

KPAR TV

P. 63A



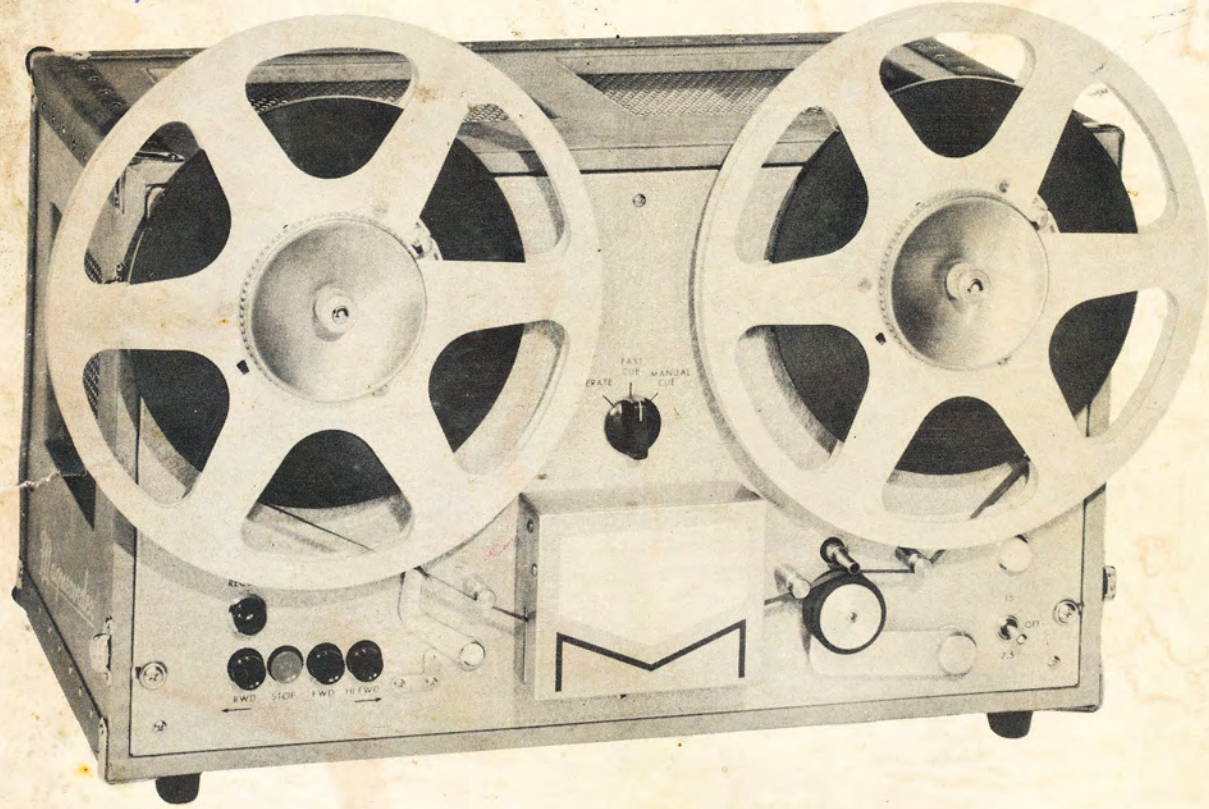
Magnecord

TAPE RECORDERS

The Choice of Professionals

Joe Woods' Dates
713 - MAG 6 4333

713
713



Service - Instruction Manual

P 63A

P63A SPECIFICATIONS

Tape Speed: 7.5 and 15 inches per second

Starting Time: Less than 0.2 second

Stopping Time: Less than 2 inches of tape when operating at 15 inches per second.

Timing Accuracy: Better than plus or minus 3 seconds in 30 minutes.

Flutter and Wow: Less than 0.2% RMS Maximum at 15 inches per second.
Less than 0.25 RMS Maximum at 7.5 inches per second. All components measured 0 to 300 cps using a 3000 cps signal.

Rewind and Hi-Forward Time: Less than 100 seconds for 2400 feet of tape.

Power: 250 watts at 117 volts, 60 cps.

Panel Size: P63A tape transport: 19" x 10½"

Unit Depth: P63A tape transport: 8½"

Weight: P63A tape transport: 47 lbs.

Compatible with:

P63-J, PT6-J, PT6-P, PT63-J, PT7-P, PT6-R, PT6-D3

(i.e. - Any Magnecord amplifier with 50 ohms input to playback amp.)

FACTORY WARRANTY

"Magnecord products are guaranteed to be free of defects in materials and workmanship for a period of 90 days from date of sale to initial user. Magnecord will replace or repair any parts found defective during the warranty period subject to factory inspection and approval. Warranty is void unless warranty cards are fully executed and mailed to the factory within ten days of purchase."



Magnecord

DIVISION OF MIDWESTERN INSTRUMENT, INC.

41ST STREET AND SHERIDAN ROAD
TULSA, OKLAHOMA

GENERAL DESCRIPTION

The Magnecord P63 incorporates the very latest advances in fine recording techniques. Quick deep slot-loading and interlocking push-button controls permit instantaneous selection of desired operation with safety and reliability. The tape is automatically depressed from the heads during rewind or "high forward" to reduce head wear to a minimum. High speed cueing control permits cueing during high forward or rewind.

Two speed direct tape drive system produces precision timing accuracy of better than three seconds in thirty minutes, and is assured through integrated design and torque motor supply and take-up tensioning. Differential brakes eliminate the danger of thrown tape loops, grabbing or chattering. Interchangeable head assemblies provide for full track, half track or instrumentation. The hinged cover protects the head assembly, yet provides for quick access for editing, cleaning and alignment.

Unitized assemblies permit maximum flexibility and minimize maintenance problems.

RACK MOUNTING

The front panels of both the transport mechanism and the amplifier are notched for standard rack mounting. When mounted in a rack sufficient clearance must be allowed for the reels which extend to a width of 23-3/4 inches outside edge to outside edge, and extend 3-1/8" above the top of the front panel, for 10.5 inches reel accommodation.

POWER SOURCE

The unit is supplied with standard A.C. cord, for use in checking the unit separately, or with an amplifier of other than Magnecord manufacture. When used with most Magnecord amplifiers, power is supplied through the interconnecting power cable by the amplifier. Power source should be 117 V, 60 cycle to terminals 23 and 24, unless otherwise specified. Other voltages and frequencies are available on special order.

For information, write: Sales Department
Magnecord Division
Midwestern Instruments, Inc.
1101 South Kilbourn Avenue
Chicago 24, Illinois

UNIT INSPECTION

The A.C. line cord is to be connected to terminals 23 and 24 of the terminal board on the rear of the bias/erase oscillator chassis for operation without amplifier. A.C. is supplied from amplifier on pins 9 and 10 of P-105 when used with P63-J.

NOTE: For others, check schematic of amplifiers to be used with the transport, so that connection is not duplicated, or you may invite severe complications!

The flywheel should be mounted on the shaft protruding from the rear of the capstan motor. Care should be taken to see that the flywheel sufficiently clears the motor at all points, and that the set screw is seated securely on the flat of the shaft. The flatter side of the flywheel should be toward the rear of the unit. The mechanical unit is now ready for mounting and connection.

CONTROLS

All control switches are located on the lower left front of the machine. The function of each is clearly marked below each button. They are from left to right: REWIND, STOP, NORMAL FORWARD and HIGH FORWARD. The mechanical arrangement allows the machine to be placed in NORMAL FORWARD only after placing the machine in STOP and reels come to complete stop. This precludes undue tape stress or breakage. Care should be used when making this switching sequence. (See section on "Tape Motion.")

RECORD INDICATOR

Directly above the rewind button is the RECORD INDICATOR lamp. When the RECORD/PLAYBACK switch on the amplifier unit is placed in RECORD, one side of this lamp will glow, indicating the machine to be in record condition. When the transport is started, both sides will glow, indicating that the bias/erase oscillator is functioning.

NOTE:

The operating voltages for the oscillator are supplied by the associated amplifier. Thusly, bias should be adjusted each time different amplifier is used, (see section on Bias Adjustment) for best results.

CAPSTAN

The capstan is driven by a 2 speed hysteresis synchronous motor, and the capstan proper is an extension of the drive motor shaft. The capstan drive motor requires no other attention than the installation of the flywheel, cleaning and lubrication. This motor operates continuously when power switch is ON.

PRESSURE ROLLER

The pressure roller is solenoid operated. This method of operation assures that the tape will come in contact with the capstan only during FORWARD operation. (See section on pressure roller adjustment.)

TAPE BREAK ASSEMBLY

The tape break compliance arm assembly acts as a mechanical filter to remove tape speed variations introduced by the payoff reel. This assembly substantially reduces flutter components. The compliance arm has a specific operating range, beyond which it will trip the tape break microswitch, shutting off the machine. In normal operation the tape will hold the tape break switch in the proper position. When the tape end comes off the reel of the tape breaks, the arm will shut off the machine. (note section on tape-break microswitch.)

HEAD ASSEMBLY

The head assembly consists of a casting on which the Erase, Record and Playback heads are mounted. The record head casting attaches to the front panel with machine screws.

The Record and Playback heads are mounted with a Mu-metal shield. When the lock nut is loosened and the head azimuth adjustment screw is turned, the heads rotate about the gap centerline. This mounting provides a positive, simple alignment method which shows a distinct alignment peak.

SOLENOID OPERATED BRAKES

Mounted on the rear center of front panel is the solenoid operated brake assembly. The brakes are released when the solenoid is energized. (Refer to adjustments and maintenance for instructions on brake adjustment.)

REEL SIZE

The transport mechanism comes equipped with two adapter hubs for NAB 10-1/2" reels, and two reel retainers. When it is desired to use reels smaller than 10-1/2" the adapter hubs may be laid aside. The reel retainers are designed to hold the smaller reels.

AMPLIFIER CONNECTIONS AND ADJUSTMENTS

NOTE: Certain precautions must be taken by the user, since possible differences (voltage) may exist between power supplies in different amplifiers, and some adjustment may be necessary. (Unit adjusted to P63-J at factory.) Nominal B_r should be 250-300 V D.C.

Connect the power cable into the amplifier (square plug). Connect the audio cables to the amplifier connectors indicated on cable markers, and plug the A.C. cord on the amplifier into a 117 volt, 60 cycle source.

Turn amplifier switches to RECORD and place a one-tenth ohm precision resistor across record head. Use a vacuum-tube voltmeter (see Figure) to measure voltage across .1 ohm resistor with amplifier ON and transport operating in "normal forward." Adjust potentiometer R-112 at the top (rear) of the bias osc. chassis on the transport until the meter reads .08 volts. The .08 volts is a nominal setting. (Exact bias adjustment should be made for maximum output at 200 cycles.) Turn off power to both units and remove .1 ohm resistor and meter. The unit is now adjusted for operation with the associated amplifier.

LOADING AND THREADING

Place a full reel on the left-hand spindle so the tape pays off counterclockwise, and an empty reel on the right-hand spindle. Unwind approximately 3 feet of tape from the supply reel. Thread the tape over the tape break arm, under the left tape guide bar, through the head slot, over the right tape guide bar, between the capstan and pressure roller, under the last tape guide bar, and on to the right-hand empty reel. (The emulsion on dull side of the tape should face toward top of the unit.) (Refer to Figure No. 1 for the tape threading path.) Place the tape lifter operating knob in the OPERATE position.

SPEED SELECTION

Set the desired tape speed by the proper switch on the P63A panel. Set the equalizer switch on the amplifier so that it corresponds to the tape speed selected for the transport mechanism.

POWER

Depress the STOP button on the P63A. Turn the power switch on the transport mechanism to the ON position (speed control on same switch). The pilot light should

now be on and the capstan drive motor should run. Power for the bias oscillator comes from amplifier unit power supply, and this should be turned ON at least two minutes prior to operation, to allow tubes to warm up.

TAPE MOTION

(See Figure No. 5 A). The tape may be set in motion at the speed previously selected by depressing the NORMAL FORWARD button, or rapidly reeled onto the takeup reel by depressing the FAST FORWARD button. When the takeup reel is full and it is desired to rewind the tape, depress the REWIND button. Tape motion may be stopped at any point by pressing the STOP button. (If the tape breaks or becomes too slack for any reason, and the tape break compliance arm passes the twelve o'clock position, it will shut the machine off.) This is a safety feature in the event of tape breakage or the tape end running out of the payoff reel. Also, when in "fast forward" or "rewind" operations, tape should come to complete stop prior to depression of "normal forward."

TAPE DEPRESSOR OPERATING KNOB

Directly above the head cover is the Tape Depressor Operating Knob. This knob may be placed in the following 3 positions. To the extreme left (OPERATE) the tape will be in contact with the head when in normal forward only. When the tape depressor knob is in the center position (FAST CUE) the tape is in contact with the heads in all functions of the tape transport so that audio may be heard not only on normal forward but also in FAST FORWARD or REWIND. When the tape depressor operating knob is placed in the right position (MANUAL CUE) the tape makes contact with the heads and brakes are released to facilitate hand cueing or editing. The machine will not run in any function when the tape depressor operating knob is in manual cue.

CUEING AND EDITING

NOTE: The tape compliance arm should be located down during MANUAL CUE, or brakes will engage.

Editing is facilitated by opening the head cover. The tape may then be easily removed for marking or cutting. When cueing, grasp each reel firmly and pass the tapes over the heads while the tape lifter operating knob is in MANUAL CUEING position. A second method for editing and cutting is made by simply cueing up the spot to be cut or edited, then while holding the right hand reel stationary, turn the left hand reel counterclockwise until the tape drops out of the slot. The lower right hand corner of the head cover is the point to cut or mark.

CLEANING

Dampen (do not wet) a clean white cloth with ethyl alcohol. With the drive motor running, hold the cloth against the capstan to remove oil and dirt. This should be done whenever the pressure roller shows any tape residue.

Remove both the takeup and supply reels. Press the NORMAL FORWARD button. Hold an alcohol dampened section of cloth against the pressure roller to remove any residue. Take care that the cloth does not wind around the capstan or pressure roller.

With a clean section of alcohol dampened cloth wipe the three heads clean of residue.

Blow all accumulated dust out of the unit. Inspect and secure all cables. Clear all moving parts of any obstructions.

LUBRICATION

Oil the drive motor with 10 drops of SAE 20 motor oil once every six months or 500 operating hours, whichever occurs first. Apply oil only to the oiler tubes or oiler holes, never to the motor shaft.

Oil the takeup and supply motors with 2 drops of SAE 20 motor oil at the same time the drive motor is lubricated. If the unit has a cooling fan, it should be oiled as above.

HEAD DEMAGNETIZATION AND ALIGNMENT

(See next page)
Occasionally the heads may become permanently magnetized with the attendant loss of high frequency response and dynamic range. This will also cause an increase in noise. If the heads become magnetized, they can be demagnetized by the following procedure. Disconnect the unit from the A-C line. Connect the demagnetizer to the A-C line (Audio Devices No. 400 or equivalent). Pass the demagnetizer pole tips as near as possible to, but not in contact with, the pole piece for about one second. Tips should straddle the gap. Then move the head demagnetizer very slowly away so the influence of its field dies off slowly. Slow removal of the demagnetizer from the head is important. The gradual removal causes the hysteresis loops to decrease slowly in size until ending at the zero point. In severe cases it may be necessary to repeat the procedure.

Head alignment is necessary occasionally to insure maximum performance. For this procedure, a good alignment tape such as Magnecord part No. 88 x 5 should be used.

The normal procedure is to align the playback head with alignment tape, and then align the record head to correspond to the playback alignment. In doing this, the following procedure should be carefully followed:

1. Turn the playback head (right hand) adjustment screw until the head is considerably misaligned.
2. With V.U. meter reading playback output, run the alignment tape through the machine, and adjust for maximum output by turning the "allen head" screw clockwise.
3. Remove the alignment tape and load a blank tape on the machine
4. Switch the machine into RECORD and monitor the playback output with the V.U. meter while recording a signal of similar frequency to that of the alignment tape from a stable signal source.
5. While recording, adjust the record head (center one) to give maximum output from the playback head.

NOTE: No adjustment of the erase head should be necessary.

Head alignment is especially necessary when the tapes are to be used on several machines, as the head "azimuth" has an adverse effect on frequency response when not correct.

BRAKE TENSION

With the reels removed from the machine lock down the tape compliance arm and put the machine in FORWARD operation. Check reel hubs for freeness of movement. If they drag in NORMAL FORWARD, your brakes are too tight. Adjust for freeness of turning. To measure brake tension, place an empty 7 inch reel on the spindle. (If a reel with a hub having a radius of 1 inch is available, the scale will read directly in inch ounces.) Wind approximately 6 feet of string on the reel (see Figure No. 2). Wind the string in the appropriate direction and attach the string to a spring scale which will measure 5 pounds and is calibrated in ounces. Pull slowly and steadily away from the reel reading the scale at the same time. Repeat the procedure several times, if necessary, to get an accurate reading. There should be 24 to 27 inch ounces of tension when the brakes are applied. The payoff reel brake tension should be measured in a counter-clockwise direction and the take-up reel in a clockwise direction. Multiply the number of ounces shown on the scale by the radius of the reel in inches (to the point where the string is wound). The product of these figures is the brake tension. The brake tension may be increased or decreased by increasing or decreasing the tension on the brake bar which is accomplished through adjusting Allen head screws shown in Figure No. 3. After adjusting the brake tension, test the performance of the machine with 10-1/2 inch reels. The figures given for brake tensions are average and most machines will perform extremely well with these tensions. It is possible that the settings will vary slightly from machine to machine.

If the compliance arm trips the tape switch, decrease the take-up tension until the tape brake switch is not tripped by the compliance arm when the unit is stopped from FAST FORWARD or REWIND with the empty, half full, and full pay-off reel.

TAKEUP AND PAYOFF TENSIONS

WARNING! Disconnect power before inspecting or adjusting in rear of transport!

The necessary tensions for both takeup and payoff reels have been carefully set and checked at the factory, but these sometimes may vary owing transit and field conditions. The correct tensions for the takeup and payoff reels are 10vc inch-ounces and 3-4 inch-ounces, respectively.

Both reel tensions are controlled by an interdependent (series-parallel) network consisting of R-111 (300 ohms, 50 w.) and R-113 (150 ohms, 50 w.) SEE FIG. 4

To measure tension of the takeup reel, place an empty 7" reel on the right-hand spindle and wind approximately 6 feet of string on it; then attach string to scale. (See Fig. and "Brake Tension Section"). Measurement should be made with the machine operating in normal forward with the scale allowed to move slowly and smoothly toward the spindle. Do not allow other spindle to spin while making this measurement, or reading will be in error.

It may be necessary to take several readings, for accuracy.

CAUTION! Do not move resistor settings until both takeup and payoff measurements are made.

To measure payoff tension, place reel and string on left-hand reel and pull scale away from reel, with unit operating in normal forward, as in (Fig. 2).

RESISTOR SLIDER ADJUSTMENTS

1. Decreasing R-111 increases torque on takeup motor, decreases torque on payoff.

2. Decreasing R-113 increases torque on both motors.

Rear of Transport

PRESSURE ROLLER TENSION

The pressure roller assembly is shown in Figure No. The pressure roller tension must be set for 4 - 4-1/4 pounds as indicated on the spring scale used to measure brake tensions. Attach the scale by any convenient means to the pressure roller shaft without obstructing roller. Without tape on the machine and the tape lifter operating knob in the OPERATE position, depress the FORWARD button. With the spring scale attached to the pressure roller, and the pressure roller engaged with the capstan, pull down on the spring scale. Note the reading

at the point the pressure roller just stops rotating. At this point the spring scale should read 4-1/4 pounds. If the scale reading does not fall in this range, adjust the elastic stop nut on the arm linkage. It will be necessary to hold the linkage rod while making this adjustment.

TAPE BREAK MICROSWITCH

The tape break switch is actuated by the lever arm attached to the tape compliance arm. Figure No. 5a shows the arm as seen from the front panel with the lever arm. When the arm is in a position such that the lever falls in the range "A", the tape break microswitch will be actuated, removing power from everything except the capstan motor. The mechanical unit is then effectively in STOP condition. To adjust the microswitch trip arm refer to Figure No. 5. With the tape lifter operating knob in the OPERATE position, adjust the lever arm to trip the tape break microswitch when the compliance arm is in position "F" Figure No. 5. (1/16 to 1/8 inch before 12 o'clock position.)

NOTE: Be sure to press the STOP BUTTON before re-loading or pulling the Tape Brake Switch down as this will turn the machine on.

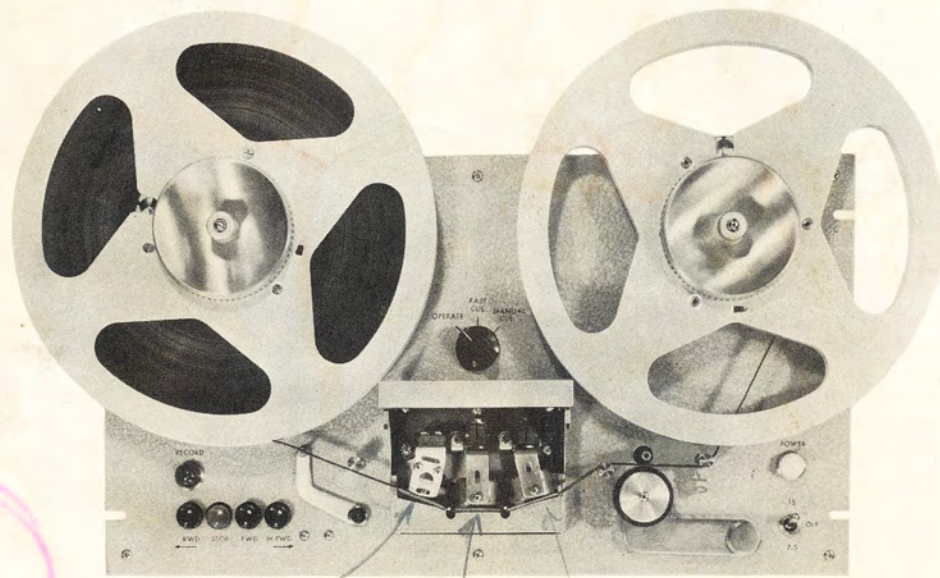


Fig 1 TAPE THREADING

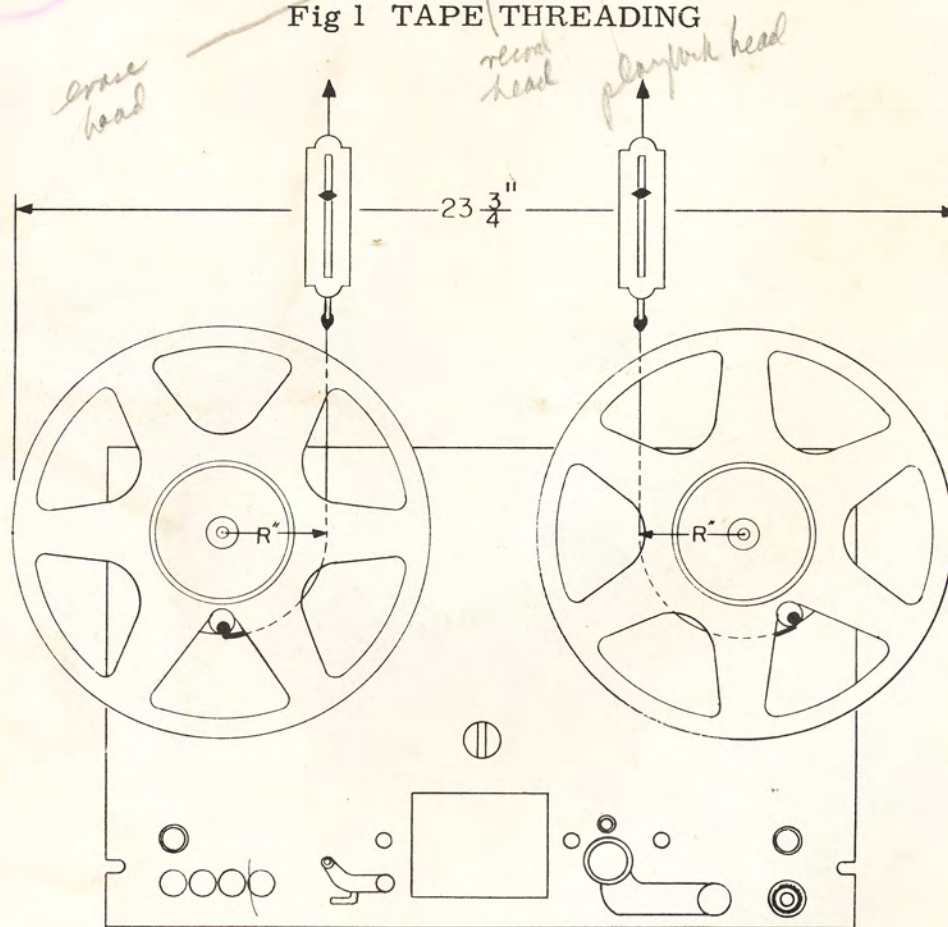


Fig. 2

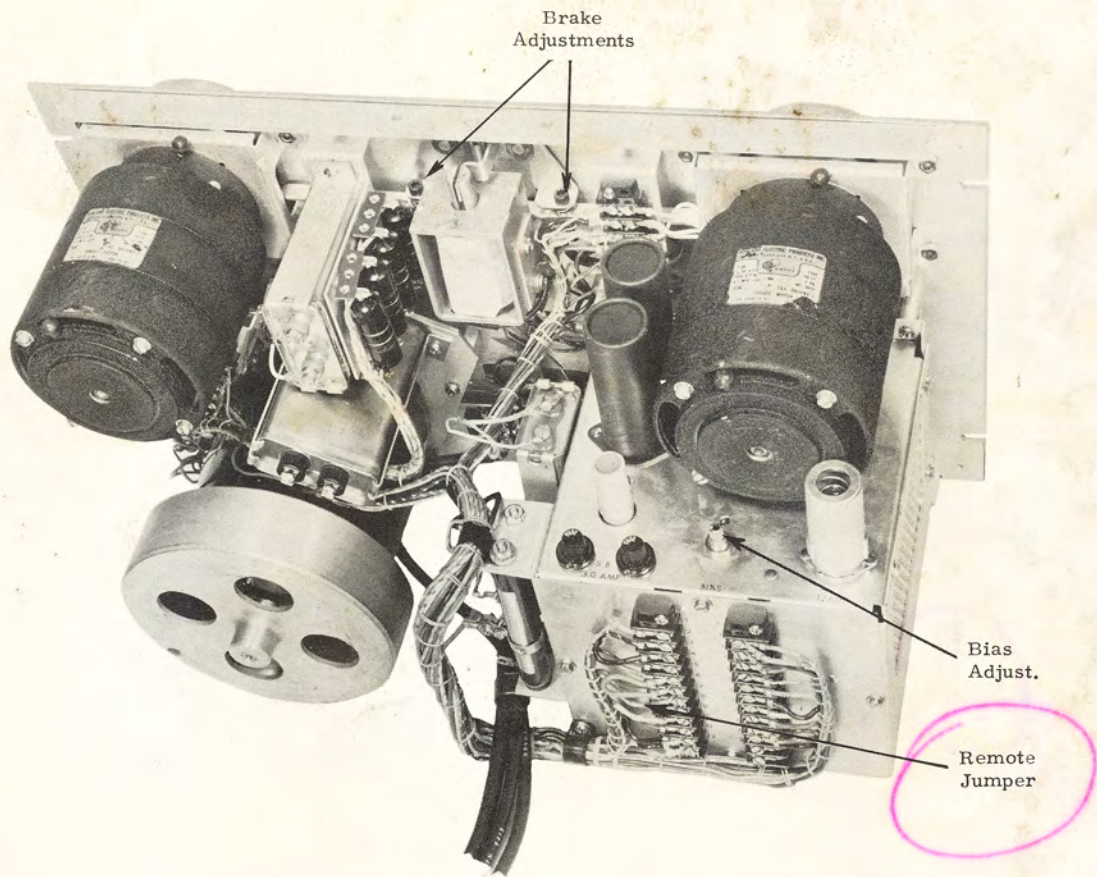


Figure 3.

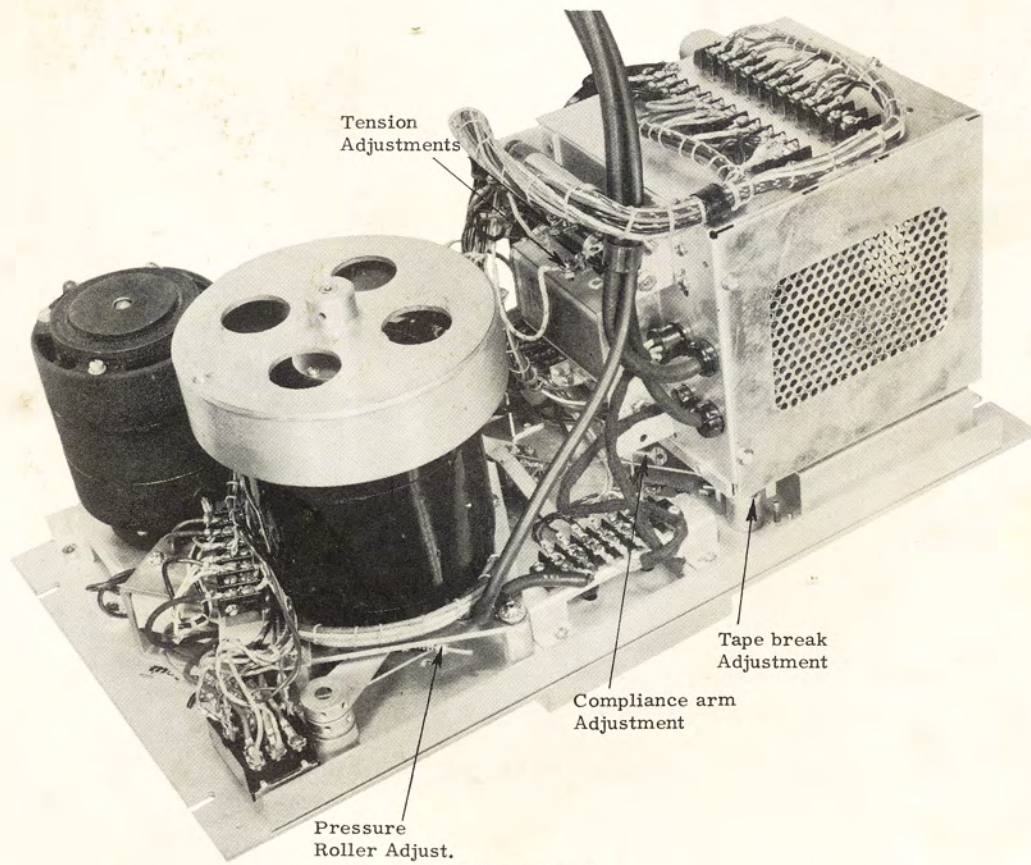


Figure 4.

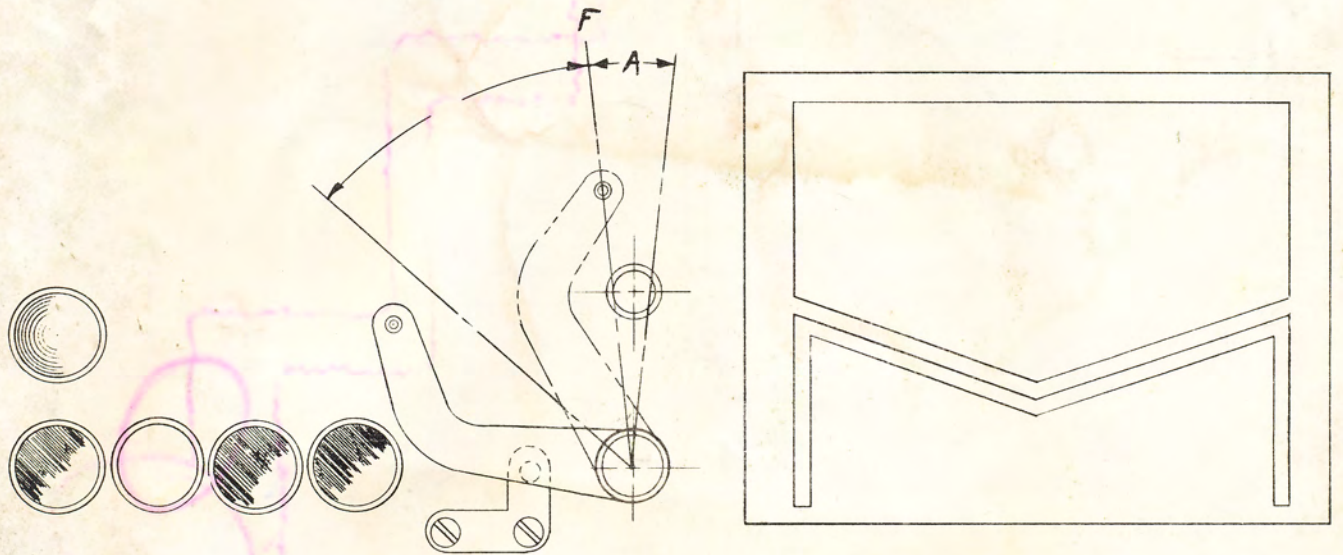


Fig 5A

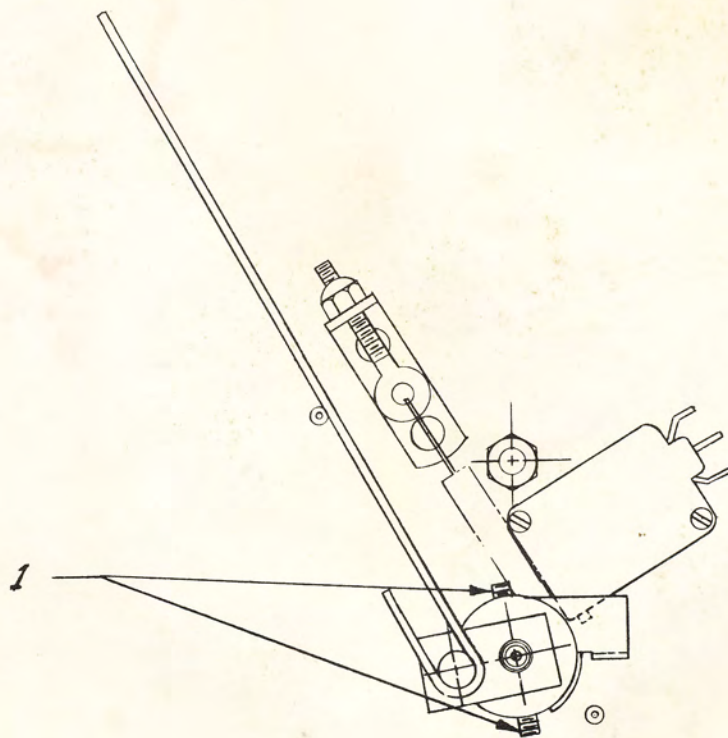
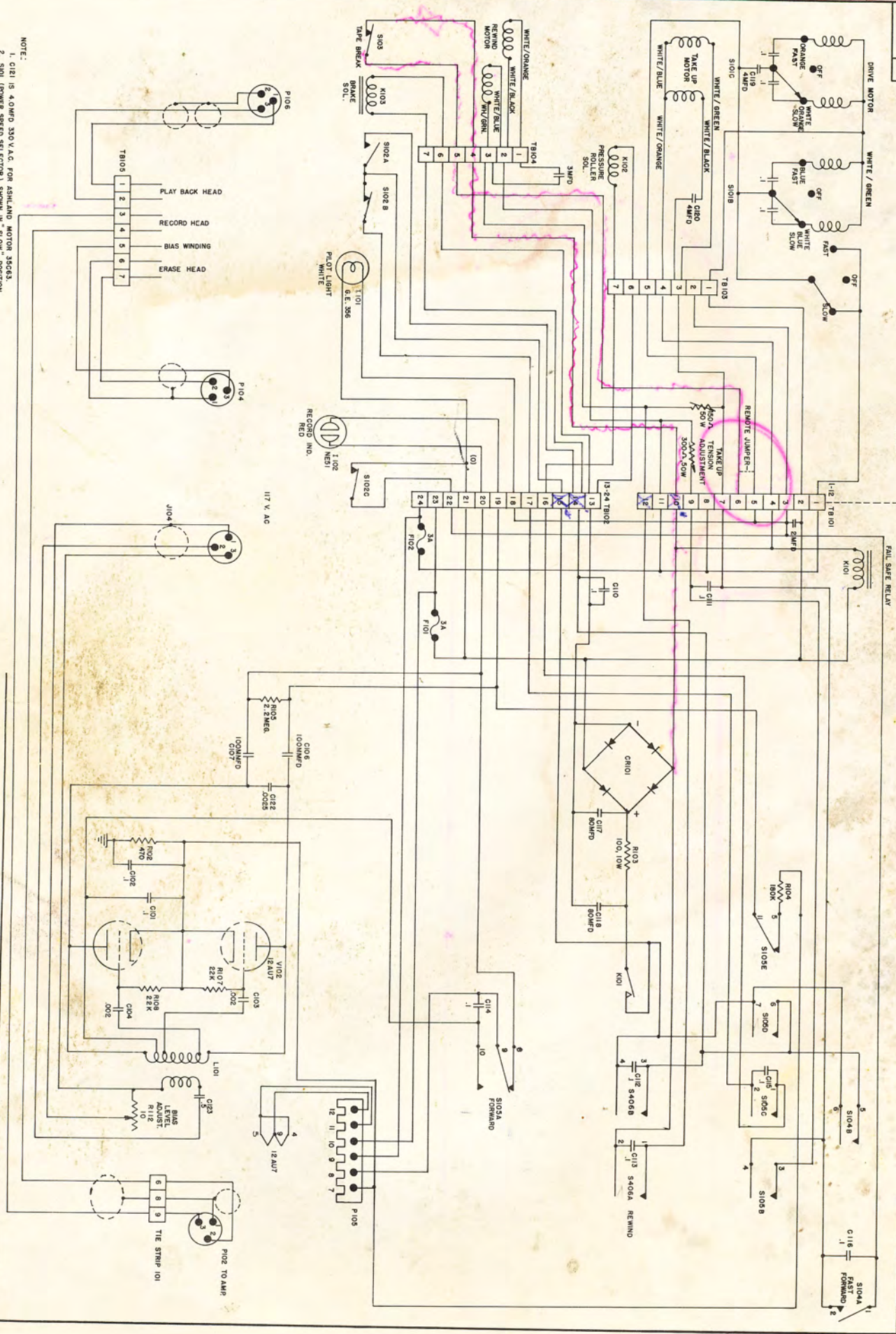


Fig. 5B



NOTE:
 1. C121 IS 40WFD 350VAC. FOR ASHLAND MOTOR 3163.
 2. S101 (POWER SPEED SELECTOR) SHOWN IN "SLOW" POSITION.
 3. S102 (TIE SWITCH) SHOWN IN OPERATE OR "FAST CUE" POSITION.
 4. FUNCTION SELECTOR SWITCH SHOWN IN "STOP" POSITION.

REV.	APP'D	DESCRIPTION

MAGNECORD INC., CHICAGO
 TITLE: ELECTRICAL SCHEMATIC, P83A RECORDER
 MATERIAL:
 FINISH:
 DATE: 5-21-57 SCALE: DRAWING NO. 92C13
 CHECKED BY: APPROVED BY:
 DRAWN BY: DATE:

P63-A PARTS LIST

REFERENCE NO.	PART NO.	DESCRIPTION
	91B2042	Brake Bar and Slider Assembly
	78A208	Brake Bar
	89A99	Brake Lining
	67X56	Roll Pin 3/32 x 1/2 Esna
	77A91	Spring Brake Adjust.
4-1	61-10CS14	10-32 x 7/8 Socket Head Screw
	77A99	Spring, Brake Bar
K-103	31A44	Solenoid
S-102C	43A114	Micro-Switch
C-119, C-120	22A70	Capacitor, 4 mfd
	91A1971	Torque Motor & Spindle Nose Assembly
Take-up Mtr.	35C60	Torque Motor
	75A5	Spindle Nose
4	75A435	Tape Guide
	91B1976	Pressure Roller Arm Assembly
1	91A1722	Lifter Arm Bracket & Hub Assembly
	91A1761	Compliance Arm Assembly
S-105	43A117	Switch, Toggle, 3 pole D. T., Center off
	91A1964	Pressure Roller Assembly
Drive Mtr.	35C62	Capstan Motor
	91C1831	Cover Head Assembly, complete
	91X2110	Head Assembly, complete
	26A4	Capacitor, Bathtub, .1 mfd, 600 V.
4	53X10	Fuse, 3 amp, slo-blo
R-103	12X51	100 ohm 10 W. Resistor
R-112	14X52	Potentiometer 10 ohm pot.
	43B132	Relay, 115 VAC
	91A1994	Erase Head Cable Assembly
C-117, C-118	23A5	Dual 40 mfd 250 V Electrolytic Capacitor
R-111	12A36	Resistor, 300 ohm, 50 W.
R-112	12X37	Resistor, 150 ohm, 50 W.
	63A152	Resistor Mounting Adaptor
	91B2131	Power Cable Assembly, complete
	91A888	Record Cable Assembly, complete
	91A2125	Playback Cable Assembly
C-106, C-107	21X34	Capacitor, 100 mmfd, 500V., Mica
C-103, C-104	21X6	Capacitor, .002 mfd, 500V., Mica
C-105	21X20	Capacitor, .001 mfd, 500V., Mica
C-101, C-102	28X2	Capacitor, .1 mfd, 600V, Ceramic
R-107, R-108	11X10	Resistor, 22K, 1/2 watt
R-102	11X20	Resistor, 470 ohm, 1/2 watt
R-105	11X5	Resistor, 2.2. meg., 1/2 watt
R-104	11X37	Resistor, 180K, 1/2 watt
C-123		Capacitor, .5 mfd, 400 V.
S-104	43X97	Push Button Switch
CR-101	42A10	Rectifier, selenium, 110V, 250 ma
	22X71	Condenser, 2 mfd
R-106	11X138	Resistor, 56K, 1 watt
V-102	97-12AU7	Tube, Twin Triode
	73B46	Flywheel
	91A5	Reel Retainer Assembly
I-101	41X1	Pilot Light, G. E. 356

