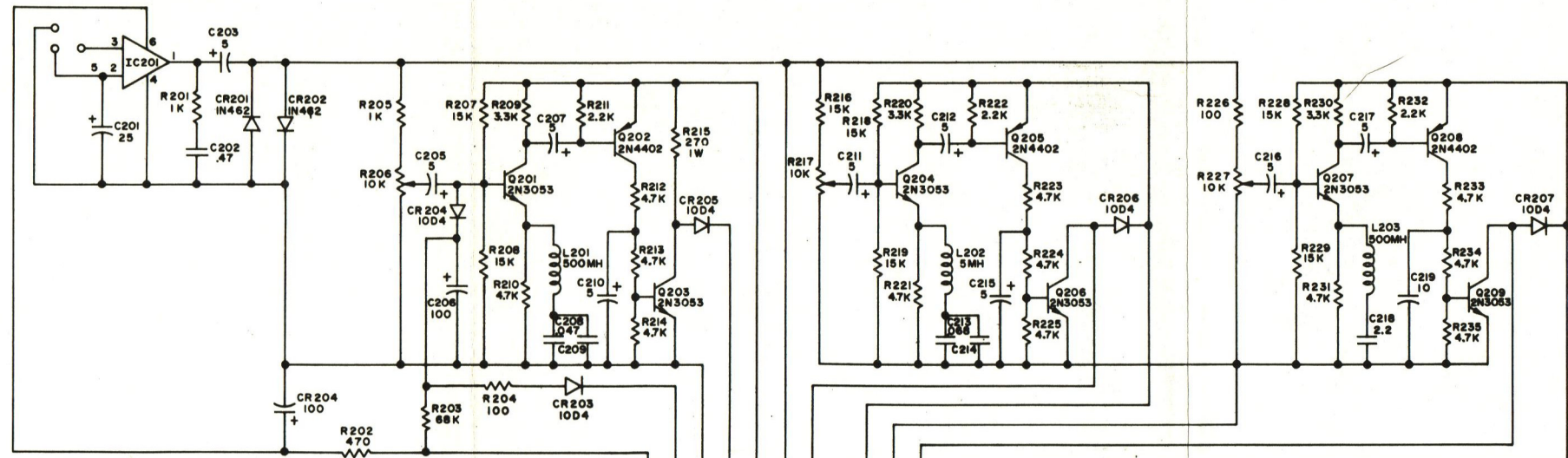


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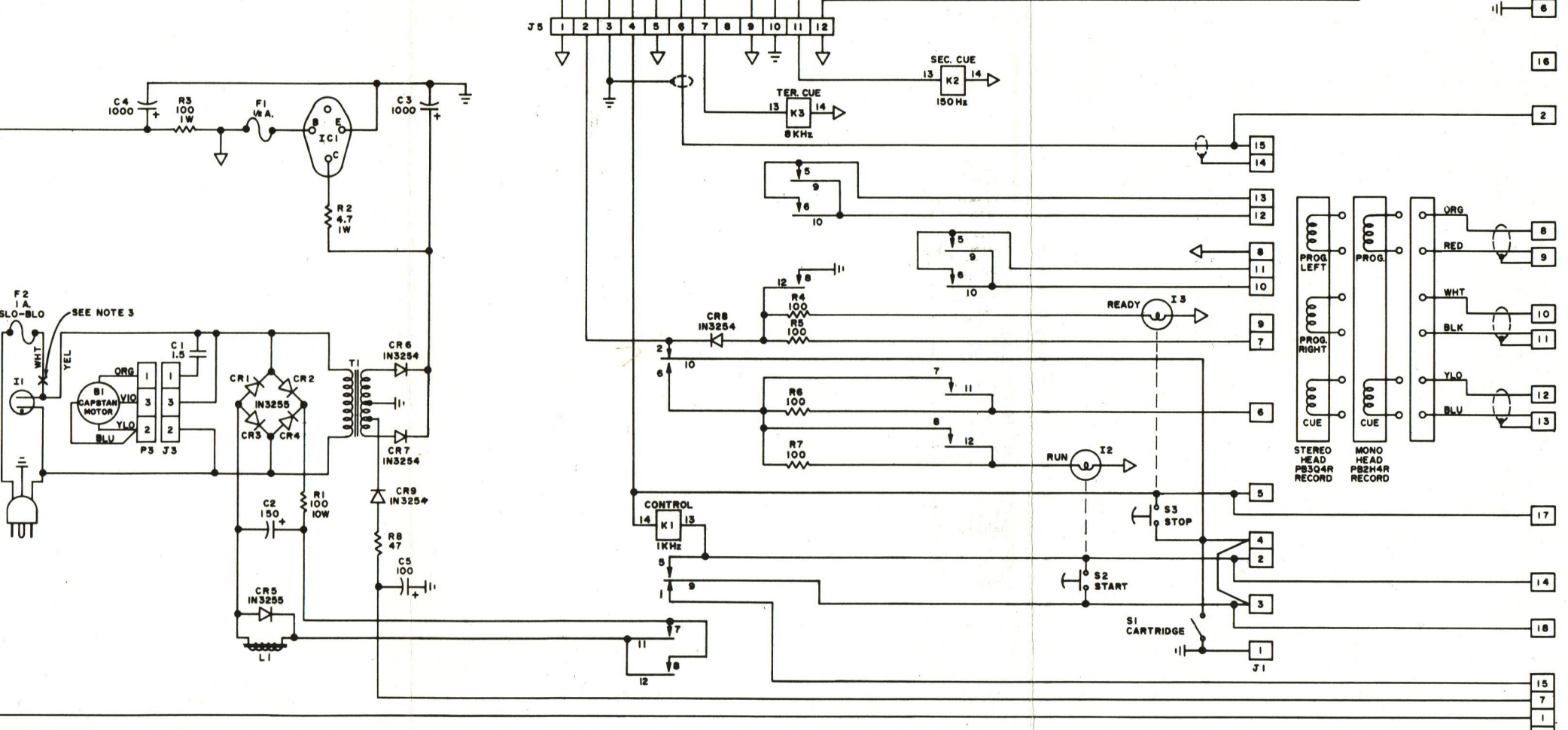
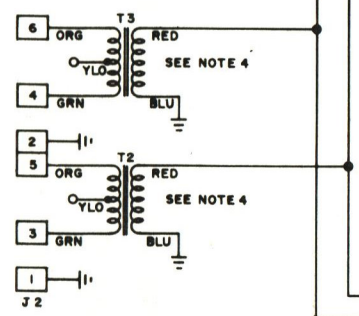
TITLE		SCHEMATIC, SP SERIES HIGH SPEED CUE	
INTERNATIONAL TAPETRONICS CORPORATION	893-0004-002	DRAWING NUMBER	REV.
BLOOMINGTON, ILL. 61701			



3 TONE CUE CARD
 EQUALIZED PRE AMP AND LIMITER 1KHz SECTION 8KHz SECTION 150Hz SECTION



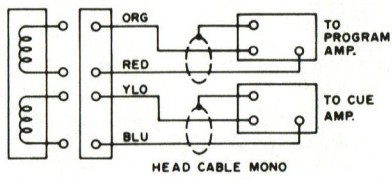
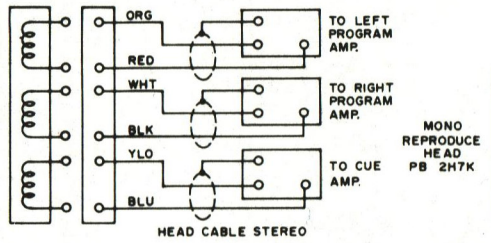
- NOTES:
1. ALL RESISTORS 1/4W UNLESS OTHERWISE SPECIFIED.
 2. ALL CAPACITORS SHOWN IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
 3. POWER LIGHT MAY BE REPLACED WITH POWER SWITCH - INSERT SWITCH AT POINT X.
 4. NORMALLY WIRED FOR 600Ω OUTPUT - FOR 150Ω, REPLACE ORANGE WIRE WITH YELLOW WIRE.
 5. FUSE HOLDERS, RELAY, TRANSISTOR AND IC SOCKETS NOT SHOWN ON SCHEMATIC.



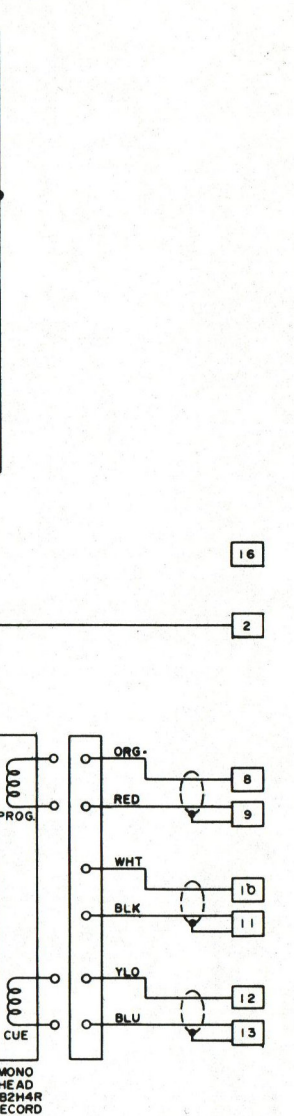
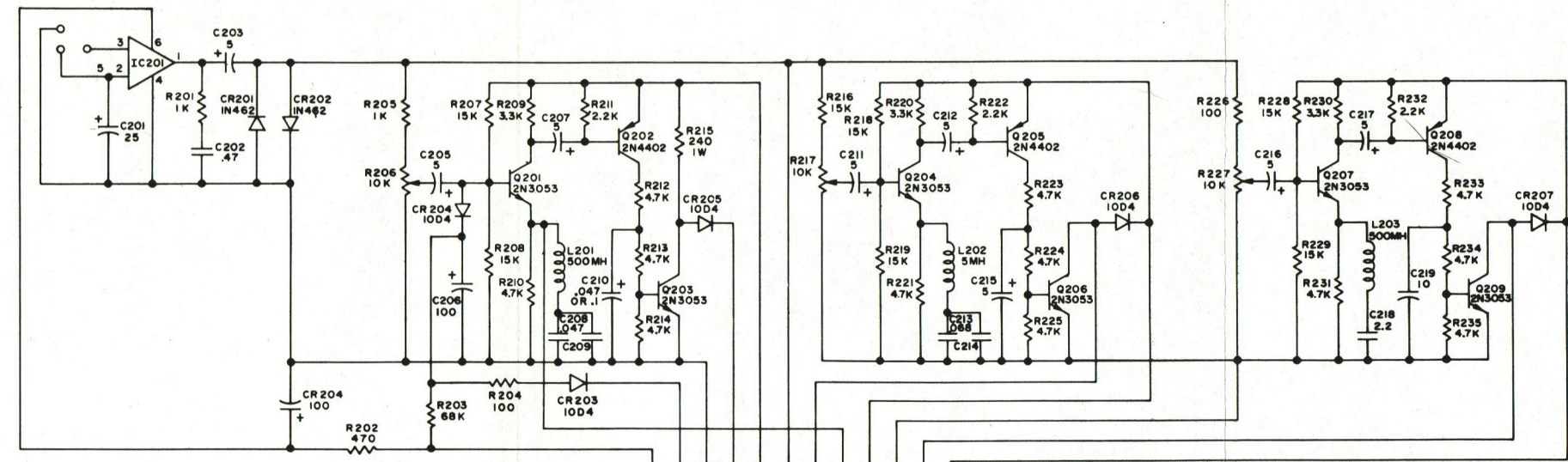
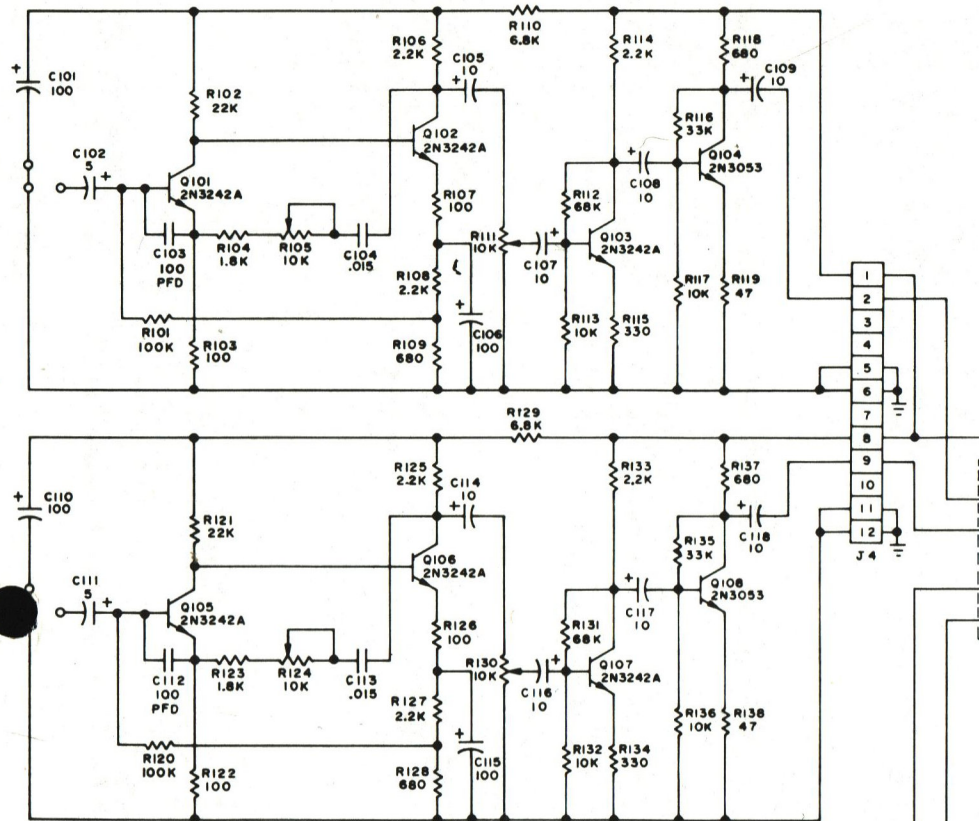
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TITLE	
SCHEMATIC, WP SERIES	
INTERNATIONAL TAPETRONICS CORPORATION	893-0002-002
BLOOMINGTON, ILLINOIS 61701	DRAWING NUMBER REV.

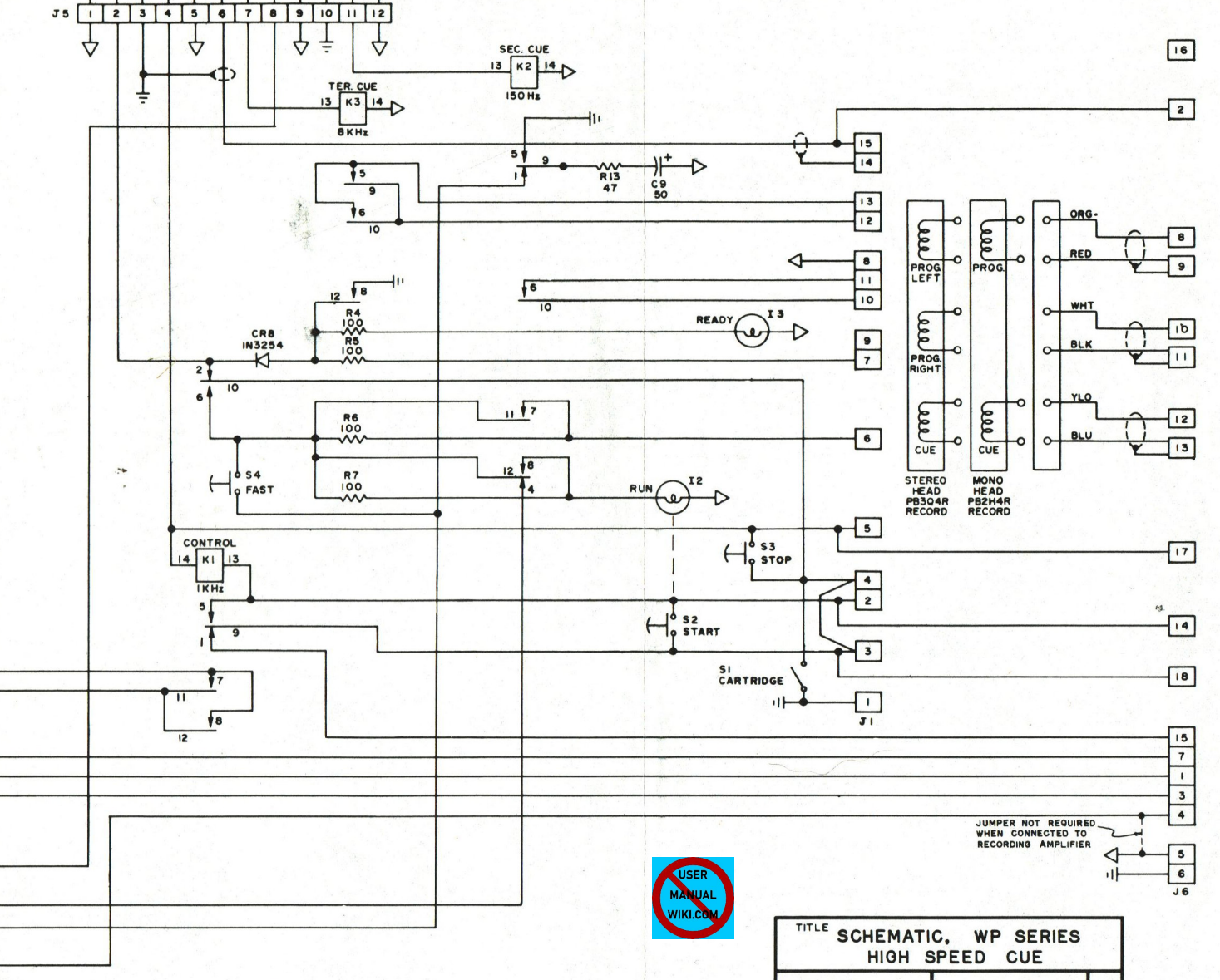
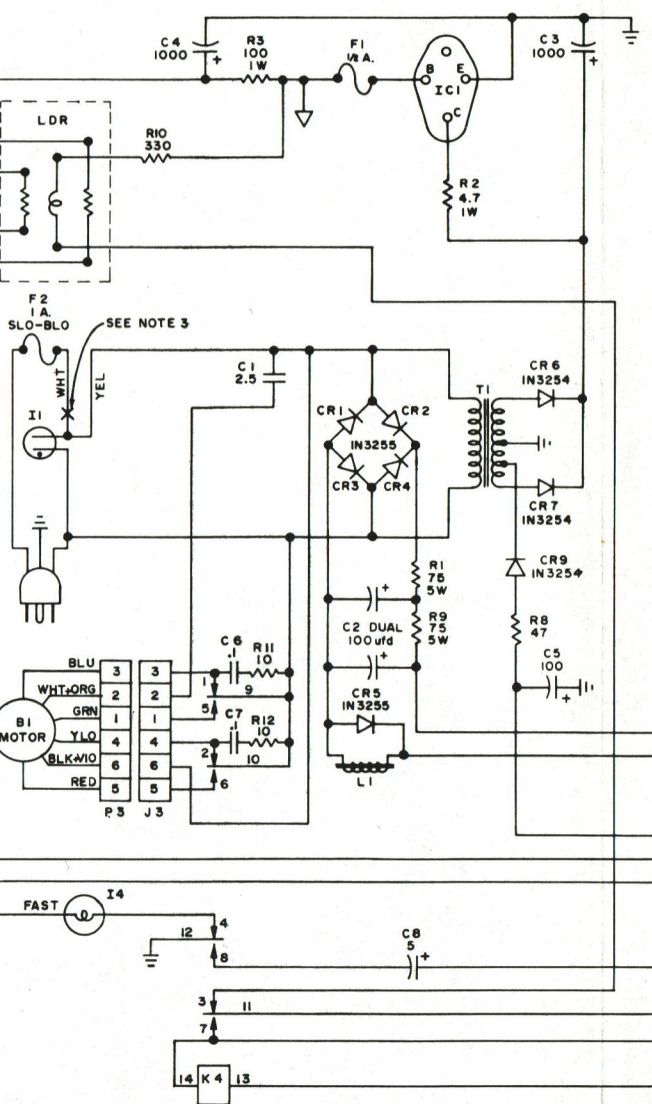
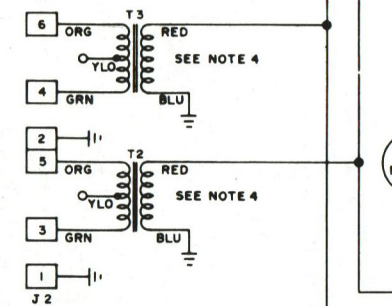
STEREO REPRODUCE HEAD PB 307K



EQUALIZED PRE AMP AND LIMITER 1KHz SECTION 8KHz SECTION 150Hz SECTION



- NOTES:
1. ALL RESISTORS 1/2 W. UNLESS OTHERWISE SPECIFIED.
 2. ALL CAPACITORS SHOWN IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
 3. POWER LIGHT MAY BE REPLACED WITH POWER SWITCH - INSERT SWITCH AT POINT X.
 4. NORMALLY WIRED FOR 800Ω OUTPUT - FOR 150Ω, REPLACE ORANGE WIRE WITH YELLOW WIRE.
 5. FUSE HOLDERS, RELAY, TRANSISTOR AND IC SOCKETS NOT SHOWN ON SCHEMATIC.
 6. ALL POINTS MARKED → ARE CONNECTED TOGETHER AND ARE AT +25V.



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