

Professional Audio Service Bulletin

Mincom
Division **3M**
COMPANY

BULLETIN NO. 1

SUBJECT: Signal Electronics PC Board FET Replacement

APPLICABLE TO: All M-79 Signal Electronic PC Boards which use Motorola FET'S

PURPOSE: To improve the reliability of the Signal Electronics PC Boards

REQUIRED PARTS: Transistor 2N4342 or 2N4343, Manufactured by Fairchild or National ONLY, Mincom Catalog No. 83-1530-2462

PROCEDURE:

- I. Replace all Motorola 2N4342 transistors on the signal electronic PC board with Fairchild or National components.
- II. Change the Instruction Manual signal electronic PC board parts list to read FAIRCHILD or NATIONAL instead of MOTOROLA for Q10, Q11, Q18, Q19, Q20, Q25, Q26, Q27, Q28, Q34 and Q35.

MANDATORY

November 1973

Professional Audio Service Bulletin

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BULLETIN NO. 2

SUBJECT: Replacement of MURA type Meter Lamps
APPLICABLE TO: ALL M-79 Professional Audio Recorders
PURPOSE: Improved Lamp Reliability

REQUIRED PARTS: 1) Lamp, Type 388, Mincom Catalog No. 83-1550-2689
2) Lamp Holder, Mincom Catalog No. 83-1620-0294

PROCEDURE:

- I. Remove MURA type meter lamp from the white line cap above the meter and unplug the wires from meter mother board.
- II. Solder wires on lamp holder 83-1620-0294 in place of the removed wires on the mother board (see Figure 1).

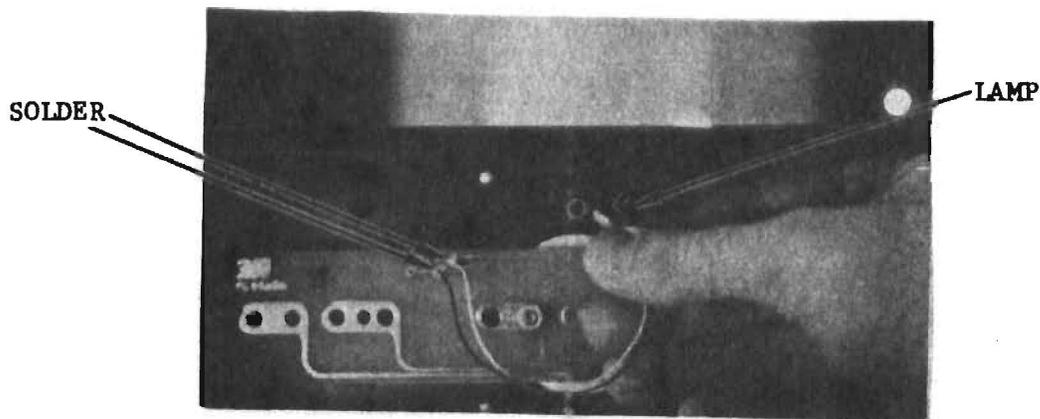


FIGURE 1

- III. Insert the lamp, type 388, in holder (83-1620-0294) and insert entire assembly in the white lens cap.
- IV. Future replacement of failed lamp will be accomplished by replacing the lamp only.

December 1973



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BULLETIN NO. 3

Subject: Change Current Limiting of Transport Power Supplies

Applicable to: Custom Electronics Design Power Supplies
Serial No. 007 through 090

Materials Required: Resistor 51 ohms, 1/2 watt, 5%
Catalog No. 83-1520-7222 - 1 each

Purpose: Increase power supply fold-back current limiting point
from 16 amps to 18-20 amps

Procedure: Remove resistor R-7 for printed circuit board and
replace with the 51 ohm resistor.

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BULLETIN NO. 4

SUBJECT: Variable Speed Modification Installation Instructions

APPLICABLE TO: M-79 Professional Audio Recorders
Mono thru 4 Tracks

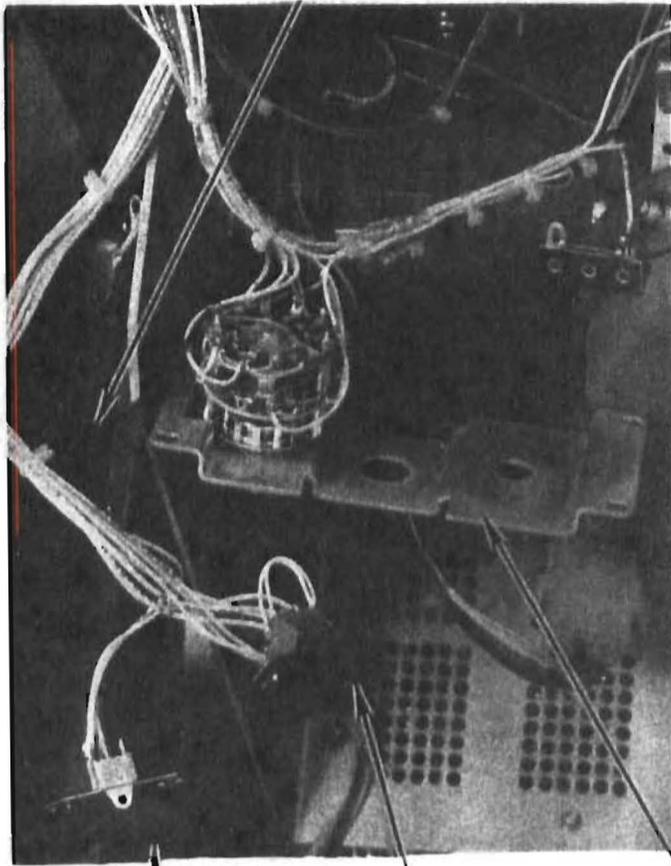
REQUIRED PARTS: Pilot Light, Amber 24V Mincom Catalog No. 83-1550-2590
1 EA. PER MACHINE Resistor - Var 2.5 K ohm " Catalog No. 83-1520-1627
Knob " Catalog No. 83-1270-0708
Plate - Stripper, Switch " Catalog No. 83-3320-2789

PROCEDURE:

- 1) Remove Power to Machine
- 2) Remove Capstan Speed Switch Knob.
- 3) Raise Deck and Secure
- 4) Remove Nuts that secure power and reel balance switches, use caution as the switches have spacers on the under side.
- 5) Remove the four Phillips Screws that hold the Capstan Speed Switch Assembly to the deck. This allows the Switch Assembly to drop back far enough to replace the Stripper plate. See Figure 1.
- 6) Mount Amber Lamp and 2.5 K ohm Variable Resistor. See Figure 2
- 7) Remove Ty-raps that secure wires with the Amp Connectors and connect to Amber Lamp. See Figure 2 and 3.
- 8) Solder a 3 inch length of 22 ga. wire from the open lug of TB5 to the wiper of R2, the 2.5 K ohm variable resistor. See Figure 3
- 9) Locate the white 22 ga. wire removed from the Ty-raps marked R2/1 → 104J2A, and solder to the lug on R2 as shown in Figure 3.
- 10) Solder the Black ground wire marked R2/3 → TB3 to the lug on R2 as shown in Figure 3.
- 11) The two tabs located on the Capstan Speed Switch S3 should be bent down, this adds the two positions for Var Hi and Var Low when the Knob is turned clockwise. See Figure 4.

- 12) Install Power and Reel Balance Switches.
- 13) Install Capstan Speed Switch Assembly and insure that the ground wire coming off the switch is attached to one of the Phillips screws.
- 14) Install Variable Speed Knob and Speed Switch Knob.
- 15) Check to insure all connections are made properly and apply power. Insure that the Amber Lamp lights in the Var Hi and Var Low Switch position and Capstan Speed does vary when rotating variable speed knob.
- 16) Insure Equalization Switching in the Var Hi, Var Low position by checking continuity between B-11 and ground for Hi Equalization and B-9 and ground for Lo Equalization at the Electronics Board, using the extender card.

Ground Wire

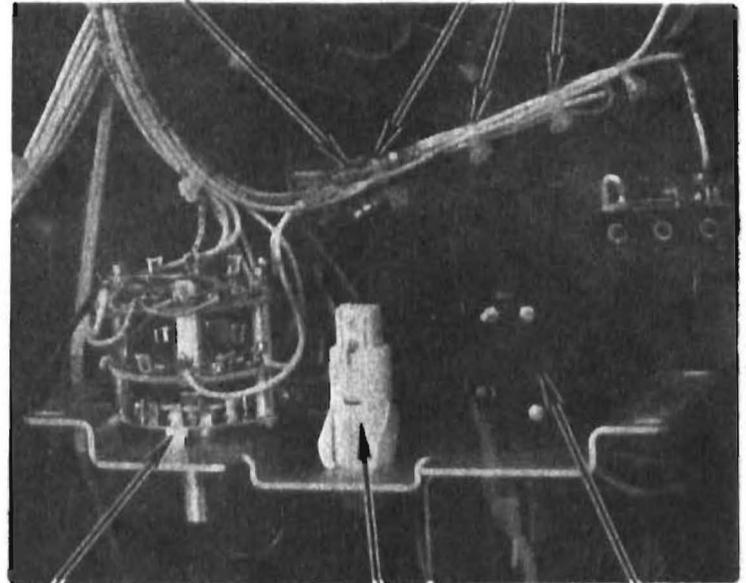


Power Switch | Reel Balance Switch | Capstan Speed Switch Assy.

FIGURE 1

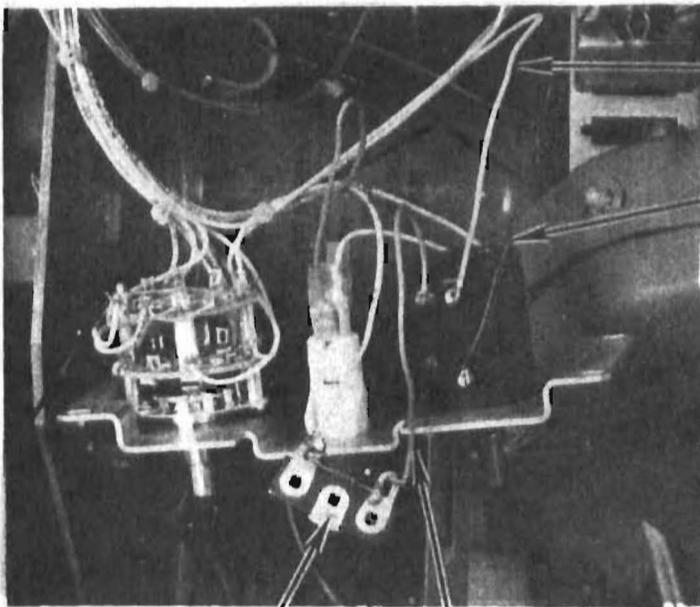
Amp Connectors

Ty-Raps



Capstan Speed Switch S3 | Amber Lamp DS2 | Var. Resistor 2.5K Ohm R2

FIGURE 2

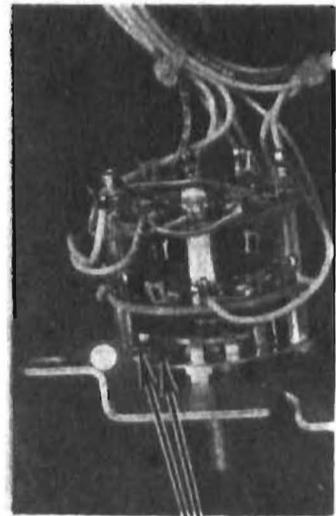


TB 5 | 22 ga. Wire 3" To Wiper of R2

FIGURE 3

White 22 ga. Wire
R2/1 → 104J2A

Black 22 ga.
R2/3 → TB3



TABS

FIGURE 4

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Bulletin No. 5A (Supersedes Bulletin #5 dated January, 1974)
Date JULY, 1979

SUBJECT: Signal Electronics PC Board Modification to Read Digital Code (SMPTE) at Rewind and Fast FWD Speeds.

APPLICABLE TO: All M-79 Professional Audio Recorders using SMPTE Time Code Equipment.

PURPOSE: To Extend Signal Bandwidth

REQUIRED PARTS: 1 ea. 10K ohm 1/4W Resistor Mincom Catalog #83-1520-7308
1 ea. IC-LM318 Mincom Catalog #83-1530-8263
2 ea. .01 uf Capacitors Mincom Catalog #83-1510-1048
1 ea. 15pF Capacitor Mincom Catalog #83-1510-5265

PROCEDURE: In most cases, the last or edge track is modified to read code in the electronics, i.e., track 8 on 8 track machine.

1. Install R127, the 10K 1/4W resistor: See Note 6 of the Signal Electronics Schematic, Figure 6-10 or 6-12 of the M-79 Manual.
2. Remove CR5, 1N270 (Clip out).
3. Remove IC4, the 741, and install a .01 uf capacitor from the socket of IC4 pin 11 to ground. NOTE: Install the capacitor as close as possible to pin 11.
4. Install the LM318 in place of the 741.
5. Install a .01 uf capacitor from the collector of Q32 in the reproduce pre-amp to ground. Install this capacitor as close as possible to the collector.
6. Install the 15pF capacitor from pin 3 to pin 10 of IC4.
7. Remove (clip out) L1 and C5 in the line amp circuit.
8. De-tune the 15 ips equalizers, both Norm and Sync, by turning all 6 pots fully CCW.

WT/Mincom Division

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BULLETIN No. 6

SUBJECT: Modification to Eliminate Power Off Erase Surge
APPLICABLE TO: All M-79 Signal Electronics Printed Circuit Boards

REQUIRED PARTS:

<u>Description</u>	<u>Mincom Catalog No.</u>	<u>Quantity</u>
Transistor - 2N3905	83-1530-2281	One per P C Board
Resistor - 2K 1/4W 2%	83-1520-7203	One per P C Board
Resistor - 30K 1/4W 2%	83-1520-7281	One per P C Board
Resistor - 11K 1/4W 2%	83-1520-0368	One per P C Board

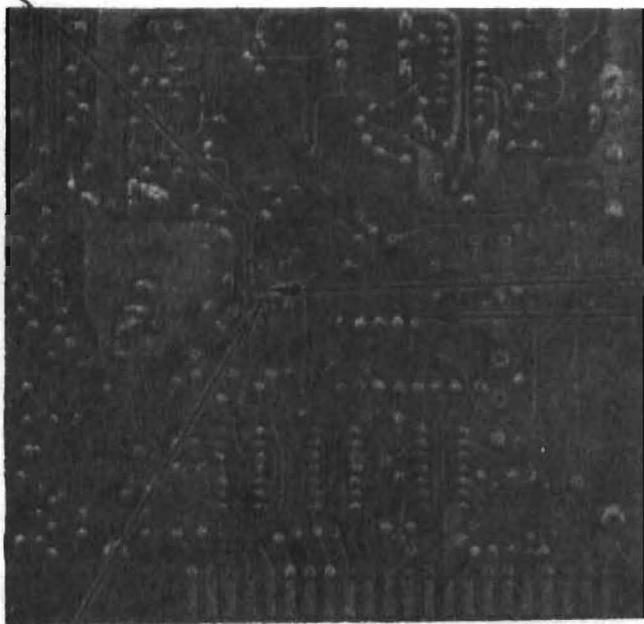
PROCEDURE:

- 1) Remove Power from machine.
- 2) Remove Track 1 Signal Electronics Board from housing.
- 3) Remove R6 and replace with 11K 1/4W 5% resistor.
- 4) Drill 4 holes using a .030/.035 diameter drill as shown in Figure 1. Use Caution not to drill into traces on the component side of the board.
- 5) Cut trace as shown in Figure 1.
- 6) Remove Q7 the 2N3903 and replace with the 2N3905 transistor as shown in Figure 2.
- 7) Install R137 the 2K 1/4W resistor as shown in Figure 2.
- 8) Install R138 the 30K 1/4W resistor as shown in Figure 2 use teflon tubing on the leads.
- 9) Solder component leads to traces shown in Figure 1 and brush clean all joints.

January 1974

FIGURE 1

Drill 1 hole

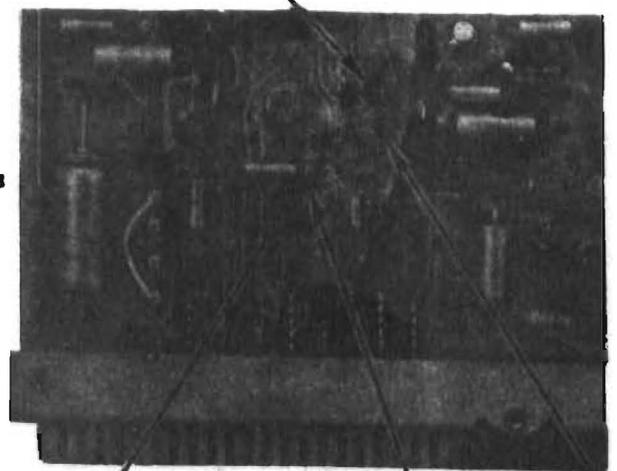


Drill 2 holes

Drill 1 hole

FIGURE 2

Q7 2N3905

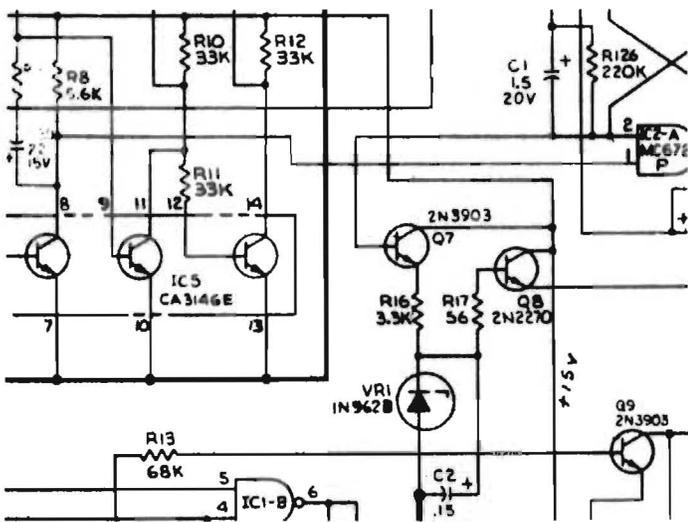


R6
11K 1/4W

R138
30K 1/4W

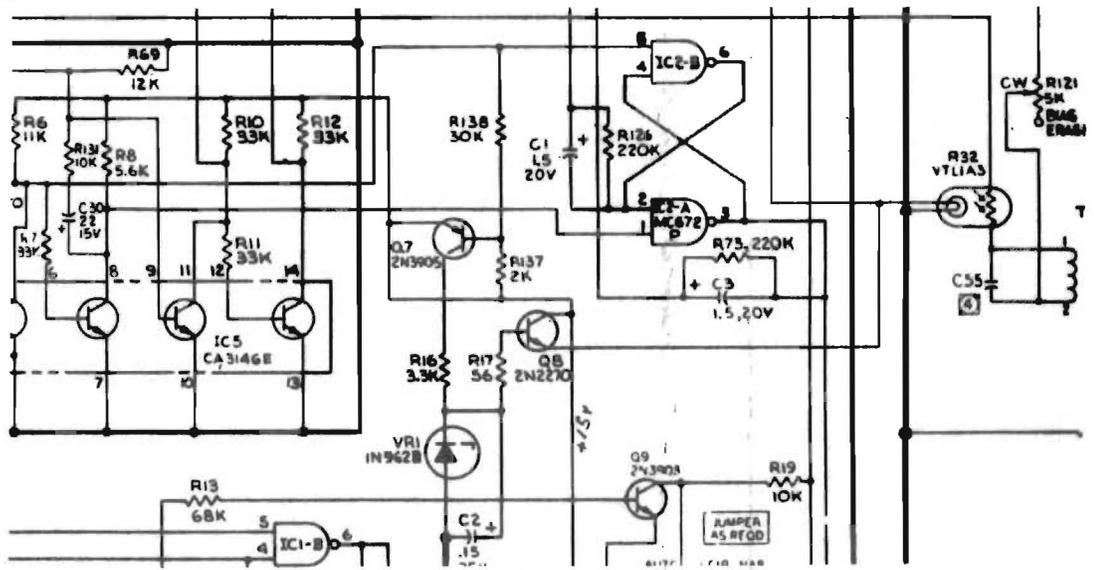
R137
2K 1/4W

Cut Trace



Change the Signal Electronics Schematic in the Manual to show the Modification

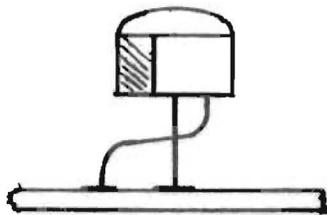
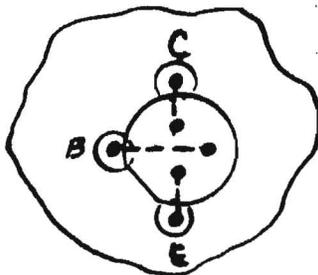
BEFORE MODIFICATION



AFTER MODIFICATION

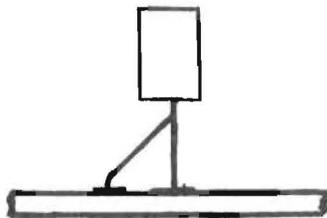
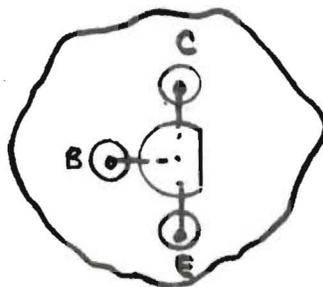
TECH. SERVICE REVISION NOTICE
APPLICABLE TO PRO AUDIO SERVICE BULLETIN #6

Due to a change in lead configuration on the 2N3905 TO18-4 case (round), it will be necessary to install this transistor as shown:

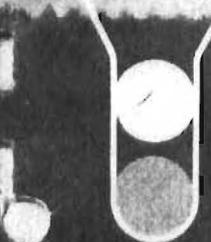


2N3905 TO18-4 Case

The 2N3905 (flat side) TO92 case will still be installed as shown:



2N3905 TO92 Case



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BULLETIN NO. 7

Subject: Pendar Switch #S13011, Mincom Catalog Number 83-1550-5467

Applicable to: All M-79, M-56, M-64 and M-23 Machines

When ordering replacements and spares in all cases except in the M-56 Remote Box, Pendar Switch #S13011 will be replaced by Pendar Switch #S180-11, Mincom Catalog No. 83-1550-5177.

February 1974

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BULLETIN NO. 8

Subject: Modification to Eliminate Possible Sync Oscillation

Applicable to: All M-79 Professional Audio Recorders

Procedure:

- 1) Remove power from machine.
- 2) Remove Track 1 Signal Electronics board from housing.
- 3) Remove L-10, 100uh coil and replace with 110 ohm, 1/4W, 5% resistor (Mincom Catalog No. 83-9520-2131 or 83-1520-0353).
- 4) Remove C-54, .0047uf capacitor and replace with 75k ohm, 1/4W, 5% resistor (Mincom Catalog No. 83-9520-2171 or 83-1520-0377).
- 5) Repeat steps 3 and 4 for each Signal Electronics board in the particular M-79 that is to be modified.
- 6) Change Signal Electronics board schematic to reflect these changes.

February 1974

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BULLETIN NO. 9

Subject: Modification Instructions for the M-79 Logic and Master Bias Supply PC Board to eliminate Bias Beating when two machines are operated in close proximity to each other.

Procedure:

Tools necessary to accomplish task:

1. Drill Motor
2. No. 70 Twist Drill

Parts necessary to accomplish task:

<u>Part</u>	<u>Mincom Catalog No.</u>	<u>Quantity</u>
Coil, 100 μ h	83-1540-0535	1
Capacitor, 4.7 μ f, 35V	83-1510-6210	2

- 1) Remove all power from machine.
- 2) Remove the following from Logic and Master Bias Supply PC Board in sequence:
 - a) Connectors
 - b) 2; 6-32 Hold Down Screws
 - c) PC Board from machine.
- 3) Place board on bench component side up and three connectors facing toward you.
- 4) Locate P-5. It will be to the extreme right of the board. Locate contact 9 and note that trace runs from contact 9 to the bottom side of C-26. Cut this trace.

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- V. Utilizing the drill motor and the #70 twist drill, put 6 holes thru the PC Board. Location of these holes are as follows: (See Figure I)
- A. Top of Contact Finger #9
 - B. Top of contact Finger #7
 - C. Between contact Finger #9 and cut in trace.
 - D. In trace running to the left of C-26 near lower left hand edge of C-26.
 - E. Between cut in trace and bottom of C-26, drill 2

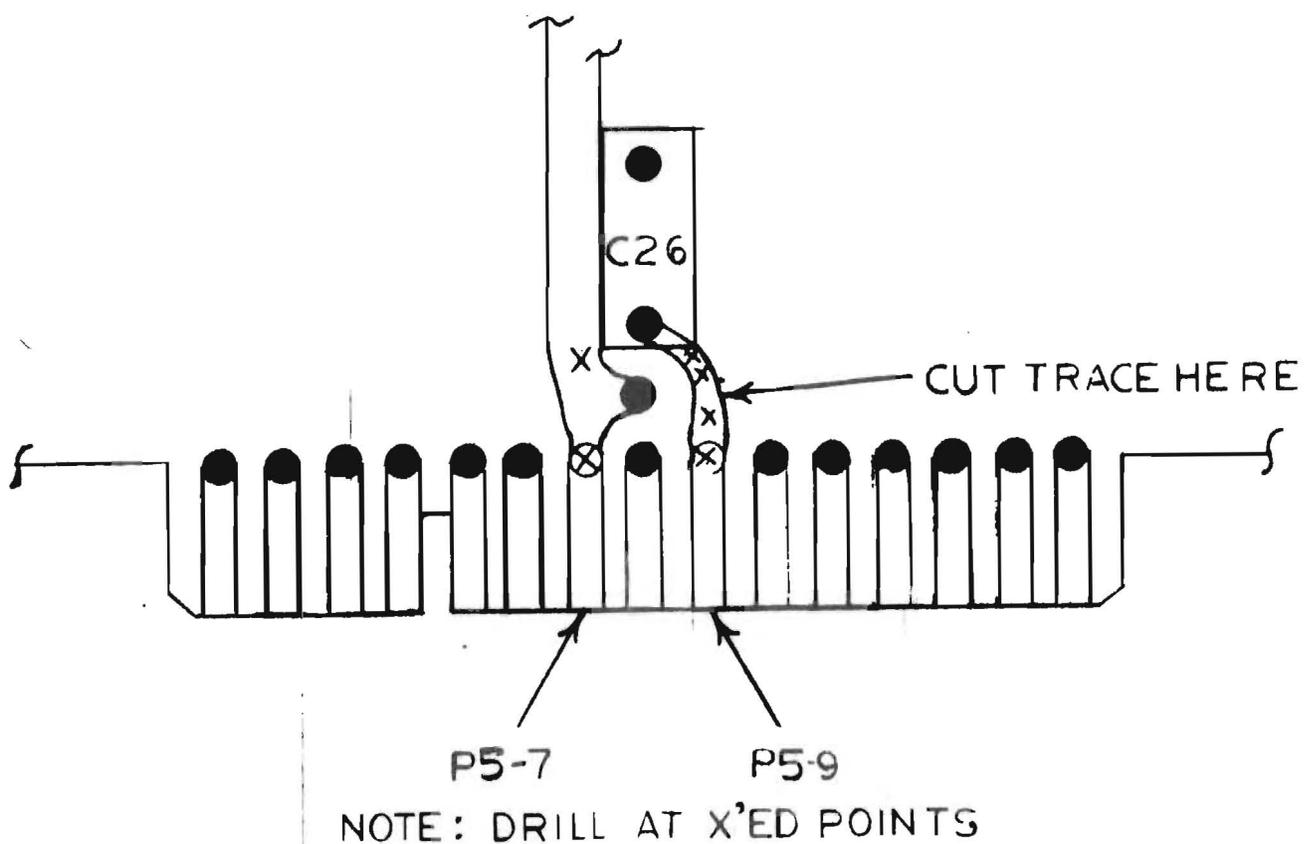


FIGURE 1

- VI. Install 4.7uf capacitor between holes drilled at top of contacts 7 & 9.
(See Figure 2)
- VII. Install 4.7uf capacitor between holes drilled just below and to the left and right of C-26. (See Figure #2)
- VIII. Install 100μh coil in two remaining holes (See Figure 2)

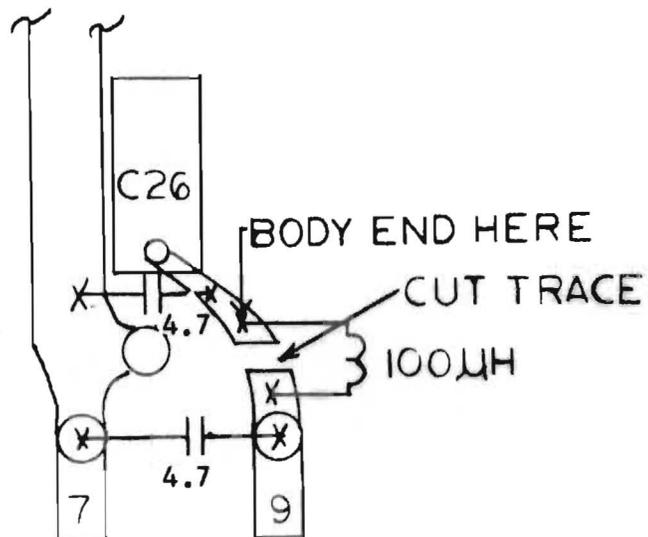


FIGURE 2

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BULLETIN NO. 10

Subject: Logic Board Modification to Prevent Overdissipation of Bias Oscillator Resistors

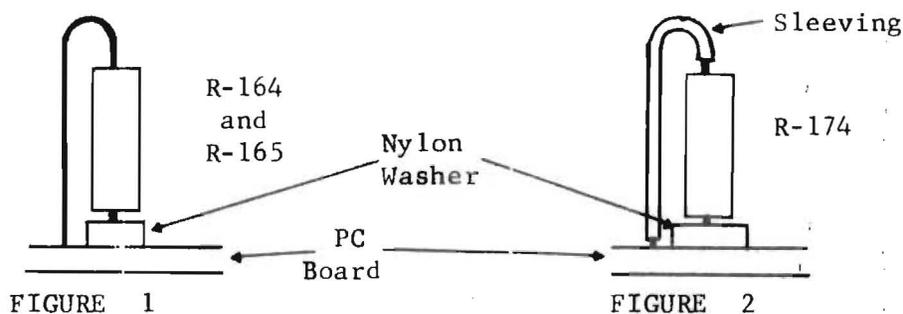
Applicable to: All M-79 8, 16 & 24 Track Recorders

Parts Required: 2 ea. 33 ohm 2W Resistor - Mincom Catalog No. 83-9520-5514
1 ea. 10 ohm 2W Resistor - Mincom Catalog No. 83-9520-5508
3 ea. Nylon Washer - Mincom Catalog No. 83-9630-0435
1 1/2" AR #16 Teflon Sleeving

Procedure:

This modification involves changing R-174, R-164 and R-165 from 1/2 watt to 2 watt values.

- 1) Remove Logic Board from machine.
- 2) Unsolder and remove R-164, R165 and R174.
- 3) Enlarge Resistor lead holes in pc board using a #54 drill to accept new resistor leads.
- 4) Install 33 ohm 2W resistor in place of R164 and R165 (see figure 1).
- 5) Install 10 ohm 2W resistor in place of R174 (see figure 2).
- 6) Install Logic Board in machine.
- 7) Change instruction manual parts list and schematic to reflect the changes.



March 1974

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BULLETIN NO. 11

Subject: DOLBY interface with M-79 Professional Audio Recorder

Applicable to: M-79 Record which interface with DOLBY M series or DOLBY A-type units.

Purpose: Provide remote connection of DOLBY units to M-79 recorder

Remote connection of M series DOLBY units to M-79 (see figure 1).

1. Connect pin A-2 of each channel signal electronics pc board to pin 3 of the DOLBY unit through a suitable connector on the recorder chassis.
2. Connect pin B-22 bus on signal electronic pc board pin 2 of ALL DOLBY units.
3. Insure R102 and R108 in CAT 44 Interface Module are 6.8 K ohms (earlier models had 2.7 K ohm or 3.3 K ohm resistors); if the resistors are not the correct values, replace them with resistors of the correct value.

NOTE: Increasing the resistor values to 6.8 K ohms increases remote sensitivity to 6 volts "ON" and 4 volts "OFF".

4. Correct operation is when the voltage between pin 2 and pin 3 of the DOLBY unit is 10.5 volts "ON" and 0 volts "OFF".

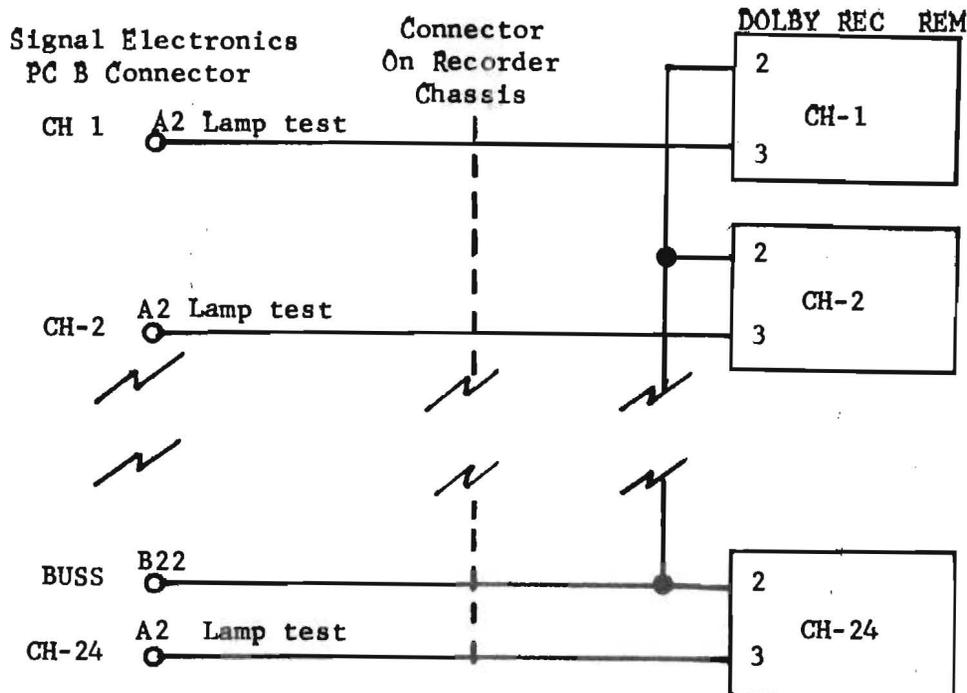


FIGURE 1

March 1974

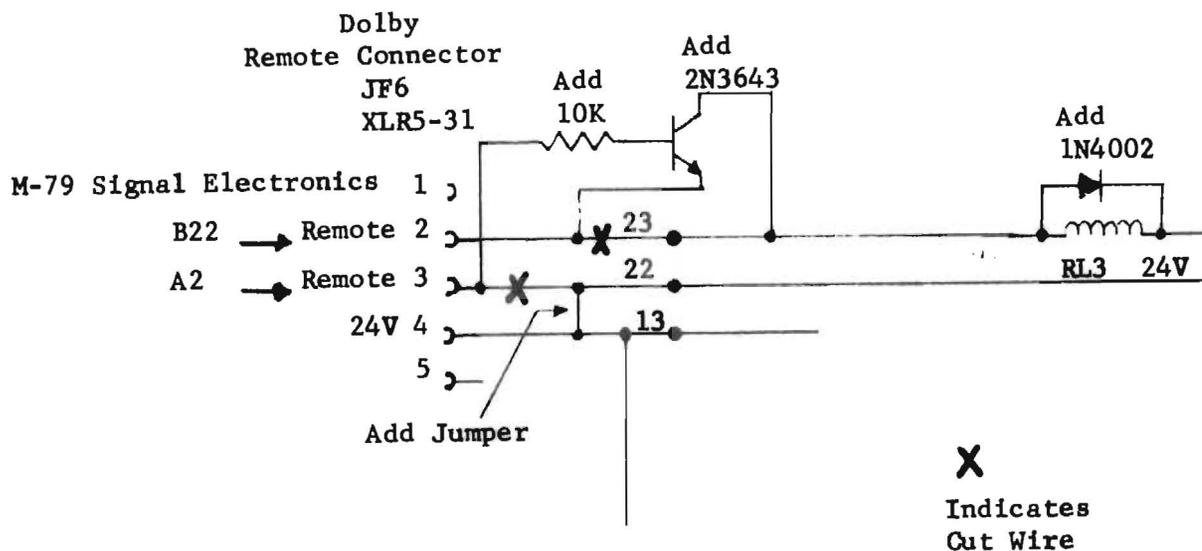
Remote connections of A-type DOLBY units to M-79

1. Connect Pin A2 of each M-79 Signal Electronics PC Board to Pin 3 of the DOLBY Remote Connector through a suitable connector on the recorder chassis.
2. Connect Pin B-22 buss on the M-79 Signal Electronics PC Boards to Pin 2 of ALL DOLBY units.
3. Modify DOLBY interface by adding circuit as shown in Figure 2.
NOTE: Refer to DOLBY 361 Interface circuit in the DOLBY Manual.

Parts Required:

- 1 ea. 2N3643 Transistor
- 1 ea. 10KΩ 1/4W Resistor
- 1 ea. 1N4002 Diode

FIGURE 2



NOTE: Added Circuit may be mounted on a Vector Board inside the DOLBY unit.

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Bulletin No. #12B (Supersedes Bulletin #12A dated January, 1975)
Date July, 1980

SUBJECT: M-79 Conversion to 14" Reels

APPLICABLE TO: All M-79 Professional Audio Recorders 8, 16 and 24 Tracks

PURPOSE: Convert M-79 Recorders to 14" Reel Operation

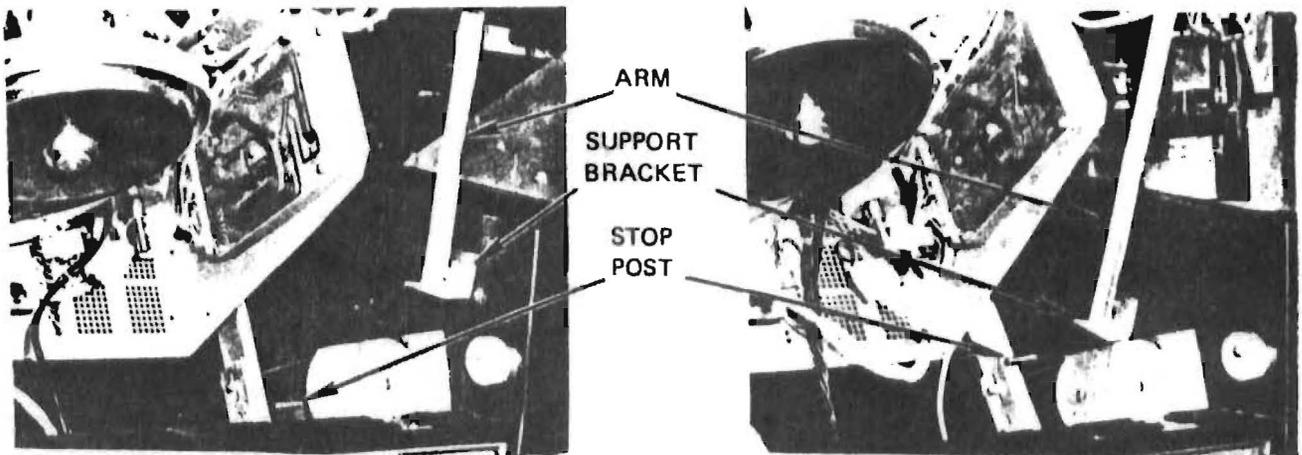
MATERIAL REQUIRED:

<u>COMPONENT</u>	<u>DESCRIPTION</u>	<u>MINCOM CATALOG NO.</u>	<u>QUANTITY</u>
Qx	2N3643	83-1530-2234	1
Ra (See Table Pg. 5)	470 ohms	83-9520-2116	1
	1K ohm	83-9520-2088	1
	2K ohms	83-9520-2148	1
Rb	20K ohms, 1/4W	83-9520-2162	1
	Kit, Conversion To 14" Reels	83-5990-1595	1

- CAUTION:**
- 1) Use of 14" reels is not recommended for recording studio operation.
 - 2) When reels over 10 1/2" are used, operate the recorder at 7 1/2 or 15 IPS. Operation at 30 IPS with the over 10 1/2" reel will result in poor tape handling.

PROCEDURE:

1. Raise the tape transport and observe the position of the support bracket and the stop post. If they appear as in figure 1, proceed with step 3. If they appear as in figure 2, proceed with step 2.



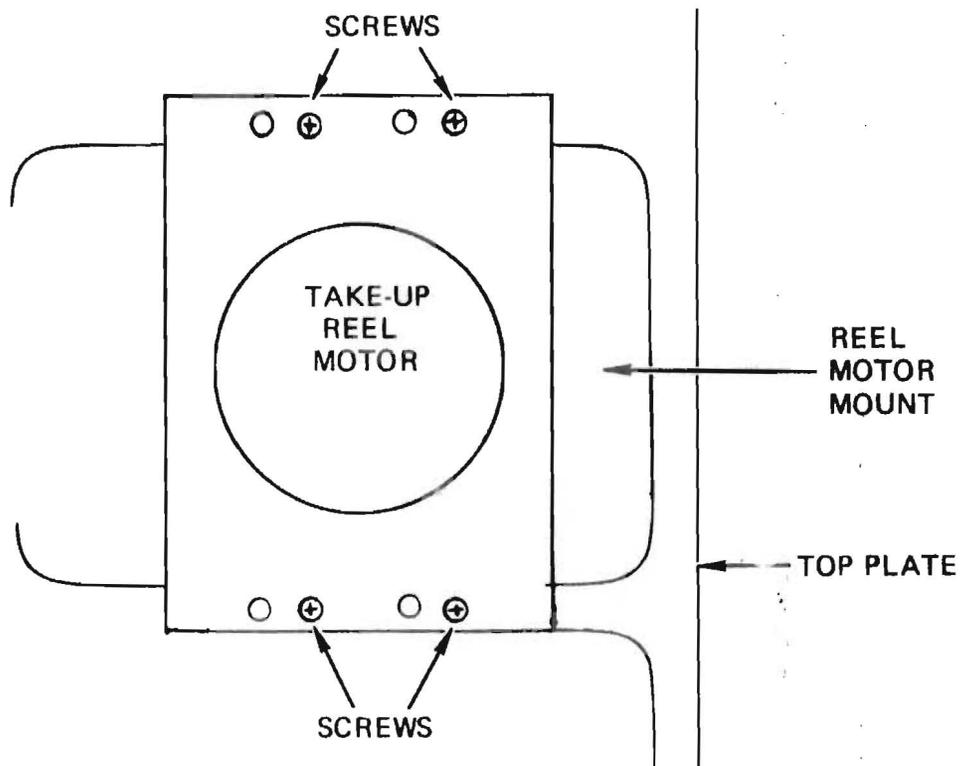
Correct Positions

FIGURE 1

Older Model Positions

FIGURE 2

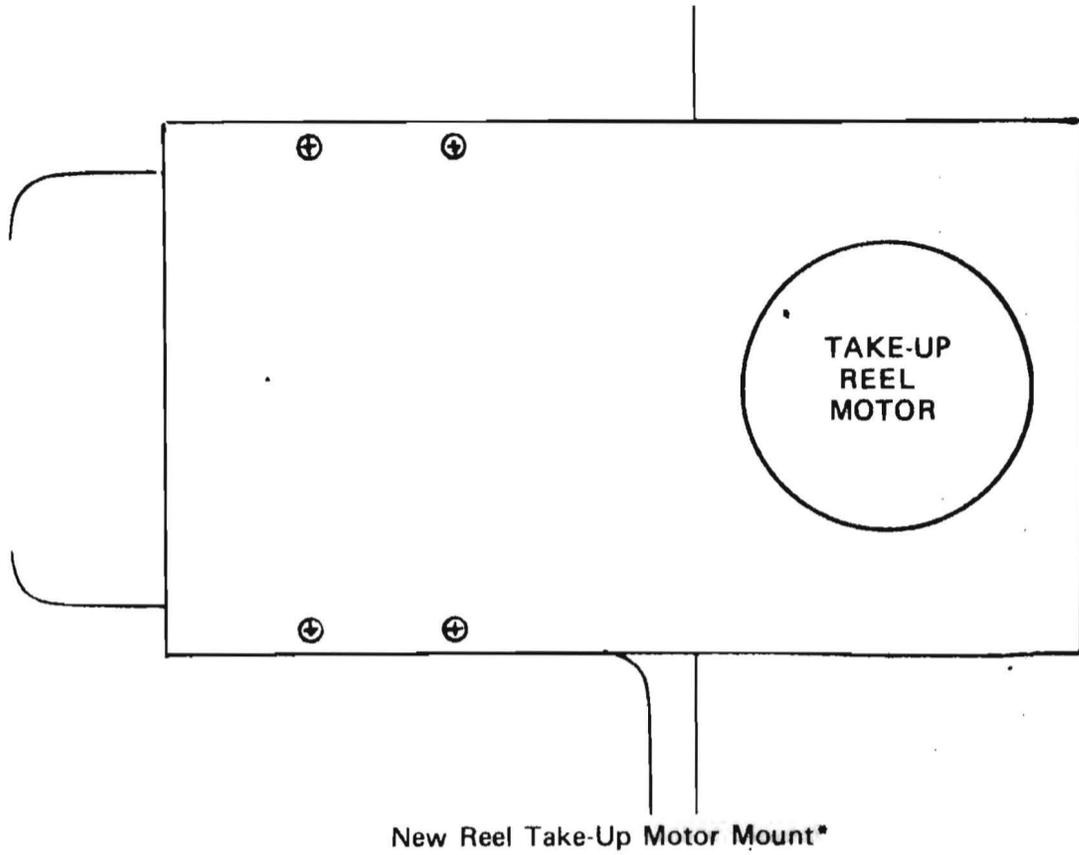
2. Modify the recorder to match figure 1 as follows:
 - a. Relocate support bracket using the template (figure 5) to locate the holes to be drilled.
 - b. Relocate the stop post so it is centered approximately 1 inch behind the pulley (see figure 1) by drilling a 1/4 inch hole and glueing in post.
 - c. Remove existing arm and replace it with a new 11 inch arm (part of conversion kit).
3. Disconnect supply and take-up motor connectors from wiring connectors; remove the four (4) screws holding each reel motor mounting plate and remove motor assembly (see figure 3).
4. Install motors on new motor mounting brackets (supplied in kit).
5. Install reel motor assemblies on recorder top plate (see figure 4). Install harness assemblies (supplied with kit) between respective motor assembly connector and wiring connectors.
6. Install new tape transport cover (supplied with kit).



Existing Take-up Reel Motor Mount *

FIGURE 3

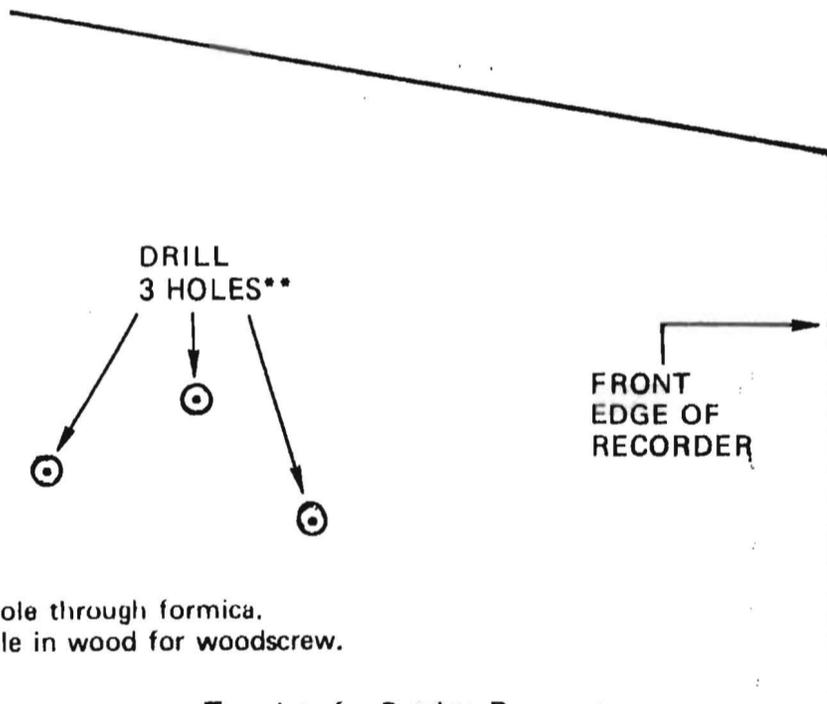
* Supply reel mount is identical to take-up reel mount.



New Reel Take-Up Motor Mount*

*Supply reel mount is identical to take-up reel mount.

FIGURE 4



- ** 1) Drill 3/16" hole through formica.
- 2) Drill 1/8" hole in wood for woodscrew.

Template for Bracket Remount
FIGURE 5

7. Modify Capstan Servo p.c. board (see figure 6).
 - a. Connect resistor Rb between GROUND and the base of Transistor Qx.
 - b. Connect resistor Ra between the junction of R17 and C7 (junction nearest to p.c. board side) and the junction of Rb and Qx base.
 - c. Connect the emitter of Qx to ground.
 - d. Connect the collector of Qx to the junction of R28 and IC1B pin 13.
8. Adjust capstan servo p.c. board pulse width and speed if necessary.
9. Perform reel alignment procedure.

NOTE: In the event replacement of items supplied in the conversion kit becomes necessary, use the following information for ordering. The conversion kit contains the following:

1. Plate, reel motor	83-3330-0523	2 ea.
2. Cover, tape transport	83-3310-1925	1 ea.
3. Harness Assy (Pickup)	83-4570-0946	1 ea.
4. Harness Assy (Supply)	83-4570-0947	1 ea.

NOTE: If your M79 is configured as shown in Fig 2, you must order the shorter support arm separate from the conversion kit.

Arm, Support (11 inches)	83-3340-0895	1 ea.
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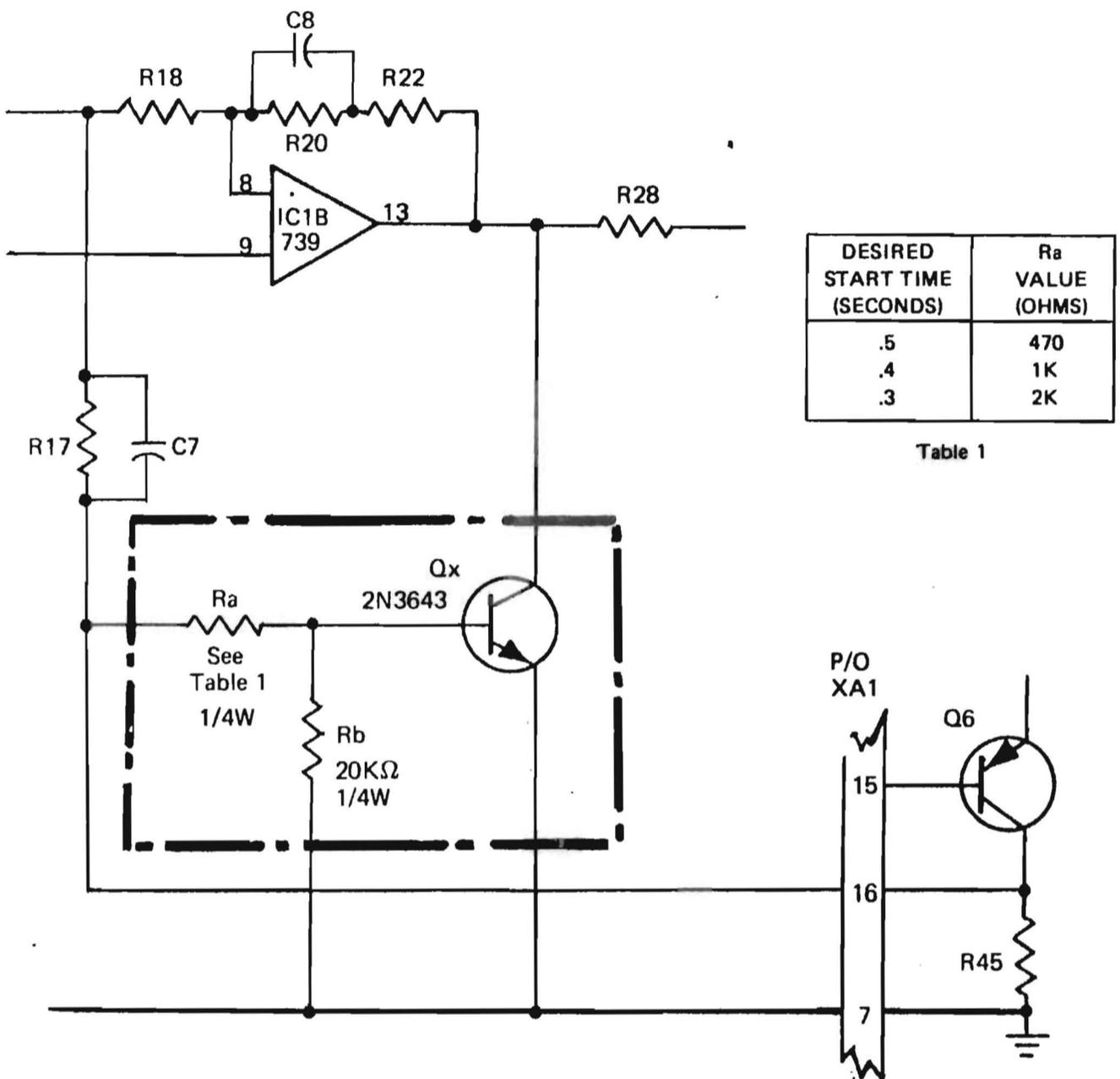


FIGURE 6

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BULLETIN NO. 13

SUBJECT: Modification to Function Switch Assemblies

APPLICABLE TO: All M-79, 8, 16 and 24 Track Machines

PURPOSE: To improve Reliability of the Mute Function during forward and rewind operation.

PARTS REQUIRED: Diode 1N914, Mincom Catalog No. 83-1530-0083, 1 per Function Switch Assy.

PROCEDURE:

Excessive leakage through CR-6 (type 1N270 diode) in the Function Switch Assembly can cause muting to fail in forward and rewind modes. This condition occurs when the leakage is sufficient to set the flip-flop IC1-C/IC1-D on the signal electronics pc board to the sync condition (IC1-D pin 11 low) turning on FET Q-34.

To eliminate possible muting failures, replace CR-6 with a type 1N914 diode on each Function Switch Assembly.

Change the Instruction Manual schematic and parts list to reflect the new diode type.

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BULLETIN NO. 14

SUBJECT: Modification of Record Amplifier Circuitry

APPLICABLE TO: All M-79 Recorders

PURPOSE: Improve the low frequency response of the amplifier

REQUIRED PARTS:	<u>Component</u>	<u>Description</u>	<u>Mincom Catalog No.</u>	<u>Quantity per Board</u>
	Capacitor	.0027 μ f, 200V, 5%	83-1510-4575	1
	Capacitor	6.8 μ f, 35V, 10%	83-1510-6144	1
	Resistor	15K ohms, 1/4W, 2%	83-1520-7231	1
	Resistor	2.2M ohms, 1/4W, 5%	83-1520-0487	1

PROCEDURE:

Replace the following components in the record amplifier with component having the values indicated.

<u>Component Designation</u>	<u>New Component Values</u>
C-23	.0027 μ f, 200V
C-53	6.8 μ f, 35V
R-50	15K ohms, 1/4W
R-55	2.2 Megohms, 1/4W

Check Recorder alignment and adjust if necessary.

Change Instruction Manual schematics and parts list to reflect the component values and catalog numbers.

GM:rb
October, 1974

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BULLETIN NO. 15

SUBJECT: Modification of Line Amplifier Circuitry
APPLICABLE TO: All M-79 Recorders
PURPOSE: Prevent possible high frequency oscillations in the line amplifier

REQUIRED PARTS:	<u>Component</u>	<u>Description</u>	<u>Mincom Catalog No.</u>	<u>Quantity per Board</u>
	Capacitor	.001 μ f, 1000V, 10%	83-1510-1024	1

PROCEDURE:

1. Drill two holes .030/.035 inches in diameter at points in figure 1.

CAUTION

Do NOT drill into traces on the back of the board.

2. Install the .001 μ f capacitor (designated C61) by inserting leads through new holes, bend leads to touch adjacent traces, then solder.
3. Check Recorder alignment and adjust if necessary.
4. Change Instruction Manual schematics (see figure 2) and parts list to reflect the new capacitor, C-61.

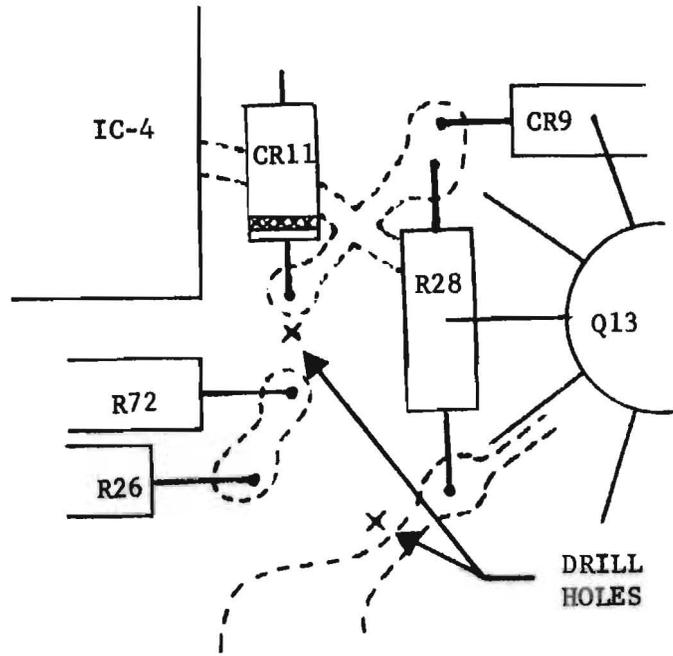


FIGURE 1

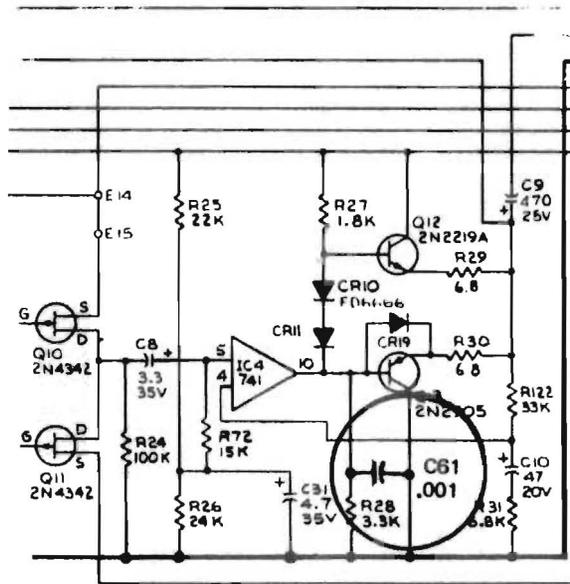


FIGURE 2

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BULLETIN NO. 16

SUBJECT: Modification to Sync Amplifier Circuitry

APPLICABLE TO: All M-79, 8, 16 and 24 Track Recorders

PURPOSE: Eliminate possible meter deflections and monitor "POP" on track in sync when adjacent tracks are put into record

REQUIRED PARTS:	<u>Component</u>	<u>Description</u>	<u>Mincom Catalog No.</u>	<u>Quantity per Board</u>
	Capacitor	560pf, 500V, 5%	83-1510-5122	1

PROCEDURE:

1. Remove Capacitor C-57 which is connected between the collectors of Q-30 and Q-24 (see figure 1).
2. Drill one hole using a .030/.035 inches, drill adjacent to the emitter connection of Q-24 (see figure 2).

CAUTION

DO NOT drill into the traces on the back of the board.

3. Install the new 560pf capacitor, designated C-57, between the collector of Q-30 and the emitter of Q-24 (see figure 2). Insert capacitor lead through new hole, then bend the lead to the emitter trace of Q-24, then solder.
4. Check Recorder alignment and adjust if necessary.
5. Change Instruction Manual schematics and parts list to reflect the new location of C-57 as indicated by figure 3.

November, 1974
GM:rb

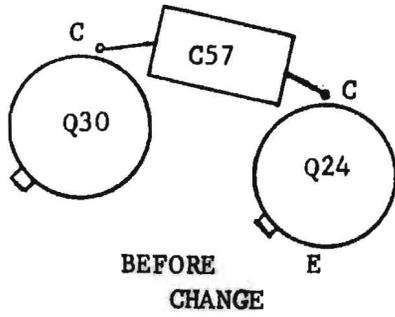


FIGURE 1

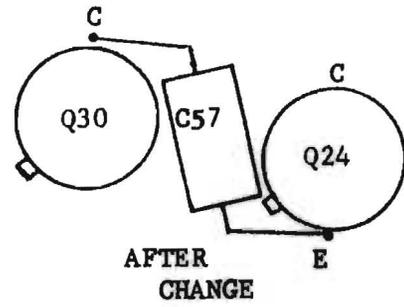


FIGURE 2

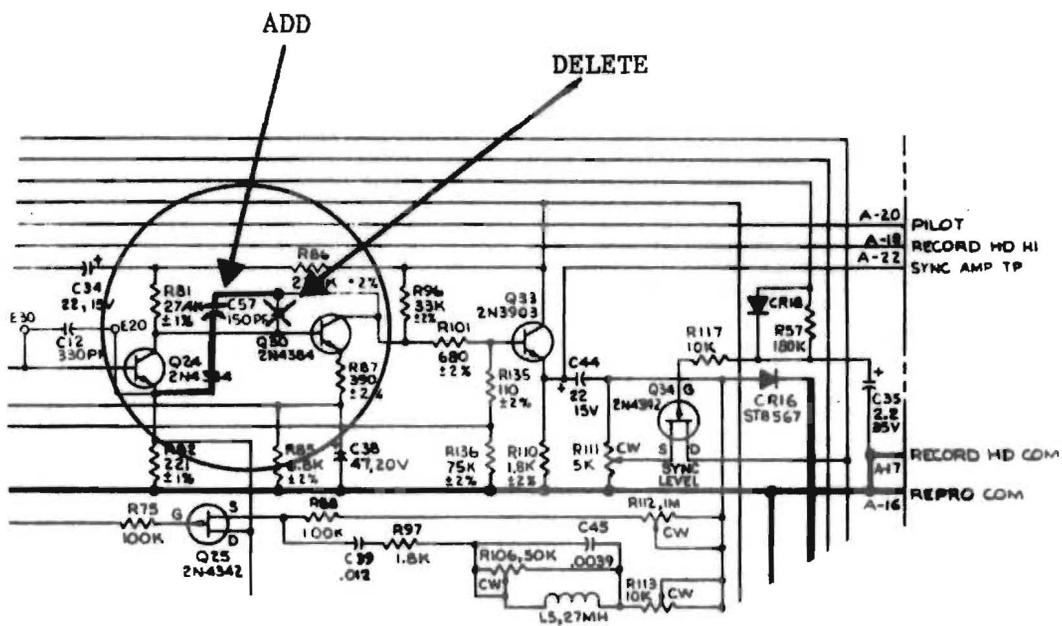


FIGURE 3

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BULLETIN NO. 17

SUBJECT: Modification of Signal Electronics PC Board for DOLBY Interface.
APPLICABLE TO: All M-79 Recorders
PURPOSE: Prevent Oscillations of Signal Electronic when DOLBY unit is disconnected.

REQUIRED PARTS:

<u>Component</u>	<u>Description</u>	<u>Mincom Catalog No.</u>	<u>Quantity per Board</u>
Capacitor	.001 μ f, 1000V, 10%	83-1510-1024	1
Resistor	15 ohms, 1/2W, 2%	83-1520-7267	1
Teflon Tubing	(for the insulation of component leads)		As Required

PROCEDURE:

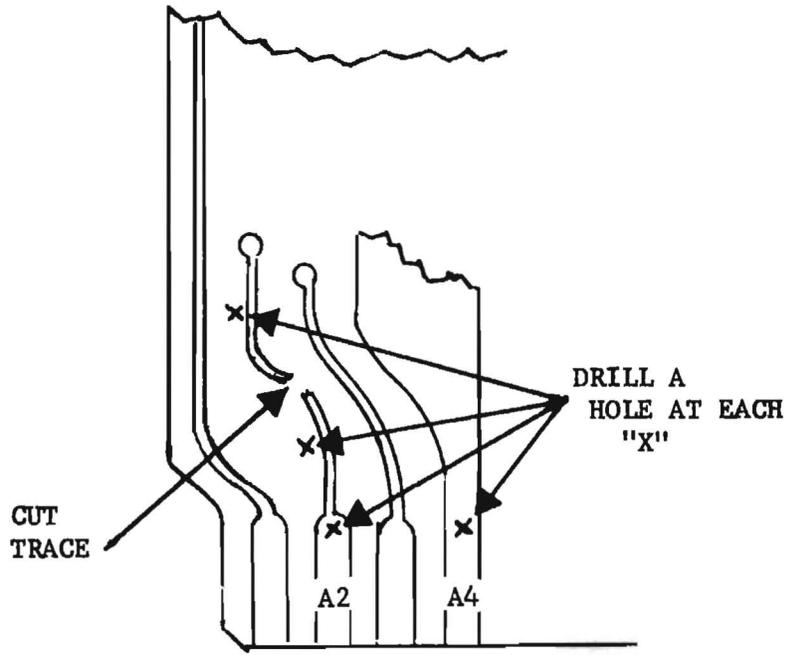
1. Drill four holes .041/.046 inches in diameter at points indicated on figure 1.

CAUTION

When drilling holes adjacent to circuit traces, do NOT drill into the trace.

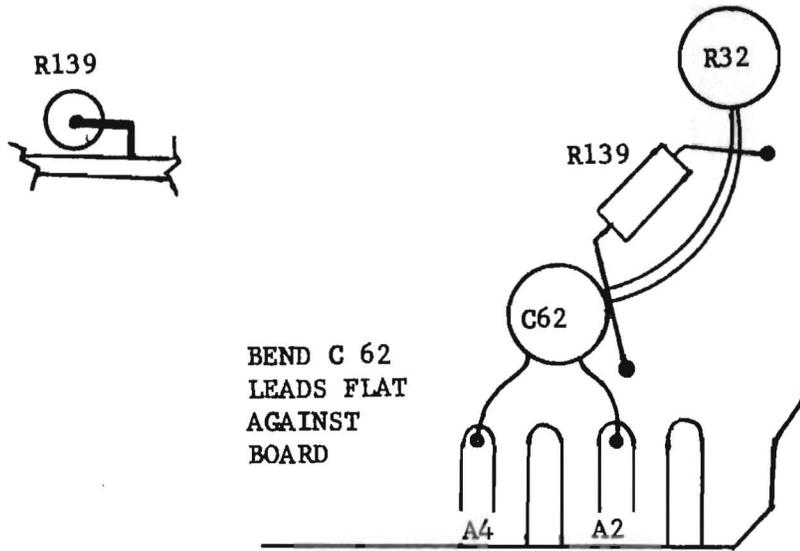
2. Cut the printed circuit trace as indicated on figure 1.
3. Install the capacitor, designated C-62 in the holes drilled in the finger contacts (see figure 2). Insure the leads lie flat against the board to prevent shorts to the board brace.
4. Install the resistor, designated R139, as indicated in figure 2. Bend the leads to make contact with the trace on the back of the board and solder. R-139 must be bent as shown to prevent accidental short circuits and to permit the board to be installed in the Recorder.
5. Change Instruction Manual schematics (see figure 3) and parts list to reflect C-62 and R-139.

GM;rb
November, 1974



BACK OF PC BOARD

FIGURE 1



FRONT OF PC BOARD

FIGURE 2

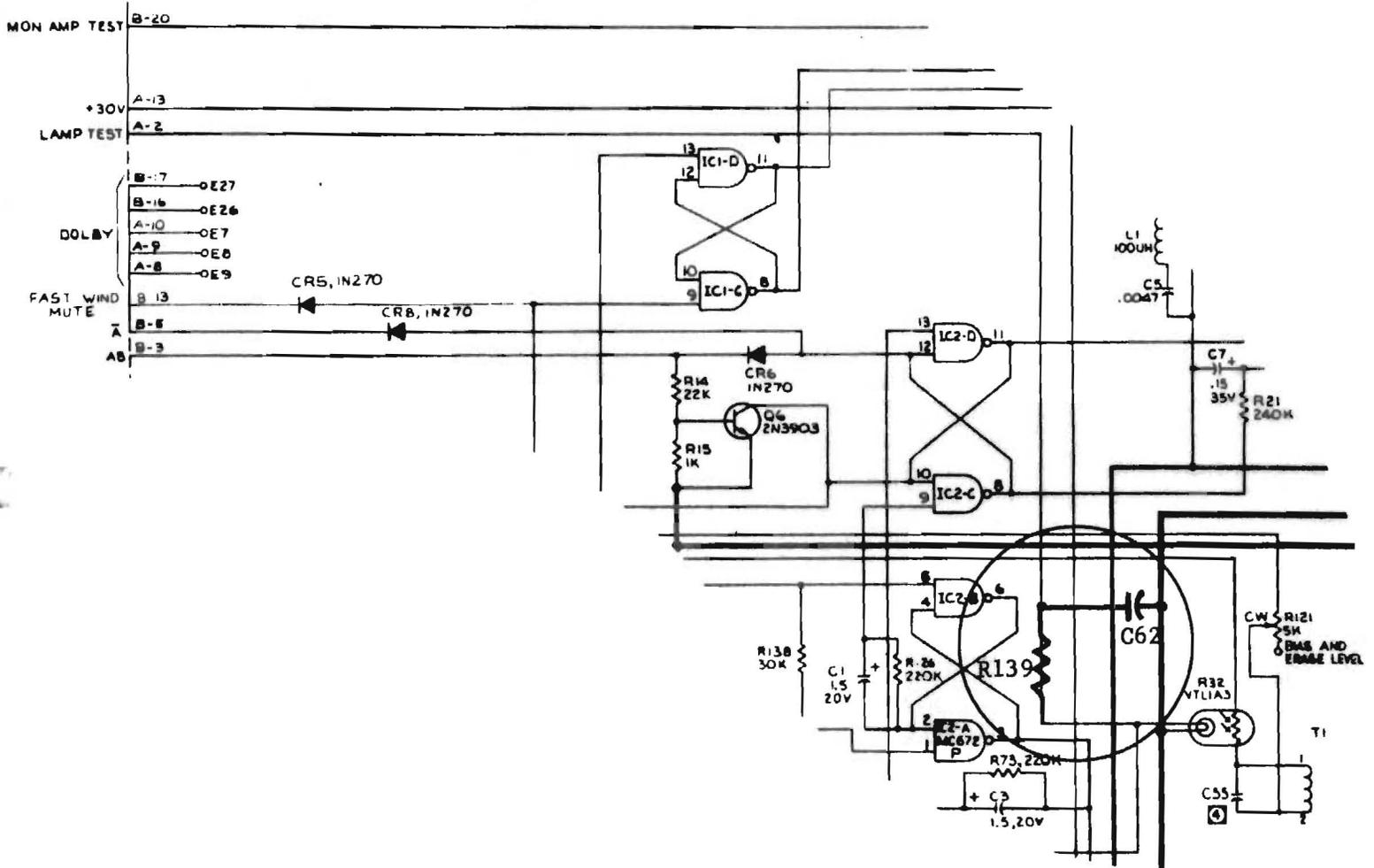


FIGURE 3



GENERAL OFFICES • 3M CENTER • SAINT PAUL, MINNESOTA 55101 • TEL. (612) 733-1110

Mincom Division

To Our Customers:

In the past, some M-79 owners have notified us of a high incidence of mechanical and/or brush noise coming from the capstan motor assembly in their recorders.

We have consequently re-engineered these assemblies using new style brushes and bearings. We have also modified the motor housing to preclude any possibility of audible motor noise.

To further improve the noise rejection and to realize the utmost benefit from the above changes, the procedures and modifications called for on the attached Field Service Bulletin should be incorporated.

All new M-79 recorders are being shipped with these modifications incorporated.



MINNESOTA MINING AND MANUFACTURING COMPANY

Professional Audio Service Bulletin

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Division **3M**
COMPANY

Bulletin No. 18

SUBJECT: Installation of Replacement Capstan Motor Assemblies
Cat. No. 83-5920-2020

APPLICABLE TO: 8, 16 and 24 Track M-79 Recorders

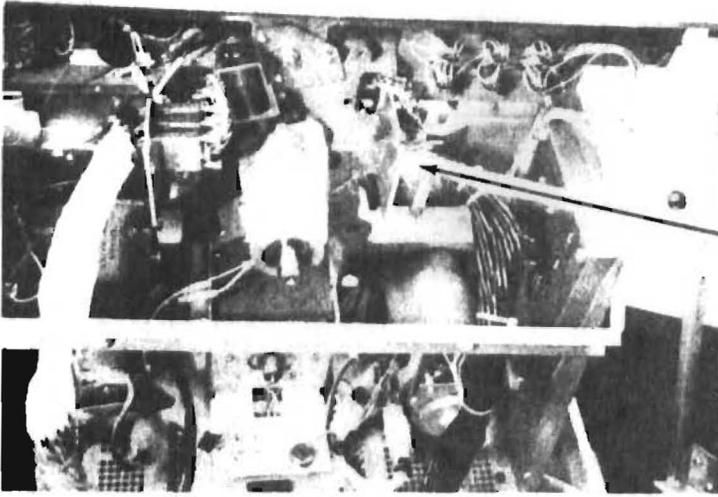
PURPOSE: Modify Head Connector Mounting to Minimize Motor
Noise Pickup by Head Cables.

PROCEDURE:

1. Remove old motor assembly as follows:
 - a. Remove four 4-40 screws securing belt guard and remove bottom half of belt guard.
 - b. Remove capstan drive belt.
 - c. Remove screw securing flywheel and remove flywheel (holding capstan on top of transport to prevent its turning).
 - d. Remove upper half of belt guard by removing screws securing it.
 - e. Disconnect capstan motor connector J-7.
 - f. Remove two cable clamps which secure head cables to motor assembly. (Save clamps)
 - g. Remove capstan motor assembly by removing four screws securing it to transport (2 screws on each side).
2. Removal of old head connector brackets. (Complete work on reproduce bracket before starting on record side.)
 - a. Disconnect head connector(s) and move aside.
 - b. Remove three screws holding reproduce connector bracket to transport. Save screws for reuse in step 3b.
 - c. Remove and save 2-56 posts and nuts securing connector(s) to bracket. Make a note of male post location in reference to pin number on connector, for ease in reassembly.
 - d. Old bracket will have to be cut in order to remove connector(s). Be careful head cable is not nicked.

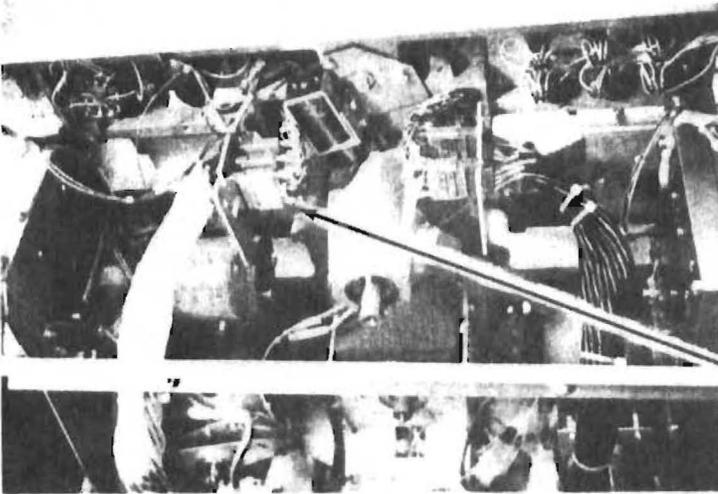
3. Installation of new head connector brackets, 83-3320-2963 right bracket and 83-3320-2964 left bracket.
 - a. Mount connector(s) on new bracket in reverse order of removal making sure of locator pin position as noted in step 2c.
 - b. Install new bracket assembly onto transport. (Figure 1)
 - c. Reconnect head connector(s). (Figure 2)
4. Repeat steps 2 and 3 above for bracket on record side.
5. Install replacement capstan motor assembly leaving mounting screws loose.
6. Reinstall top half of belt cover.
7. Reconnect motor connector - J-7.
8. Reinstall flywheel - hold capstan to prevent turning.
9. Reinstall capstan belt and refer to section 4-30 of the manual for belt tension adjustment.
10. Reinstall lower belt cover.
11. Install head cable mounting bracket 83-3320-2962 as shown (Figure 3). Use existing screw on right side, use 8-32 x 1/2" screw on left side.
12. Attach head cables to bracket using clamps removed in step 1f. Use 10-32 hardware furnished (Figure 3).
13. Install a spring from each head cable bundle to rear of transport wrap around (See Figure 3).
14. Remove transport cover (scalp plate) to allow access to capstan servo p.c. brd.
15. Perform servo adjustments in sections 4-16 and 4-17 of manual - refer to section 4-18 to change speed range if necessary.
16. Replace transport cover.

Figure 1



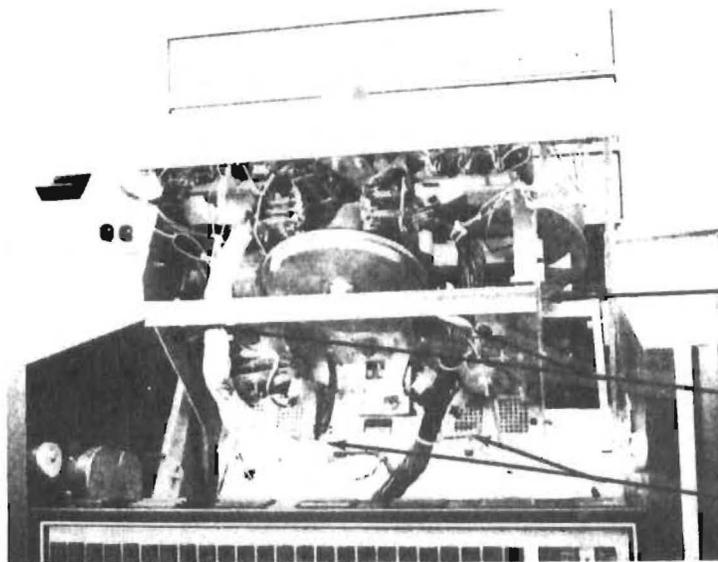
Arrow points to
reproduce-connector
mtg bracket

Figure 2



Arrow shows head
connectors reconnected

Figure 3



Head cable support
bracket

Head cable clamp

Head cable slack
preventing springs

Professional Audio Service Bulletin

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Bulletin No. 19

MODIFYING M-79 FOR IMPROVED HIGH FREQUENCY RESPONSE AT 7½ IPS

PURPOSE: To preclude the necessity of readjusting bias when switching between 7½ ips and 15 ips.

NOTE: If machine is used at 30 ips or CCIR with these modifications, C-23 should be shorted with a jumper wire.

PARTS NEEDED PER TRACK:

K-A	1 ea.	Reed Relay - SPDT - 24-28V 83-1550-3620-1 or equivalent	\$38.00 Ea.
CR-A		1N4004 Diode 83-1530-0151	.35 Ea.
R-13		33K ¼ watt resistor 83-9520-2109-1	.45 Ea.
R-A		750 ohm ½ watt resistor 83-1520-7357-9	.35 Ea.
R-41A		200-ohm variable resistor 83-1520-1572 .750" x 1.750" perf brd or pc brd (see figure 2)	5.30 Ea.

PROCEDURE:

1. Remove Q-20, R-13, R-19, CR-9 and discard.
2. Remove any jumper connected to points E-10 through E-13.
3. Remove TP-2 (white) from board. Use care in not lifting pads from pc board (see figure 1).
4. R-41-A will be mounted in place of TP-2. Clip off rear lead of R-41-A. Drill a hole midway between and slightly above TP-2 mounting holes. This hole and forward most hole will be used to mount R-41-A (see figure 1).
5. Locate trace running from R-42 to wiper of R-41. Cut this trace about an inch from R-42.
6. Drill a hole behind bottom lead of C-14 (erase trimmer). Do not drill through any traces.

7. Locate same trace as in Step 5 and drill a hole into this trace between C-14 and Q-16 (see figure 1).
8. Mount relay K-A on a piece of perf board and mount the perf board to the mounting screws of Q-16 and Q-17 using two 6-32 nuts (see figures 1 and 2).
9. Install new R-13 (33K ohm).
10. Install CR-A into holes from which R-19 was removed.
11. Install R-A (750 ohm) between E-11 and E-12.
12. Connect a pair of wires to coil of relay K-A and route across top of board to terminals ~~E-11~~ and ~~E-12~~. Connect one wire to ~~E-11~~ and the other to ~~E-12~~.
12 13 12
13. 13 Connect a wire from the wiper of K-A to R-42. Connect to the end of R-42 closest to the relay.
14. Connect a wire from the normally closed contact of K-A to trace going to wiper of R-41 through hole drilled in Step 7 above.
15. Install R-41-A in location vacated by TP-2 (a drop of selastic will hold it in place).
16. Connect a wire from the normally open contact of ^KR-A (through hole drilled in Step 6 above) to the wiper of R-41-A.
17. Connect a wire from front term of R-41-A to front term of R-41.
18. Fill in (with solder) the rear mounting hole of TP-2. This trace must not be broken.
19. Place signal brd on extender card and install in machine.
20. Place machine in record at low speed and monitor the wiper of R-41 with scope. A bias waveform should be visible.
21. Switch recorder to high speed (maintaining record mode); bias waveform should disappear. Switch scope to wiper of R-41-A; bias should be present.

NOTE: If bias is the reverse of Steps 20 and 21, the wires going to the normally open and normally closed contacts of K-A should be reversed.

22. Monitor TP-1 with VTVM (record mode) and adjust R-121 for 1.2V RMS (1 volt on 24 track).

NOTE: Before continuing with record alignment, reproduce alignment should be checked and adjusted if necessary.

23. To align bias the upper bias adjust R-41 is used for low speed and the lower R-41-A for high speed.
24. The bias must be adjusted (using appropriate pot) for 5db overbias at 15kHz for any speed (including 7½ ips).

Typical record response with above bias settings are:

7½ ips (-10VU input) flat to 15kHz -3VU 19kHz
15 ips (0VU input) flat to 20kHz -3VU 24kHz
30 ips (0VU input) flat to 20kHz -3VU 24kHz

JDC:lj

FIGURE 1

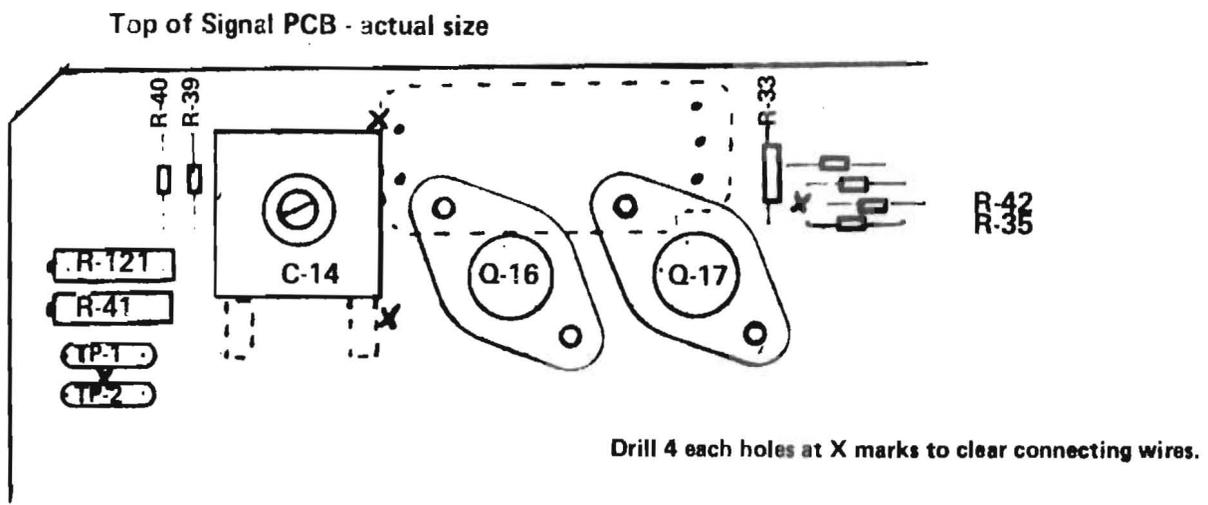


FIGURE 2

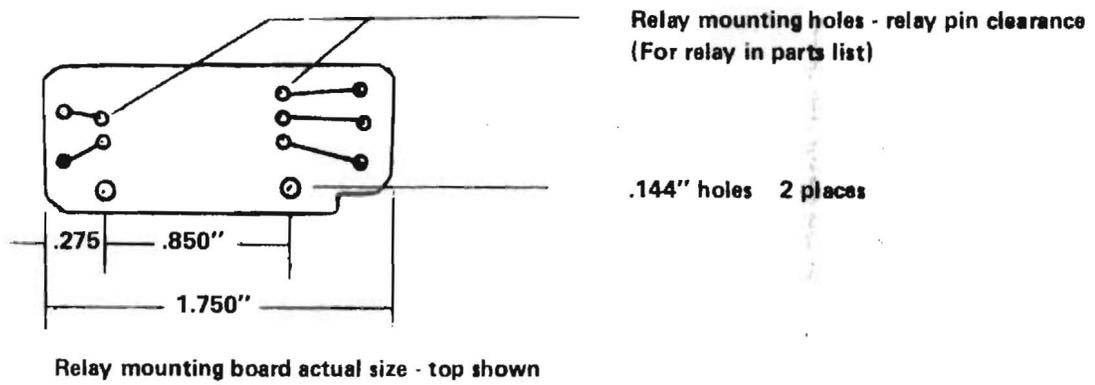
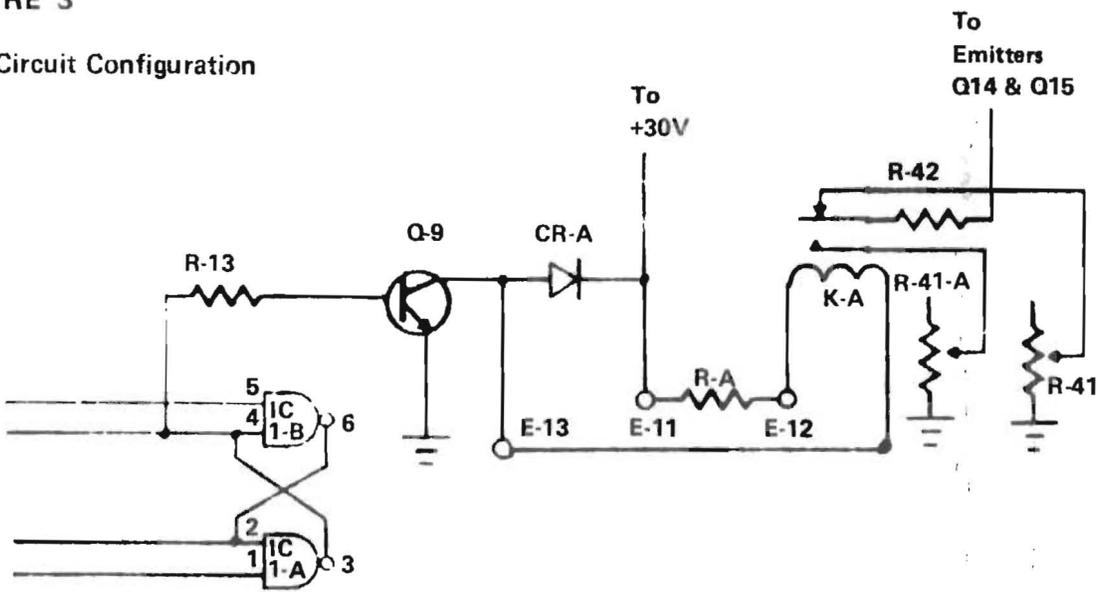


FIGURE 3

New Circuit Configuration



Professional Audio Service Bulletin

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Bulletin No. 20

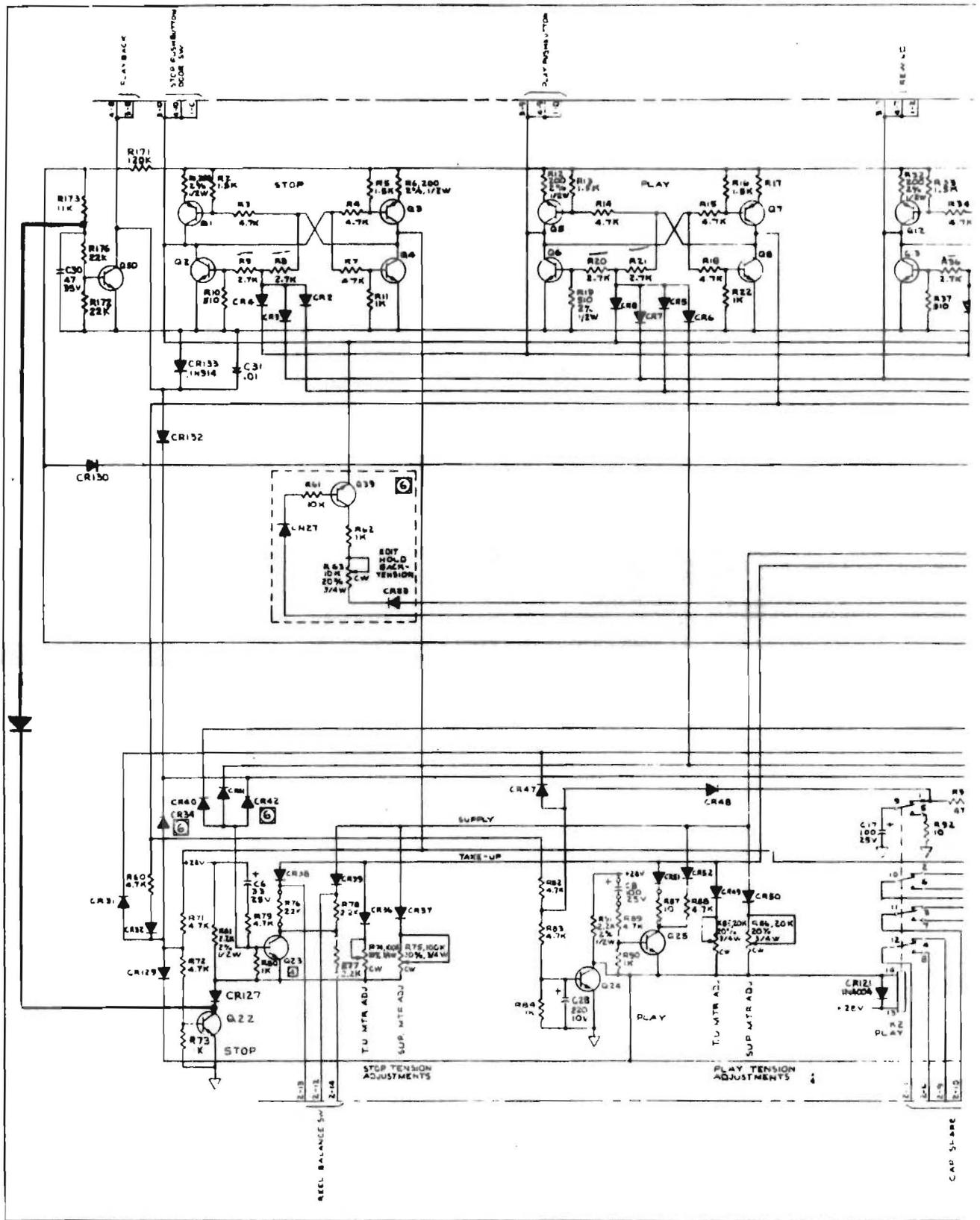
SUBJECT: Modification To Mute Signal Electronics When In Stop Mode

APPLICABLE TO: 8, 16 and 24 track M-79 recorders

PARTS NEEDED: 1N914 Diode Catalog No. 83-1530-0083-7 \$.60
1 EA.

PROCEDURE:

- 1) Remove logic pc Board from recorder.
- 2) Install 1N914 diode from collector of Q-22 to junction of R-173 and R-176. (cathode of diode to collector of Q-22) see Fig. 1. Use tubing on leads of diode.
- 3) Install logic pc board into recorder.
- 4) Thread a roll of tape onto the recorder which has a signal recorded on it and press stop button.
- 5) Manually move tape back and forth. Signal from tape should not be heard nor appear on meters.
- 6) Press mute defeat switch and repeat step five. Signal should be heard and should appear on meters.
- 7) This mod will not effect the monitoring of input signals.



STOP MUTE MODIFICATION

FIGURE 1



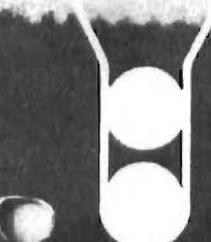
Professional Audio Service Bulletin

Mincom
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COMPANY

BULLETIN NUMBER 21

- SUBJECT:** Modification Effecting Erase Set Up Voltage At Test Point "1" on Signal Electronic Cards
- APPLICABLE TO:** All M-79 Recorders
Special Emphasis To 24 Track
- PURPOSE:** To Prevent Erroneous Bias Failure Indications (Blinking of Record Lights)
- EXPLANATION:** Due to normal aging of the vactec (L.D.R.), the bias signal at the output of the erase amplifier can fall below the warning circuit threshold. This causes the record lamps to flash without affecting the recording process. This would be more likely to occur on a 24 track recorder since the erase level is set for 1 volt RMS, and the warning threshold is approximately 0.8 volts RMS. This threshold voltage can vary from card to card due to component tolerances.
- SOLUTION:** Effective with M-79 serial number 500, resistor R-39 (27 ohm) was changed to a 56 ohm resistor. This raises the erase set up level from 1 volt RMS to 2 volts RMS for a 24 track recorder and from 1.2 volt RMS to 2.4 volts RMS for all other track configurations. This change also increases the usable life of the vactec.
- PROCEDURE:** Replace R-39 on the signal electronics PCB with a 56 ohm ¼ watt resistor Mincom catalog number 83-1520-0349 or equivalent, change your manual set up procedure, page 4-13 section 4-41 step 4 to read 2.0 volt RMS for 24 track and 2.4 volts RMS for other recorders.

November, 1976



Professional Audio Service Bulletin

Mincom
Division **3M**
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BULLETIN NO. 22

SUBJECT: Logic Board Flip-Flop resistor changes

APPLICABLE TO: All M-79 Logic Boards used with Selectake II

PURPOSE: To assure proper latching of mode control flip-flops.

REQUIRED PARTS: 8 ea. 1.2K ohm, $\frac{1}{4}$ W resistor, 83-1520-0363-4
4 ea. 240 ohm, $\frac{1}{4}$ W resistor, 83-1520-0358-4
1 ea. 3.0K ohm, $\frac{1}{4}$ W resistor, 83-1520-7313-2
4 ea. 39 ohm, 1W resistor, 83-9520-4122-2

PROCEDURE:

1. Replace R8, R9, R20, R21, R36, R41, R47 and R52 with the 1.2K ohm resistors.
2. Replace R10, R19, R37 and R48 with the 240 ohm resistors.
3. Replace R31 with the 3.0K ohm resistor.
4. Add the 39 ohm resistors in series with the following traces on the component side of the board.
 - a. J3-10 to Q1, Q2
 - b. J3-9 to Q5, Q6
 - c. J3-7 to Q12, Q13
 - d. J3-6 to Q16, Q17
5. If this recommended change is incorporated, please alter the Logic Board schematic diagram to reflect this change.

NOTE: This change on the Logic Board must be done in conjunction with the change affecting the Selectake II Processor Board. See Service Bulletin number 23.

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BULLETIN NO. 23

SUBJECT: Selectake II Processor Board Changes

APPLICABLE TO: All Selectake II's

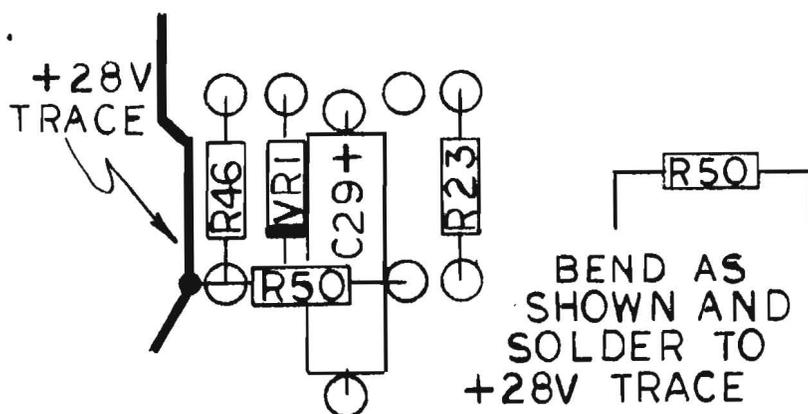
PURPOSE: To assure proper latching of mode control flip-flops on logic board.

REQUIRED PARTS: 1 ea. 20K ohm, $\frac{1}{4}$ W resistor, 83-1520-7259-7
1 ea. 12V Zener Diode 1N963B, 83-1530-0252-8

PROCEDURE:

A. Applicable to "A" versions. Serial numbers 100 - 199.

1. Remove R50.
2. Install 20K ohm resistor as shown in figure 1.



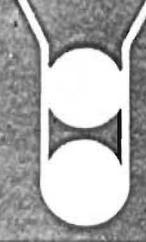
3. Replace VR1 with 12V Zener

B. Applicable to "B" versions. Serial numbers 200 and above.

1. Replace R50 with 20K ohm resistor
2. Replace VR1 with 12V Zener

C. If this recommended change is incorporated, please alter the schematic diagram to reflect this change.

WRT(10/77)



Professional Audio Service Bulletin

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BULLETIN NO. 24

SUBJECT: Logic Board "Cutout" Circuit Modification

APPLICABLE TO: All M-79 Logic Boards

PURPOSE: To prevent short term or false triggering of "end of tape" sensor.

REQUIRED PARTS: 1 ea. 10K ohm, ¼W resistor 83-1520-7308-2
2 ea. 0.1 microfarad, 200V capacitor 83-1510-4499-3

PROCEDURE:

1. Replace R143 with the 10K ohm resistor
2. Solder one of the 0.1 microfarad capacitors across R143.
3. Solder the other 0.1 microfarad capacitor from base to collector of Q33.

Professional Audio Service Bulletin

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BULLETIN NO. 25

SUBJECT: Modification of Master Remote Ass'y and
Signal Electronics P.C. Boards.

APPLICABLE TO: All M79 8, 16 and 24 Track Recorders

PURPOSE: To allow any channel, armed in Record, to remain in 'A',
or Input Monitor, when Play-Record has been terminated
by Stop. Automatically switches to 'B' when Play is
entered and remains in 'B' until Play-Record is re-initiated.

REQUIRED PARTS:

A. Master Remote Ass'y.

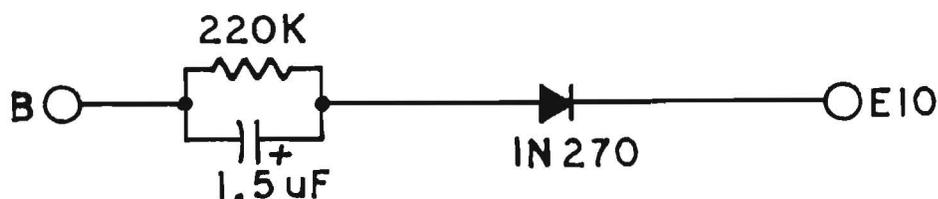
1. 1 Ea. - 220k, $\frac{1}{4}$ w, 2% Resistor 83-1520-7301-7
2. 1 Ea. - 1.5uf, 35v TA Capacitor 83-1510-6183-1
3. 1 Ea. - 1N270 Diode 83-1530-0263-5

B. Signal Electronics Board

1 per Channel - 100pf, 500v Capacitor 83-1510-5155-0

PROCEDURE:

1. Remove R126 from each Signal Electronics Board.
2. Replace C1 on each Signal Electronics Board with the 100pf capacitor.
3. Add the following circuit to the Master Remote Ass'y, between Pin 'B' and E10.



4. If this change is incorporated, please alter the affected schematic diagrams to reflect this change.

WT(9/78)

Professional Audio Service Bulletin



BULLETIN NO. 26

SUBJECT: Reproduce and Record Alignment Procedure

APPLICABLE TO: All M23, M64, M56 and M79 PAR's

PURPOSE: To normalize the Reproduce and Record alignment of the PAR's in order to match the "Standard Reproduce Alignment Tapes" to the various "Mastering" tape types used by most studios.

Note: This Procedure assumes that the PAR's will be aligned for OPTIMUM performance of the particular Mastering tape in question. For desired fluxivity levels on the Mastering Tapes other than those shown in the chart below (optimum), refer to Step 5.

PROCEDURE:

1. Determine the Fluxivity level of the Reproduce Alignment Tape and cross-reference that level to the type of Mastering tape to be used per the chart below. This resultant level (in VU) will become the Reproduce Reference level for optimum performance of the Mastering tape to be used.

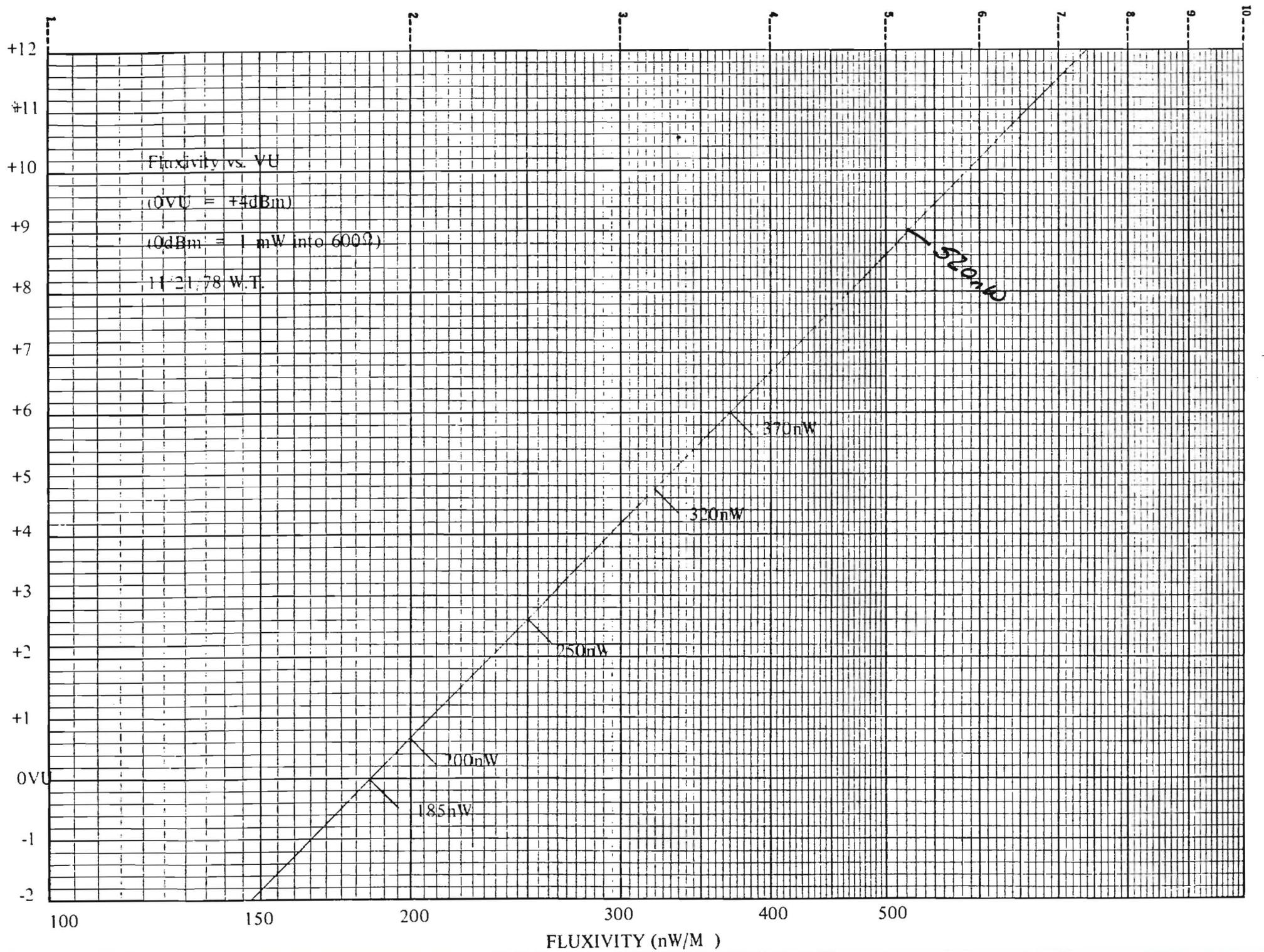
MASTERING TAPE	Fluxivity Level of Repro Align. Tape				
		185nW/M	200nW/M	250nW/M	370nW/M
SCOTCH 250	-6VU	-5VU	-3VU	0VU*	
AMPEX 456	-6VU	-5VU	-3VU	0VU*	
SCOTCH 207	-3VU	-2VU	0VU*		
SCOTCH 206 <i>226</i>	-3VU	-2VU	0VU*		
AMPEX 407	-3VU	-2VU	0VU*		
AMPEX 406	-3VU	-2VU	0VU*		

*Maximum Recommended reference Fluxivity.

All VU levels rounded off to the nearest VU.

2. Set Reproduce gain, at the reference frequency, to this established reference level.
3. Adjust Reproduce equalization for optimum frequency response relative to this level.
4. Align the Record Electronics per standard procedure, maintaining 0VU in and 0VU out.
NOTE: 0VU Record level will be used regardless of the Reproduce Reference level established in Step 1.
5. To align the PAR for a fluxivity level on the Mastering tape other than that listed in the chart above (Optimum):
 - a. Repeat Steps 1 and 2.
 - b. Determine the difference between optimum and desired Fluxivity levels (in VU) from the "VU vs. Fluxivity" graph below.

NOTE: Adjusting for Fluxivity Levels above that which is recommended can result in higher distortion and loss of head room.
 - c. Increase Reproduce gain, at the reference frequency, by the amount established on Step 5b.
 - d. Repeat Steps 3 and 4.

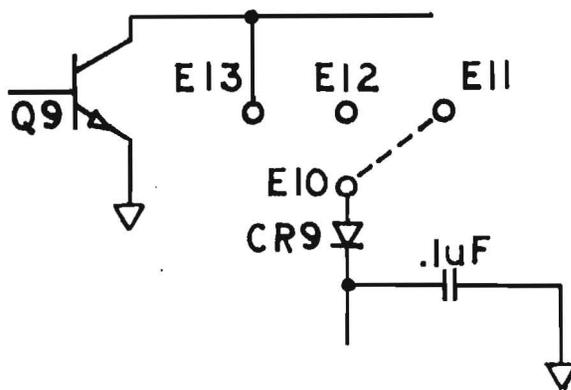
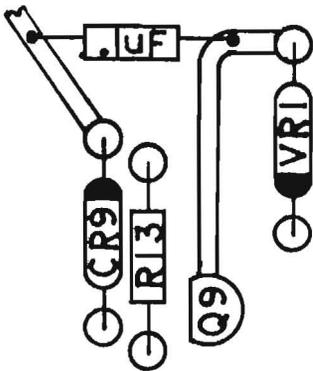


Professional Audio Service Bulletin

3M

Bulletin No. 27
Date January, 1979

- SUBJECT:** Modification of Record Amplifier Circuit
- APPLICABLE TO:** All M-79 Signal Electronics Boards.
- PURPOSE:** To prevent possible re-recording or "ECHO" phenomenon associated with instruments having high level and fast attack time, such as kick drum, etc.
- REQUIRED PARTS:** 1 Ea. 0.1uF, 50v capacitor 81-2711-5382-7
- PROCEDURE:**
1. Add Capacitor between the cathode of CR9 and the anode of VR1 (ground) as shown in figures below.



2. Repeat for each Signal Electronic Board.
3. If this recommended change is incorporated, please alter the affected schematic diagram to reflect this change.

WI/Mincom Division/3M Company

Professional Audio Service Bulletin



Bulletin No. 28
Date April 17, 1979

SUBJECT: Modification of Mute Circuit

APPLICABLE TO: All M-79 Logic Boards

PURPOSE: To decrease turn-on time of Mute circuit when entering Forward or Rewind modes; delay turn-off of Mute circuit when entering Stop mode from Forward or Rewind, until tape comes to a complete stop.

REQUIRED

PARTS: 1 Ea. 1N914 Diode 83-1530-0083-7
1 Ea 47K, 1/4w Resistor 83-1520-7204-3

PROCEDURE:

1. Replace R173 (on lower left quadrant of Logic Board) with the 47k Resistor.
2. Add diode across (in parallel with) R173. Cathode of diode towards R173, R171 junction.
3. If this change is incorporated, please alter the affected schematic diagram to reflect this change.

Note: Refer to Bulletin #20 for Stop mode muting.

Professional Audio Service Bulletin



Bulletin No. 29A
Date OCTOBER 1979

SUBJECT: All Selectake II

PURPOSE: To increase reliability by slowing 2.2 m Sec Clock (U10).
Prevents intermittent mode dropouts.

REQUIRED PARTS: 1 ea Plastic Capacitator (.012-.018uF)

PROCEDURE:

1. Remove bottom cover from Selectake II remote unit.
2. Connect isolated scope probe to U2 pin 40.
3. Check timing of 2.2 m Sec clock and trim capacitor C2 for 1.9-2.1 m Sec. (value should fall between .012 and .018uF).

T./Mincom Div.

HM †SBA

Professional Audio Service Bulletin



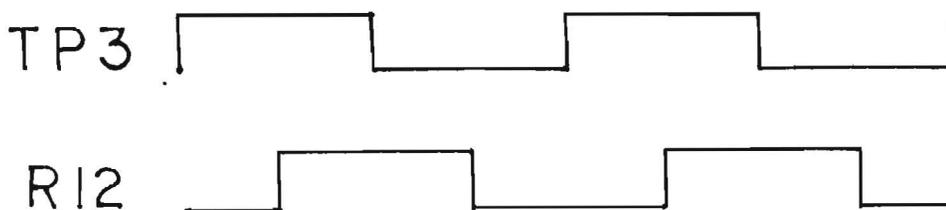
Bulletin No. 30
Date JULY, 1979

SUBJECT: Cleaning and adjustment of Selectake II Sensor Assembly.

APPLICABLE TO: All M79's equipped with Selectake II

PURPOSE: To insure accuracy of time and tape position by offsetting affects of dirt and age on Sensor Assembly.

- PROCEDURE:
1. Lift Transport to its raised position.
 2. Loosen and remove 1/4-20 socket head cap screw securing base of Reversing Idler.
 3. Remove reversing idler by lifting up.
 4. Clean octagon mirror on base of idler body with dry cotton swab.
 5. Replace idler and secure, insuring that mirror surface does not strike Sensor Assembly.
 6. Return Transport to its normal position.
 7. Remove protective cover from Power Supply/Interface module (located on inside of left side panel of M79 when viewed from rear).
 8. Connect vertical inputs of scope to TP3 and lower end of R12 (see Page 9 of Selectake II manual).
 9. Place M79 into a Rewind or Forward mode and adjust R4 for best symmetry at TP3. Adjust R9 for best symmetry at R12.
 10. The waveform relationship at this time should be such that there is no coincidence of either the positive or negative transition points between either waveform, as shown below.



11. Verify accuracy of time and tape position by running M79 in Fwd, Rwd and Play.
12. The above procedure should be repeated on a weekly basis for cleaning the mirror and on a monthly basis for adjusting the sensors.

W.T./Mincom Div.

Professional Audio Service Bulletin



Bulletin No.

Date

#31

MARCH, 1980

SUBJECT: Replacement of μ A741 OP Amps on Signal Electronics P.C. Boards with LF356A Op Amps

APPLICABLE TO: All M79 Signal Electronics Boards

PURPOSE: To improve the performance characteristics of the M79 by upgrading the parameters of the Op Amps used in the Record and Monitor Amplifiers.

	<u>μA741</u>	<u>LF356A</u>	
Power B.W.	8kHz - Typ	4.5MHz - Typ	
Slew Rate	0.5V/ μ S - Typ	12V/ μ S - Typ	
Input Noise V	25nV/ $\sqrt{\text{Hz}}$ - Typ	12nV/ $\sqrt{\text{Hz}}$ - Typ	
REQUIRED PARTS:	I.C. - LF356A	83-0003-2012-3	2/Channel
	Cap - .02 μ F, 100V	83-1510-1008-5	2/Channel
	I.C. Socket - 8 Pin	83-1620-0290-7	2/Channel
	Mylar Tubing		As Required

PROCEDURE:

1. Remove IC3 and IC4 from their sockets.
2. Unsolder and remove 14 pin sockets for IC3 and IC4.
3. Install and solder 8 pin sockets; leaving pins 1, 2, 7, 8, 13 and 14 open. See Figure 1, below.

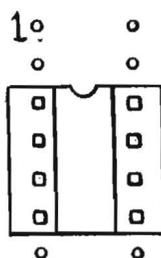


Fig. 1

NOTE: Pin numbers called out in steps 3-7, refer to original 14 pin IC layout.

- 4. Install one .02uF cap in vacant holes 1 and 14 of IC3. See Figure 2, below.
- 5. Install the other .02uF cap in vacant holes 7 and 8 of IC4. See Figure 3, below.

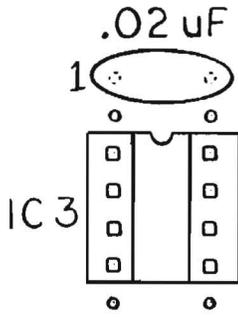


Fig. 2

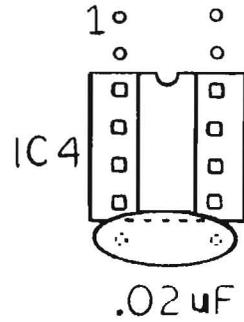


Fig. 3

- 6. Using Mylar sleeving over cap leads; solder .02uF cap to traces from IC3 pins 6 and 11. See Figure 4, below.
- 7. Using Mylar sleeving over cap leads; solder .02uF cap to traces from IC4 pins 6 and 11. See Figure 5, below.

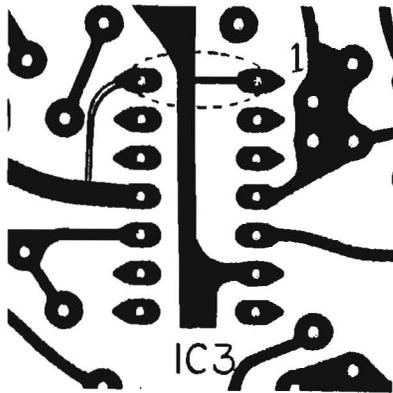


Fig. 4

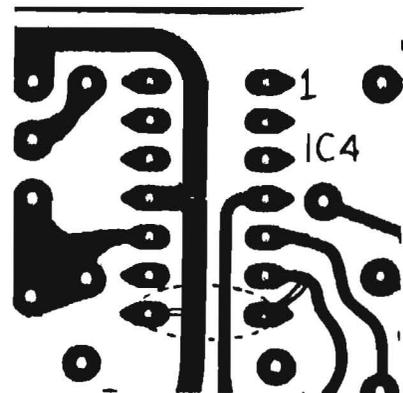


Fig. 5

- 8. If this recommended change is incorporated, please alter the Signal Electronics schematic diagram to reflect this change.

Professional Audio Service Bulletin



Bulletin No. 32
Date February, 1980

- SUBJECT: Modification of Capstan Braking Circuit
- APPLICABLE TO: All M-79 Logic Boards
- PURPOSE: To prevent possible failure of Q6, the Capstan Servo drive transistor.
- PROCEDURE:
1. Remove power from the M-79.
 2. Remove the logic board.
 3. Cut the trace from K2-2 to J2-8. See Figure 1, below.

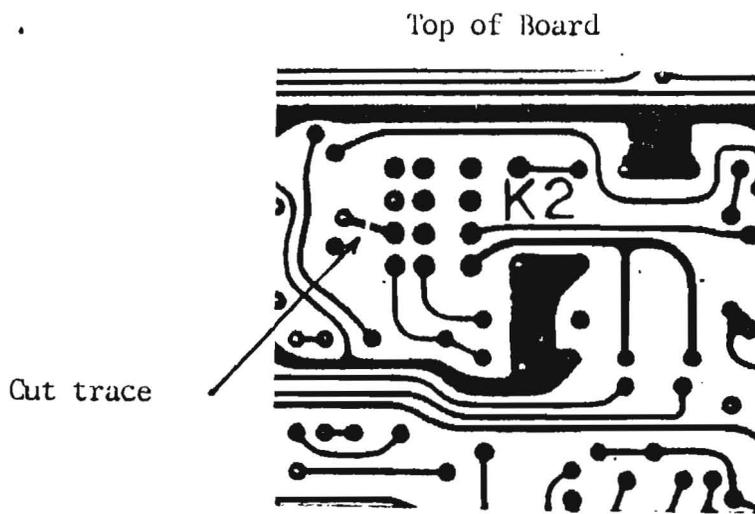


Figure 1

4. If this recommended change is incorporated, please alter the affected schematic diagram to reflect this change.

Professional Audio Service Bulletin



Bulletin No.

Date

#33

MARCH, 1980

- SUBJECT: Modification of Head Door Circuit.
- APPLICABLE TO: ALL M-79 Recorders.
- PURPOSE: To allow Record and Reproduce Head Doors to remain closed upon entering STOP mode.
- PROCEDURE:
1. Remove power from M79.
 2. Remove black cover (scalp) plate from transport.
 3. Locate Logic Board connector J1 (to the rear and left of Capstan Servo Card).
 4. Remove and sleeve wire from pin V of J1 (lower right hand pin).
 5. M79 Head Doors should now remain closed at all times except when in FWD, RWD and tension release modes. Doors may be opened in STOP mode by lifting the tape from the EOT sensor.
 6. If this change is incorporated, please alter the Composite Schematic diagram to reflect this change.

WT/MINCOM DIVISION

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Professional Audio Service Bulletin



Bulletin No. #34
Date MAY, 1980

SUBJECT: Modification of Record Logic

APPLICABLE TO: All M79 Multi-Track Recorders

PURPOSE: To allow Record punch-in by pressing only the Record button and punch-out by pressing the Play button.

REQUIRED PARTS:

1 Ea	Xstor 2N3643	83-1530-2234-4
1 Ea	Diode 1N914	83-1530-0083-7
1 Ea	Res 10k, 1/4W 2%	83-1520-7308-2
1 Ea	Res 820ohm, 1/4W, 2%	83-1520-7227-4
1 Ea	Standoff #4 x 3/8	83-9350-0227-5
1 Ea	Screw 4-40 x 5/8	83-9260-4519-2
1 Ea	Nut 4-40	83-9260-2003-9
1 Ea	Washer, Lock, #4	83-9261-4203-1
2 Ea	Washer, Nylon, #4	83-0822-6610-7
A/R	Wire, 24AWG, Solid Perforated Vector Bd. 3/4" x 1"	

PROCEDURE:

1. Lift Transport to the raised position.
2. Locate diode CR2 on the Play switch
3. Replace CR2 with jumper wire. Refer to Composite Schematic, Figure 6-1 of manual
4. Remove Master Control Ass'y - Remote
5. Locate diode CR11 on Master Remote (Between E13 and E10 on P.C. board).
6. Replace CR11 with jumper wire. Refer to Master Control Ass'y - Remote schematic, Figure 6-7 of manual.
7. Remove bottom cover from Selectake II (For M79's so equipped).
8. Locate diode on Play switch.
9. Replace diode with jumper wire. Refer to Selectake II schematic, Figure 5 of Selectake II manual.
10. With Steps 1-9 completed, Record punch-in may now be initiated from the Play mode by pressing only the Record button at any of the three Transport mode control locations.

NOTE: Modification of Play switch circuit must be done at all Transport mode control locations.

11. Remove Logic and Master Bias Supply board from rear of M79.
12. Add the circuit shown in Figure 1, below, to the Logic board.

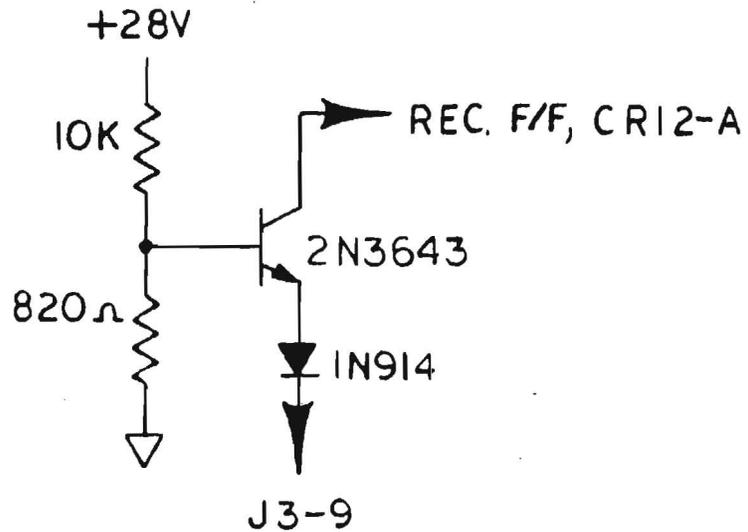


FIGURE 1

- a. Locate the ground plane between R42 and R48 (lower left quadrant of Logic board), on the rear side of board. See Figure 2, below.
- b. Drill .125 Dia. hole through ground plane, ensuring that hole does not cut any traces on component side of board. See Figure 2, below.

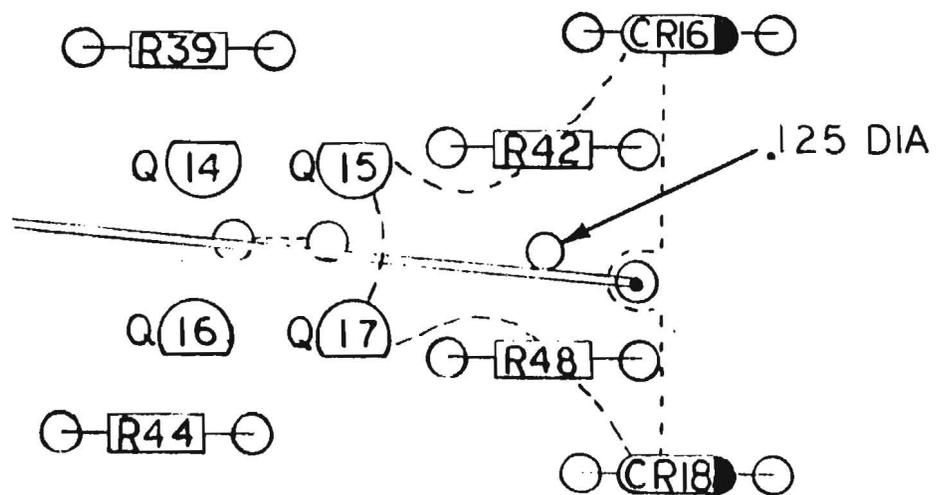


FIGURE 2

- c. Fabricate circuit shown in Figure 1, above, on 3/4" x 1" perf board, using Figure 3, below, as a guide.

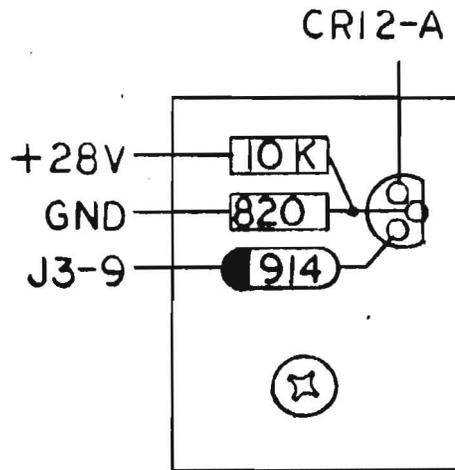


FIGURE 3

- d. Attach perf. board to Logic board, using 3/8 standoff and mounting hardware; ensuring that hardware is isolated from traces by nylon washers.
- e. Connect the 24 AWG wire from the components on the perf. board to Logic Board.
1. Attach wire from 10k resistor to +28v (bottom side of R44).
 2. Attach wire from 820ohm resistor to gnd (top side of R48).
 3. Attach wire from cathode of 1N914 diode to J3-9 (lower left connector).
 4. Attach wire from collector of transistor to anode of CR12, in Record F/F.

NOTE: For those M79's not equipped with Selectake II; a 39ohm, 1W resistor must be added in series between J3-9 and the common collectors of Q5 and Q6. For those M79's with Selectake II, Bulletin #22 should have previously been incorporated.

13. With Steps 1 - 12 completed, Record punch-out may now be initiated by pressing the Play button at any of the three Transport mode control locations.

NOTE: This modification depends on Play lamp current through the 39ohm resistor to develop punch-out voltage for resetting the Record F/F. As such, it is imperative that at least two of the Play lamps be functional.

If this change is incorporated, please alter the affected schematic diagrams to reflect this change.