



# MELLOTRON<sup>®</sup>

A DIVISION OF  **SOUND SALES INC.**

Sherman, Conn 06784  
203/354-9395

## MELLOTRON MAINTENANCE PROCEDURES

**\*\*PLEASE NOTE! ALL TOOLS MUST BE DEMAGNETIZED\*\***

### KEYBOARD ADJUSTMENTS & CLEANING LOCATIONS

1. Adjusting Keyboard: New tapes are initially 1.5 mils thick. Your tapes, or any tapes used for a long period of time, will lose some of this thickness at the contact point of the capstan and pinchrollers. When excessive wear occurs, you may advance your tapes to beyond this point. This procedure will be covered in the section on "Tape Cueing". Also, the keys themselves will change due to temperature and humidity changes. Therefore, your keyboard should require a readjustment of the pressure rollers and pads (located on the underside of the keyboard). These adjustments are done from the top of the keyboard with the keyboard in place and the machine running.
2. Pads & Rollers: Take the lid off your machine and notice the two rows of screws on the top of the keyboard. The rear row is for adjusting the pressure rollers; the front row is for adjusting the pressure pads. You will be adjusting one key at a time; roller first, pad second, etc., until all 35 keys are adjusted.

Starting with the pressure roller, loosen rear screw until the key can be depressed and no sound is heard. Now, slowly tighten the screw into the key until the tape starts to drive (this is called the stall point). From the stall point, the roller screw is tightened two (2) more complete turns. Loosen the front screw, same as above, and tighten it to the stall point. From the stall point, the pad screw is tightened one (1) more complete turn. (These are approximates, and fine adjustments may be needed for full operation).

3. Key Depth Adjustment: The depth of movement of the keys is controlled by the aluminum bar that runs over the top of the wooden keys. The height of this bar is adjusted at the factory to give a maximum depth of key movement of 3/8". It can be raised or lowered by adjusting the bolts that hold it tight. However, readjustment of the pads and rollers will be necessary due to the changes in the distances of pads and rollers from their respective functions.

Cont'd.

4. Key Tension (or Touch): The key tension is determined by the retention nuts at the rear of the wooden part of the key. By turning each nut clockwise, the key tension will increase and the key will rise. In manufacture, keys are adjusted by the above method until the key rises and comes in contact with the aluminum bar above the keys. When all keys are just touching the bar, a further quarter to half a turn can be applied, depending on your preference of touch (light or heavy).

#### A. CLEANING

1. Cleaning Heads: Apply a small amount of cleaner on cloth or cotton swab. Rub three or four heads, then put more cleaner on another spot of cloth and clean three or four more; continue to rub all 35 heads clean.

After "washing", polish heads with a soft cloth. Do not scrub heads or scratch them. Use a cotton cloth or cotton swabs, as these are softer and more absorbent.

You may clean your Mellotron as often as you like; however, we recommend that it be cleaned every ten hours of playing time.

2. Cleaning Guides: Two (2) tape guides on either side of head-block (comb-like guides for tapes). Use clean spot on cloth; use large spot of cleaner. Rub guides down thoroughly on top edges and the leading edges of the guides.
3. Cleaning Capstan: Mellotron on; use small dot of cleaner on a cloth. Apply to capstan, press firmly, and continue down capstan, cleaning the entire length.

This cleaning should be done approximately every ten hours of actual playing time, or if Mellotron has not been used for any length of time.

4. Cleaning Tacho Head: This head is attached to capstan motor and is accessible from the rear of Mellotron with rear panel removed. The Tacho Head is actually a motor tachometer to tell the SMS3 unit how fast the motor is turning, and to detect fluctuations. Remove motor from mounts by releasing the two nuts on either side and pulling motor off screws, and releasing from drive belt.

Capstan Motor Assembly: Use clean cotton swab and cleaning solvent to clean Tacho Head all around. Be careful not to break wiring connections while cleaning.

Cont'd.

5. Cleaning Commutator: Motor Commutator is where brushes make contact to spin motor. It's located at rear of motor, and is in an exposed section to be cleaned. The Commutator is a series of small metal plates attached together in a circle. Motor does not have to be removed to clean Commutator plates.

Apply generous amount of cleaner to cloth, press against Commutator plates with finger, and spin motor by turning flywheel with your other hand. Clean thoroughly. You may also use a fine grit emery cloth to polish these while motor is running.

6. Cleaning Felt Strip: Use a vacuum cleaner with a narrow nozzle to run down felt to clean.
7. Cleaning Pressure Rollers: Remove keyboard from Mellotron and place on hard, flat surface with pads and rollers facing up. Put small dot of cleaner on cloth and press against a roller and spin roller to clean all around; clean all rollers.
8. Cleaning Pressure Pads: DO NOT put any carbon tetrachloride or any cleaning solvent on pressure pads! The glue that holds the pads onto the metal arms is sensitive, and strong cleaner will dissolve glue, allowing pads to slip or even fall off. Just dab pressure pads with wet (water only) cotton swabs or small paint brush. You're only trying to remove the dust; always be careful not to disturb the setting of the pads by bending or hitting them.

#### B. DEMAGNETIZATION

1. Demagnetizing Heads (Every 25 Hours): Expose headblock by removing the tape frame. Release two little "M" clips that hold block in place. Now, disconnect the wire that runs from the headblock to the metal box under the control panel. Using an AC powered demagnetizer, proceed to demagnetize entire headblock.

Head demagnetization is an important, frequently overlooked area in the maintenance program. Heads that become permanently magnetized can partially erase valuable pre-recorded tapes that pass over them. This is especially true of important higher frequencies which, when absent, will make high quality tapes sound flat and mushy, lacking brilliance. Heads can become magnetized by:

1. Testing with an ohmmeter.
2. Normal on/off current surges through electronics during use.
3. Through the use of magnetized tools.
4. Any A.C. electrical appliance.
5. Storing too near strong magnetic fields such as those created by speaker cabinets.

NOTE: Cleaning solvents and head demagnetizers are available through Sound Sales, Inc.



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## INSTALLATION OF MELLOTRON TAPES ONTO TAPE FRAME

**CAUTION: READ INSTRUCTIONS THOROUGHLY AND LOOK CAREFULLY AT  
DIAGRAM BEFORE STARTING!**

1. Take Mellotron lid, keyboard, and tape storage box metal lid off machine; put aside carefully.
2. Place empty tape frame into Mellotron, screw rear strip into place, and install front frame section.
3. All of your tapes are on one continuous piece of tape. Only the number (1) tape is marked with a number "1". All the following are represented by a small hash mark.
4. Start with the tape by reeling off the top of the reel and #1 will appear on the top side.
5. Sit in front of the Mellotron. Remove front panel under the keyboard, exposing front of tape frame. Unwind the tape until the hash mark appears marked #1. Place the tape about 12" in front of hash mark under the first set of screws on the LEFT end of the REAR screw strip, with the number facing up.
6. Tapes are marked with only a hash mark after #1, so be careful not to miss one. This mark should be set right between the two screws that are on the side of the head that the tape is covering (as a marker for where the tape should be held).
7. With the rear of the tape in place, pull out about 60" of tape and let it fall in front of the Mellotron. The tape should be set with the hash mark over the head. The tape goes through the two tape guides on each side of the headblock. Set the tape to ride over the heads through the guides and over the plastic roller connected to the tape frame. Now you must push a loop of tape down both sides of this roller (see diagram which shows this tape frame roller). Push the two loops down until you can see them in the front panel opening (under keyboard lip). The bottom of the tape frame has springs attached to the back; the spring rides around a bottom roller (diagram) and is connected to a plastic pulley. This pulley can be pulled open (pull hard).

Cont'd.

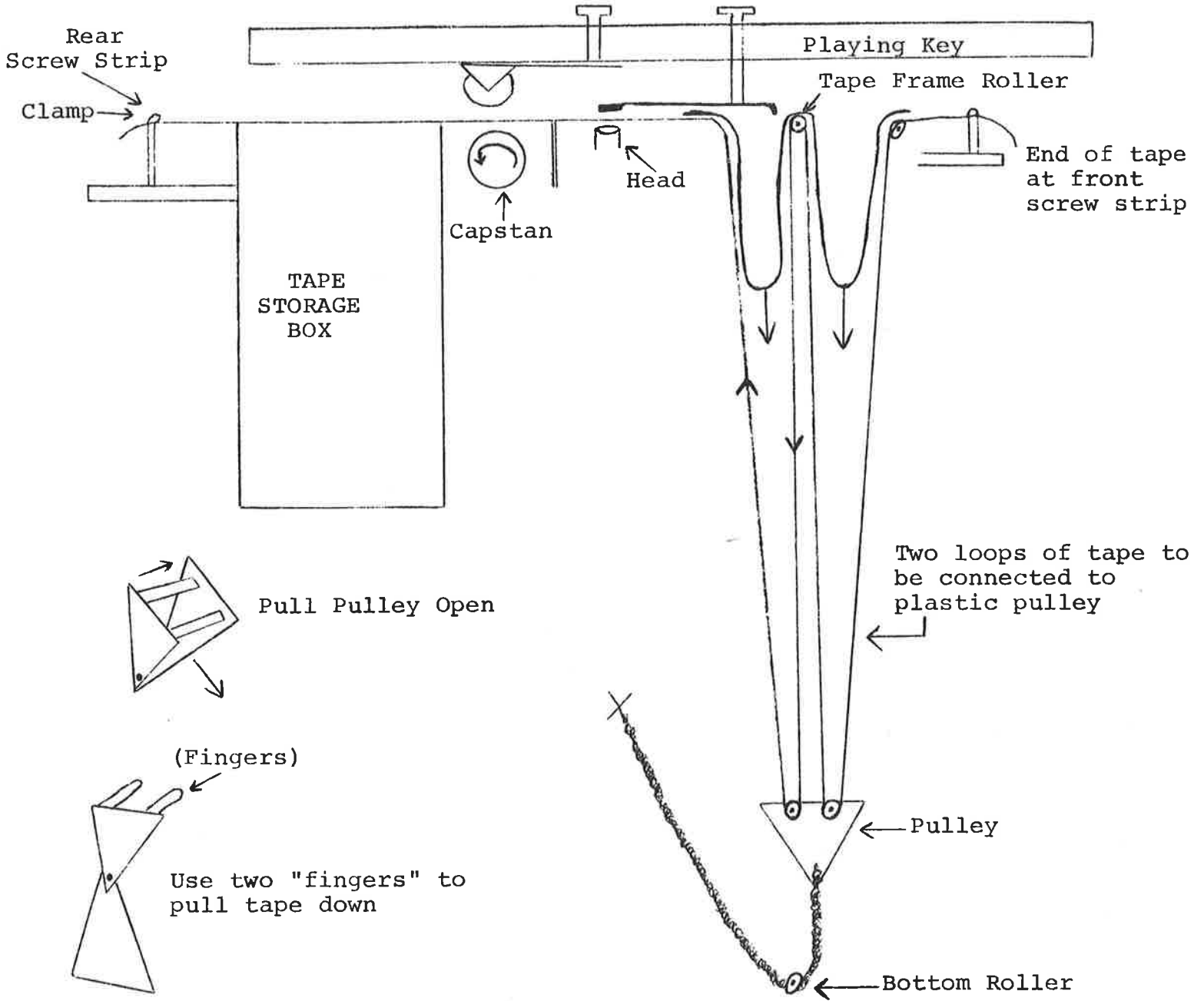
Installation of Mellotron Tapes - Cont'd.

8. Use the pulley to grab the two loops of tape and pull them down until the pulley is about 6" above the bottom of the tape frame. Now, place the tape under the front screw strip (diagram). Tighten down and cut tape about 12" past the front screw strip. NOTE: Be careful when closing pulley around tape loops not to pinch or bend the tape.

Once you install the first tape, you will understand how it travels. Repeat this procedure thirty-four more times. Remove each tape one at a time, numbers 1 through 35 (left to right) and install them all with the hash marks in the same position as the first.

NOTE: If there are any questions before starting, feel free to call us, and we will be happy to assist you.

LEFT SIDE VIEW





Exclusive Distributor,  
U.S.A., Canada, South and Central America

# SOUND SALES INC.

Route 37  
Sherman, Conn. 06784  
(203) 355-1256

## MELLOTRON 400 SMS2 CONVERSION KIT

*Actual 1 week delivery  
A 2250  
fab. Sherman*

### Kit Includes

1. SMS2 Heatsinked Device
2. Edge Connector and 9 Pin Power Supply Plug
3. One Pitch Control Pot (50K Linear)

### Modification From CMC10 To SMS2 Capstan Motor Servo System

1. Remove CMC10 circuit boards. Disconnect from power supply. Replace black earth lead onto CMC10 mounting bolt.
2. Disconnect all connections to power pack - unscrew and remove.
3. Drill four holes on right hand mounting board (viewed from rear, where CMC10 was originally mounted) to line up with the four hexagonal pillars on SMS2 heatsink.

Note: The position of the SMS2 should be as low as possible on the mounting board, ensuring that it does not obstruct the power pack casing (see Figure 1).

### Power Pack Modifications

1. Disconnect the two red leads from the two diodes on top of the power pack (see Figure 2).
2. Disconnect the orange lead from CMC10 supply fuse (see Figure 3).
3. Remove the three wires from cable strapping and connect to rear of 9 pin octal plug as follows:
  - (a) Red wires to pins 2 and 3 separately (pins 2 and 3 are empty)
  - (b) Orange wire to pin 1, with existing wire on pin 1

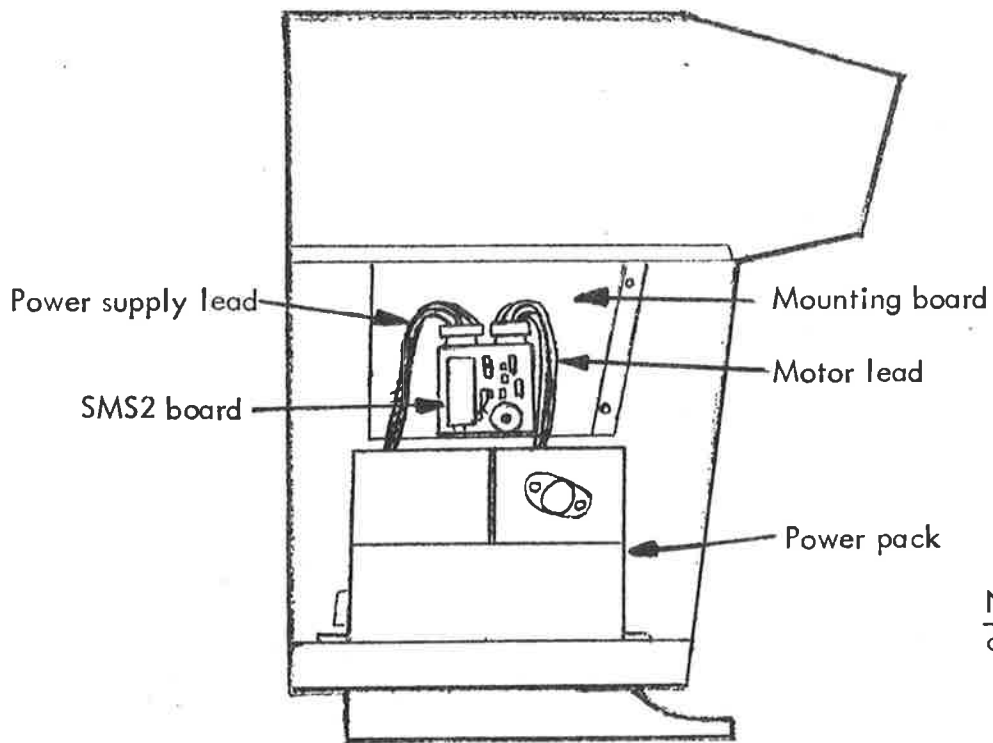
Note: This power pack can no longer be used with the CMC10 system unless modified back to standard.

### Reassembly

1. Replace power pack and connect Co-ax and 11 pin plugs.
2. Connect lead from motor to SMS2 board as shown in Figure 4.
3. Connect conversion lead (with edge connector) to 9 pin octal socket on power pack and to remaining position on the SMS2 (see Figure 4).
4. Clamp leads to mounting board to prevent accidental removal of edge connectors.
5. Replace pitch control potentiometer in control panel with 50K linear as supplied.

FIGURE 1

SECTION THROUGH MELLOTRON 400



Note: only relevant components shown

FIGURE 2

POWER PACK

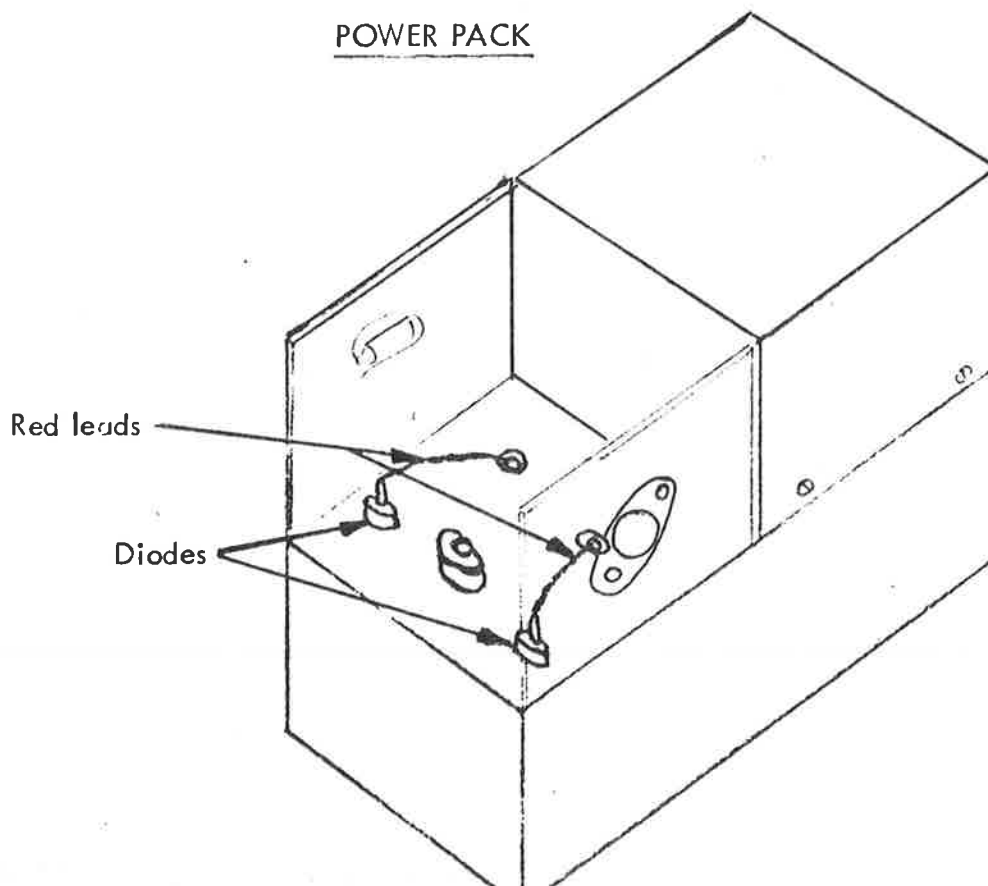




FIGURE 3

UNDERSIDE VIEW OF POWER PACK

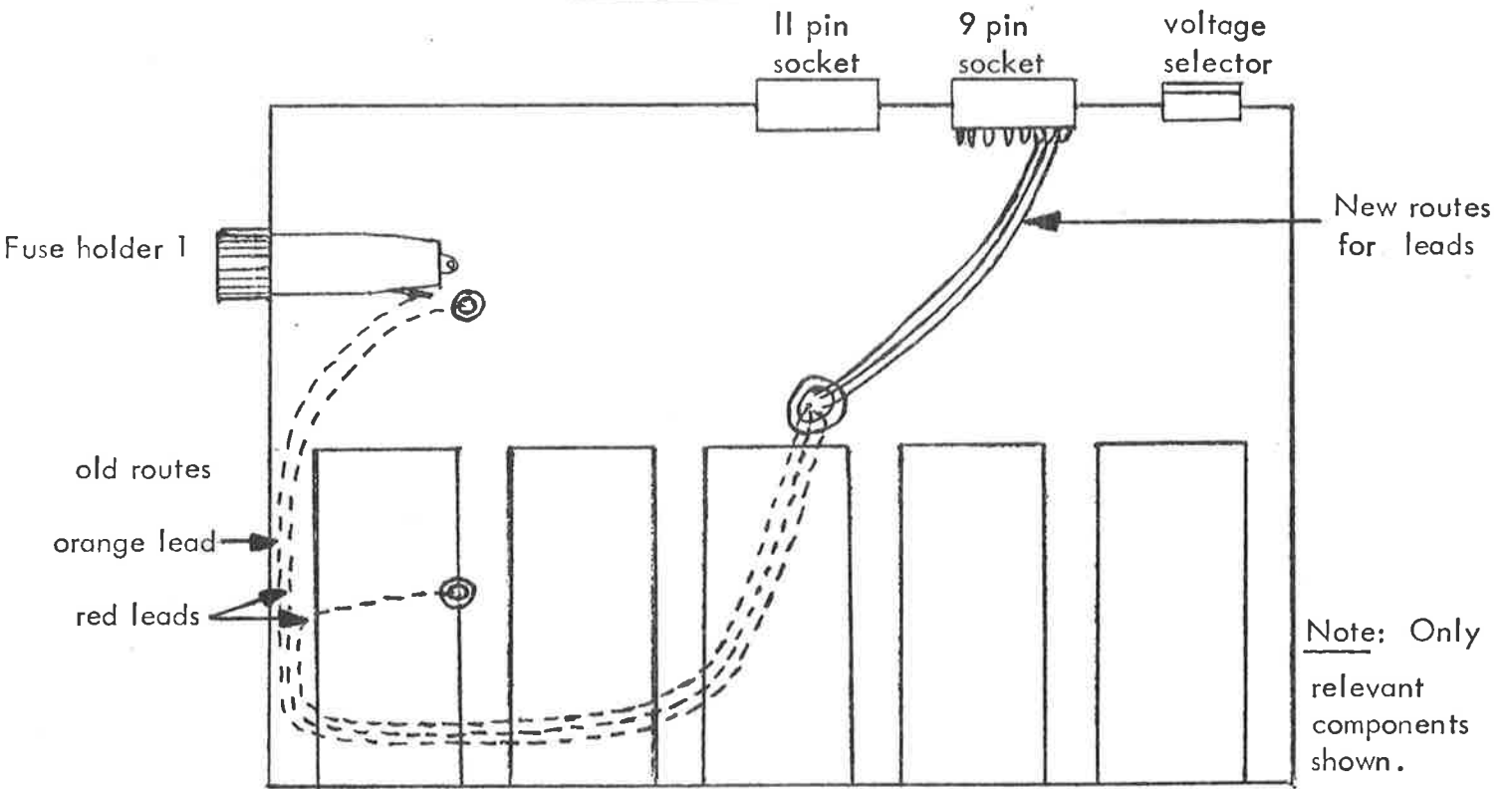
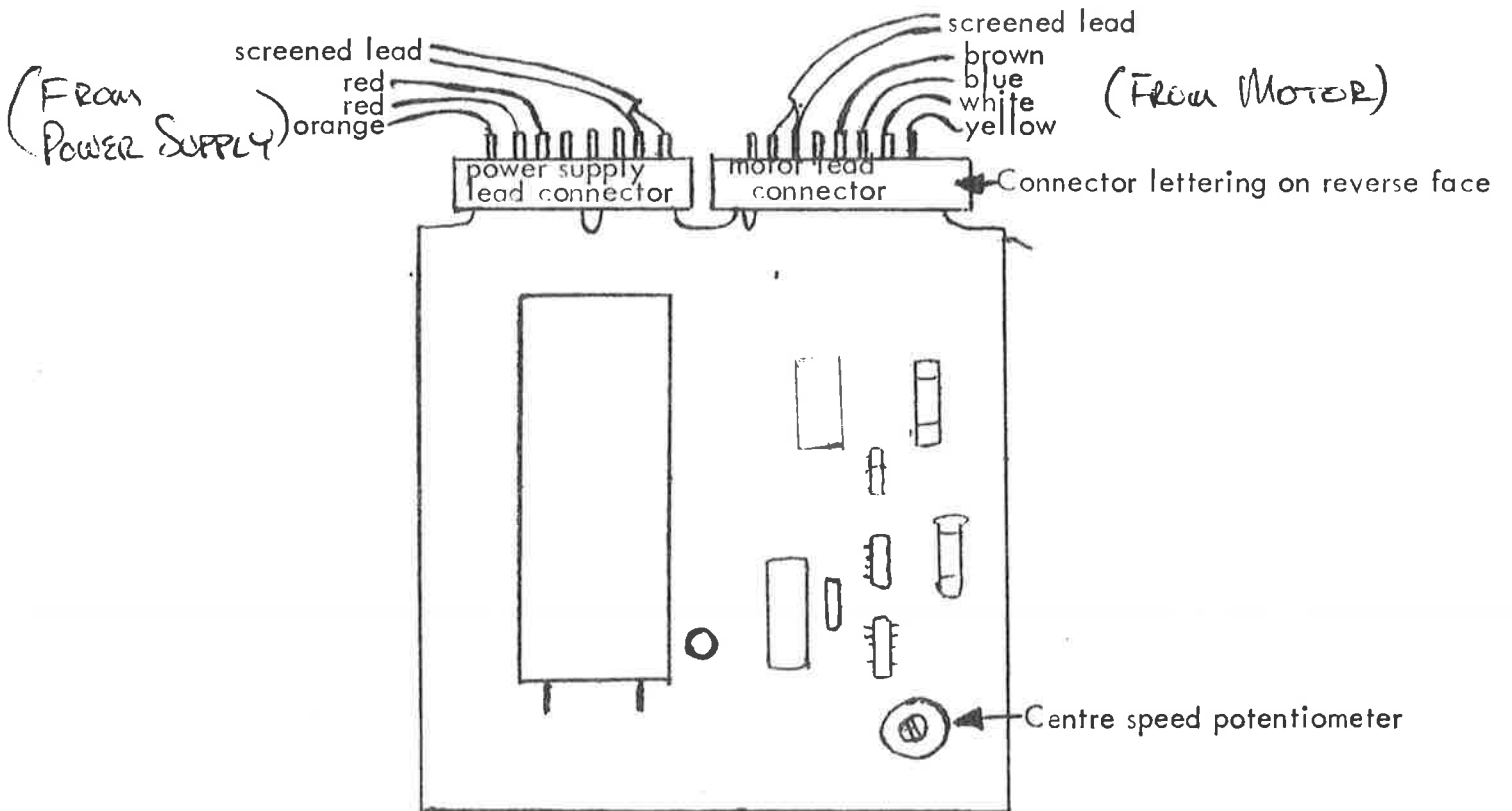
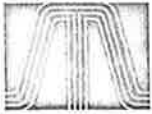


FIGURE 4 : COMPONENT FACE OF SMS 2 BOARD





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## POWER SUPPLY MODIFICATION FOR PML CIRCUIT

### PARTS LIST:

1 47K Ohm Resistor  
1 18V Zener Diode  
1 4" Strip of Wire  
PURPOSE: To Minimize Hum & Distortion

1. Remove the two screws holding down the preamp control panel.
2. Turn upside down and remove the four screws holding the metal cover on the metal box.
3. Remove the PML Circuit Board and place it aside to prevent damage.
4. Locate Pin 4 on the Edge Connector and follow that wire back to the Volume Pot.
5. Remove the wire from the Pot and fasten it to one end of the 47K Ohm Resistor.
6. Connect the other end of the Resistor to the pin on the Volume Pot from where you originally lifted the wire.
7. Replace PML Circuit Board and metal cover.
8. Turn Control Block over and fasten down, making sure to line up the Track Selector Assembly.
9. Remove the four screws and cables from the Power Supply and place it in front of you so you are looking at the top front.
10. Locate and remove the 250 Ohm 5 watt resistor from the two posts on the transistor.

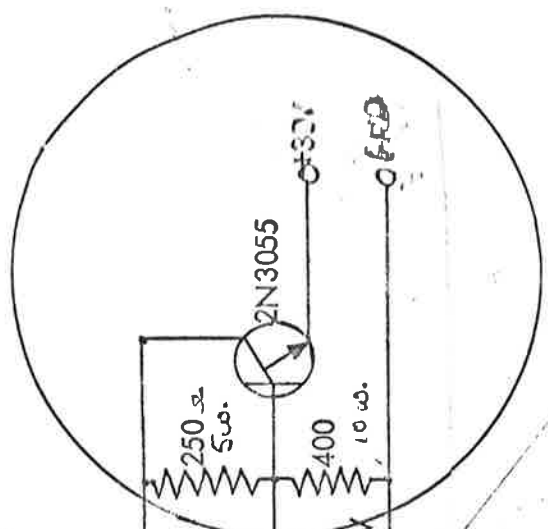
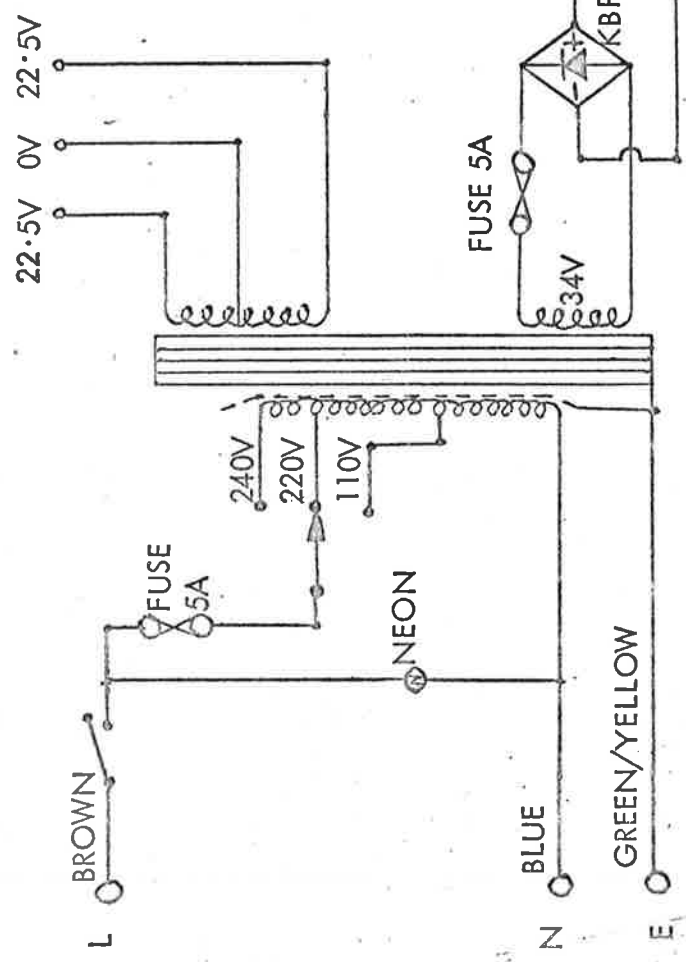
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Power Supply Modification - Cont'd.

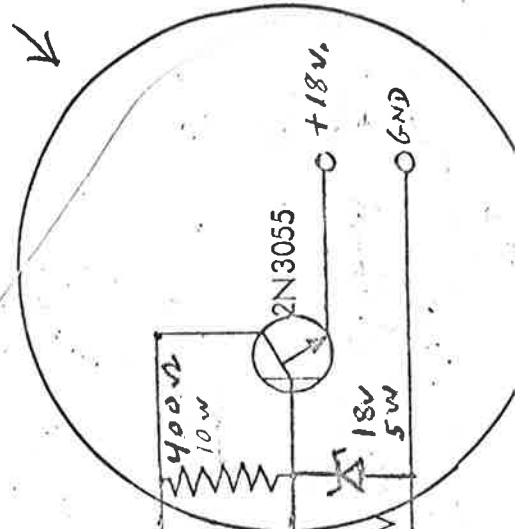
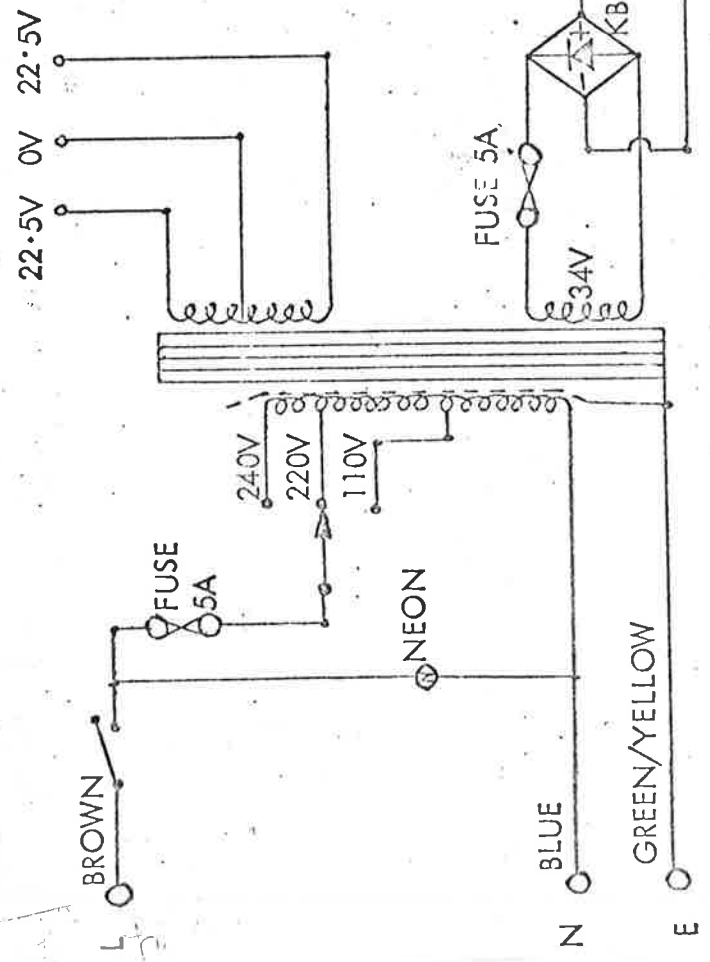
11. Disconnect the two black wires on the 400 Ohm 10 watt ceramic resistor.
12. Connect the 4" strip of wire between the center post of the transistor (collector) and the pin on the 400 Ohm resistor disconnected from the black wires.
13. Connect the side of the 18V Zener with the white band (cathode) to the other side of the 400 Ohm resistor (blue wires).
14. Connect the two black wires to the ground lug on the remaining side of the diode and secure down on the top side of the ceramic resistor by loosening the bolt through the resistor and sliding the ground lug between the bolt head and the washer.

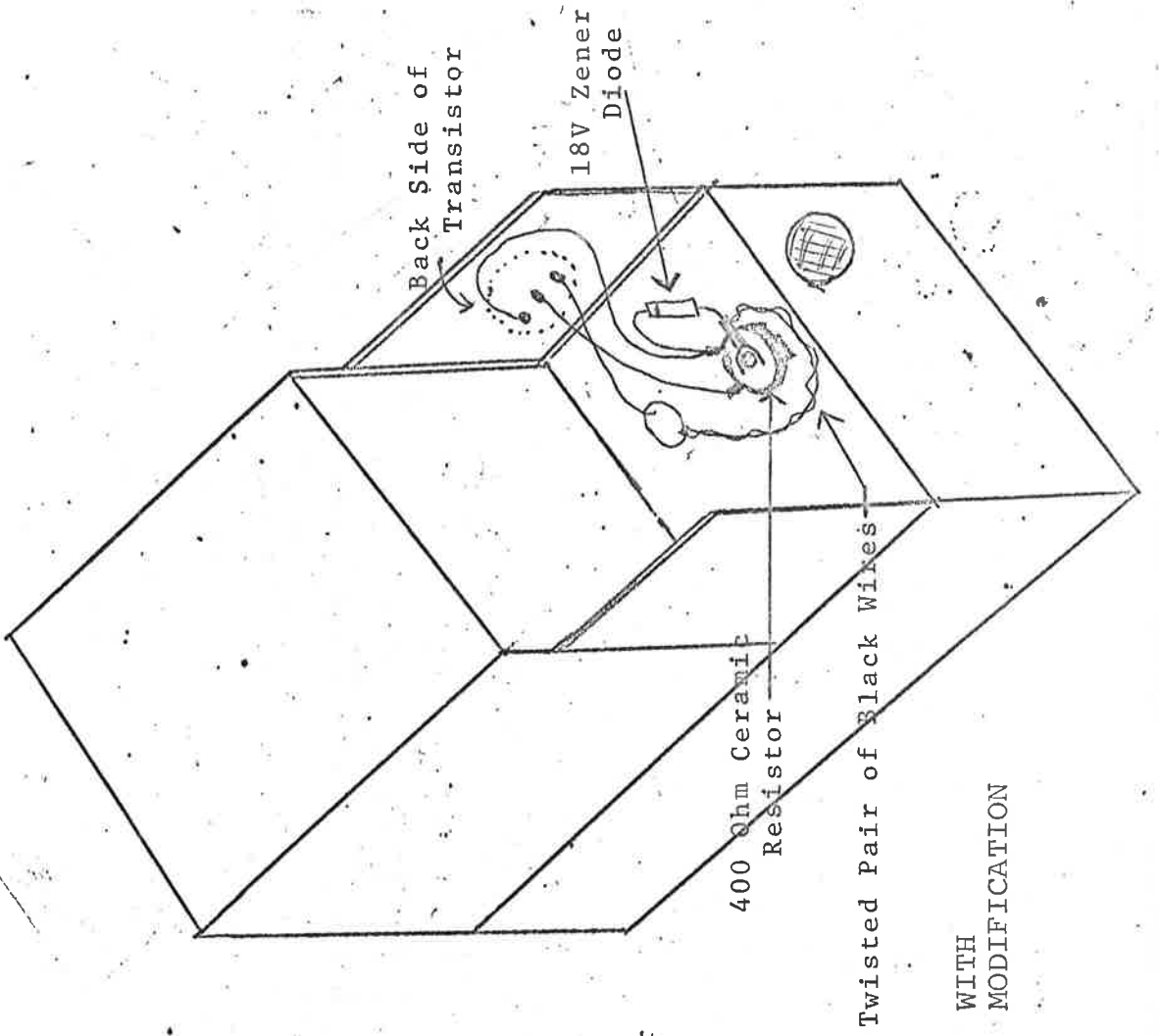
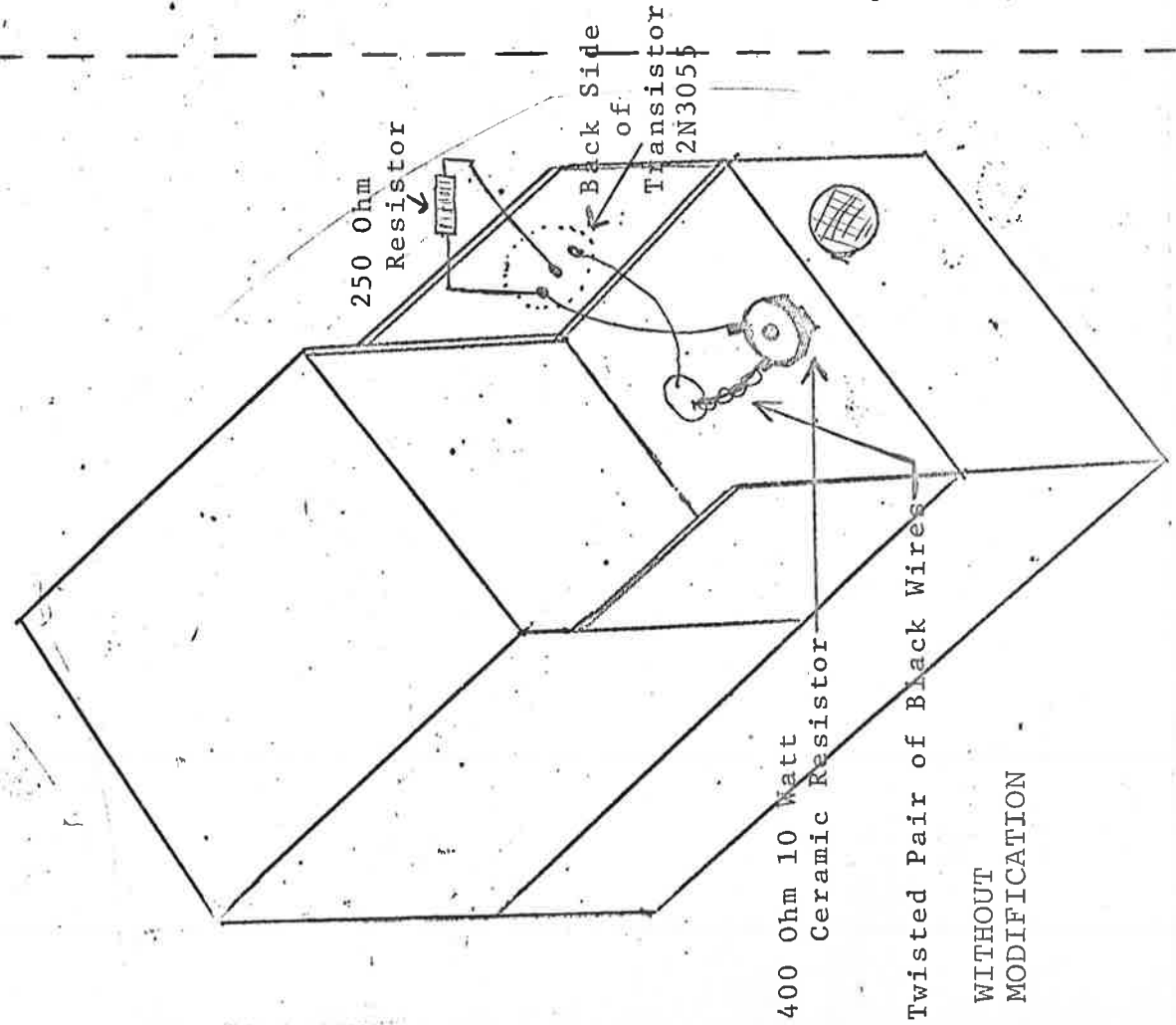
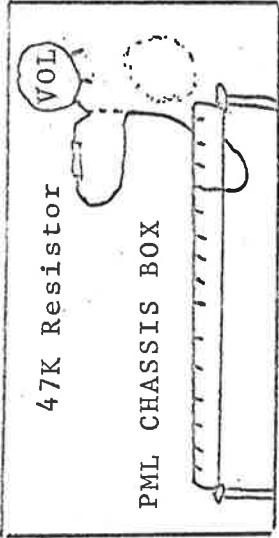
IO SMS2

WITHOUT  
MODIFICATION

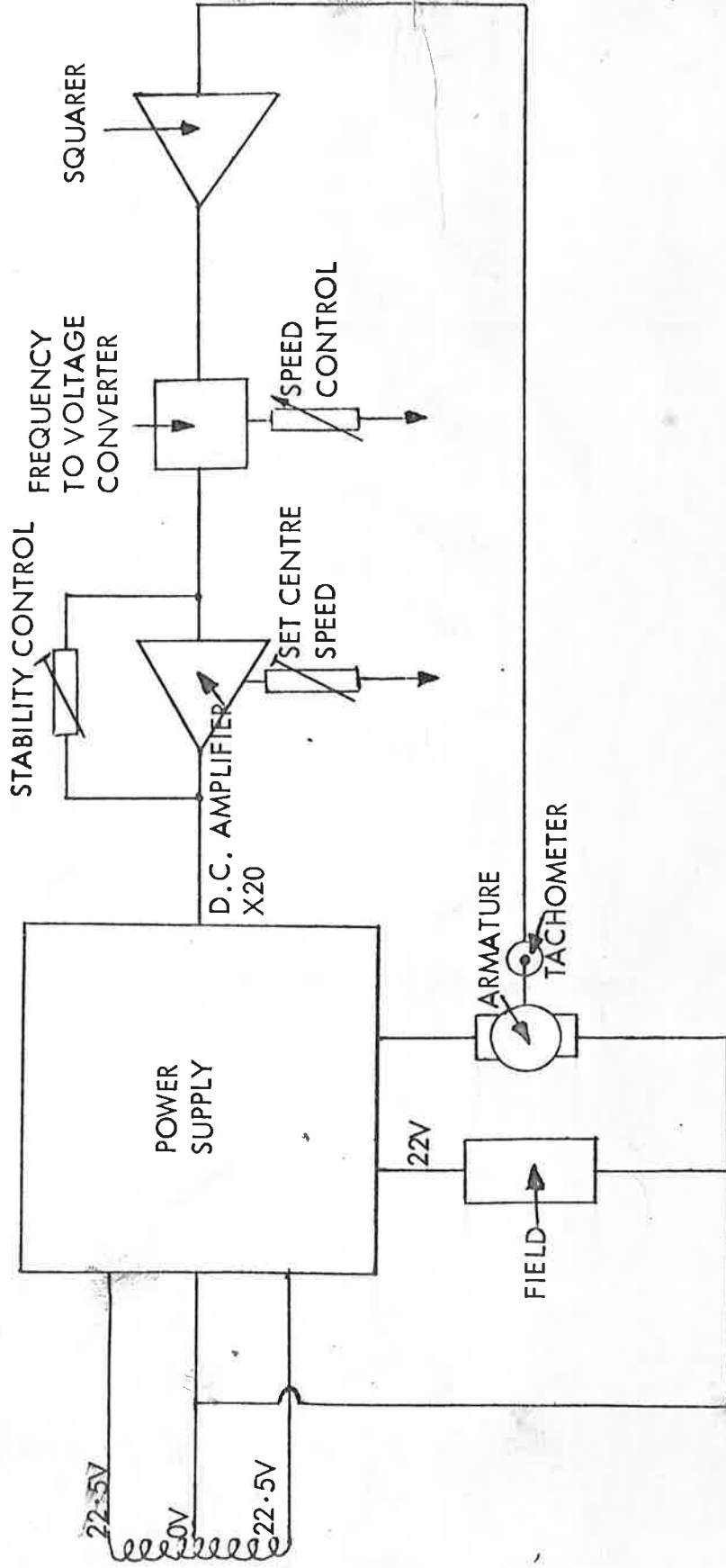


WITH  
MODIFICATION

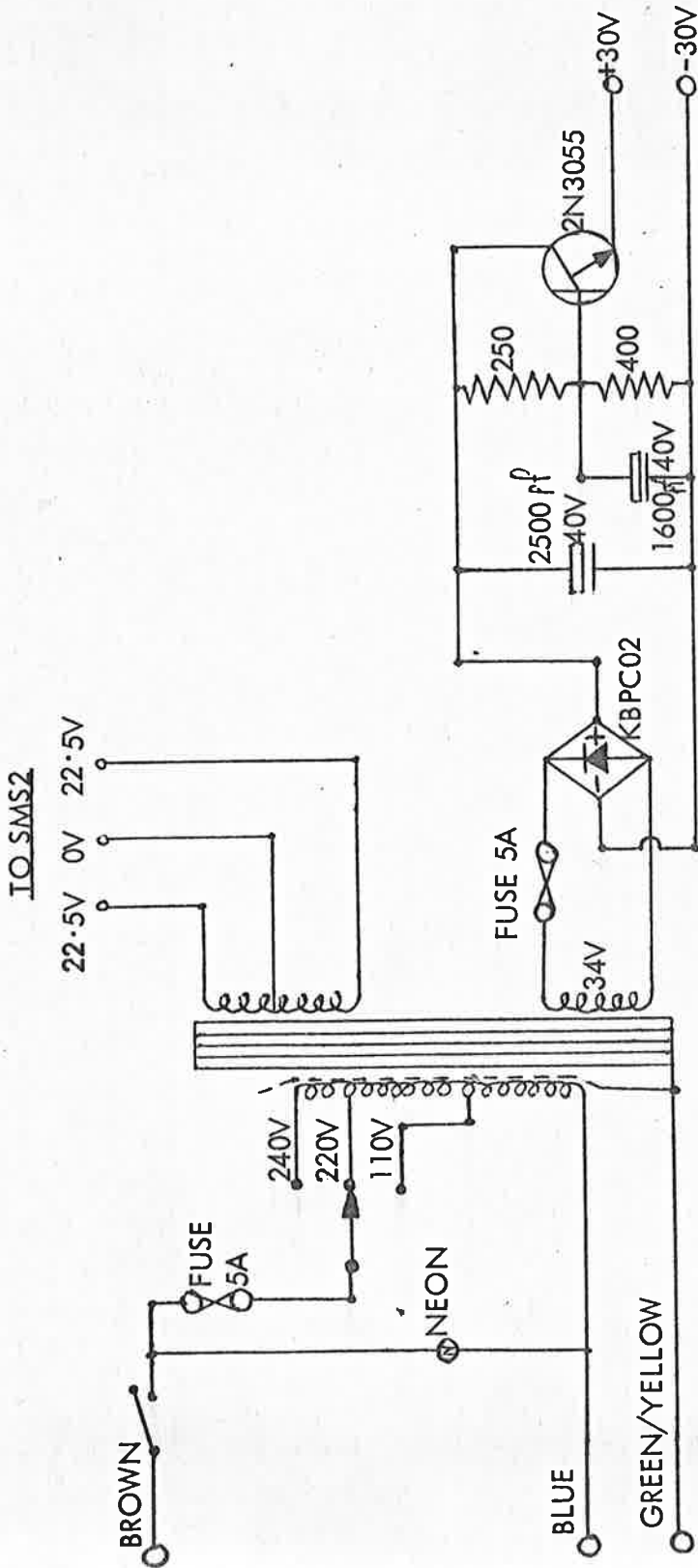




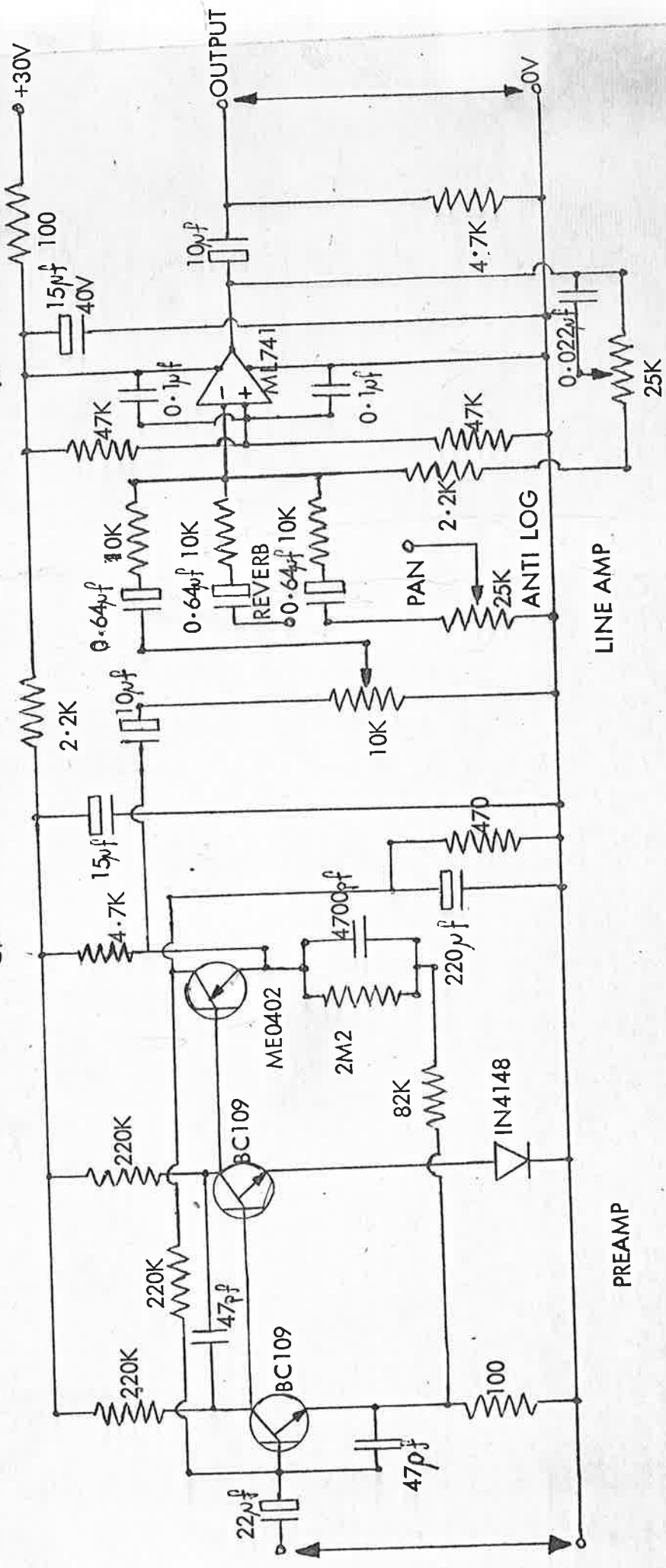
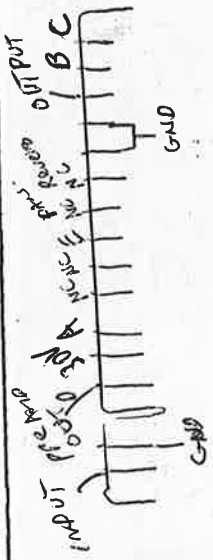
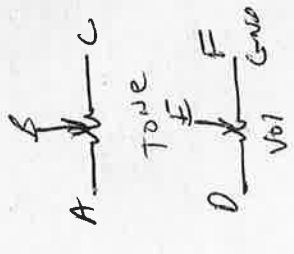
SHUNT MOTOR SERVO CONTROL TYPE SMS2



POWER SUPPLY



PREAMPLIFIER AND LINE AMPLIFIER CIRCUIT TYPE PML1



PREAMP

LINE AMP

OUTPUT

+30V

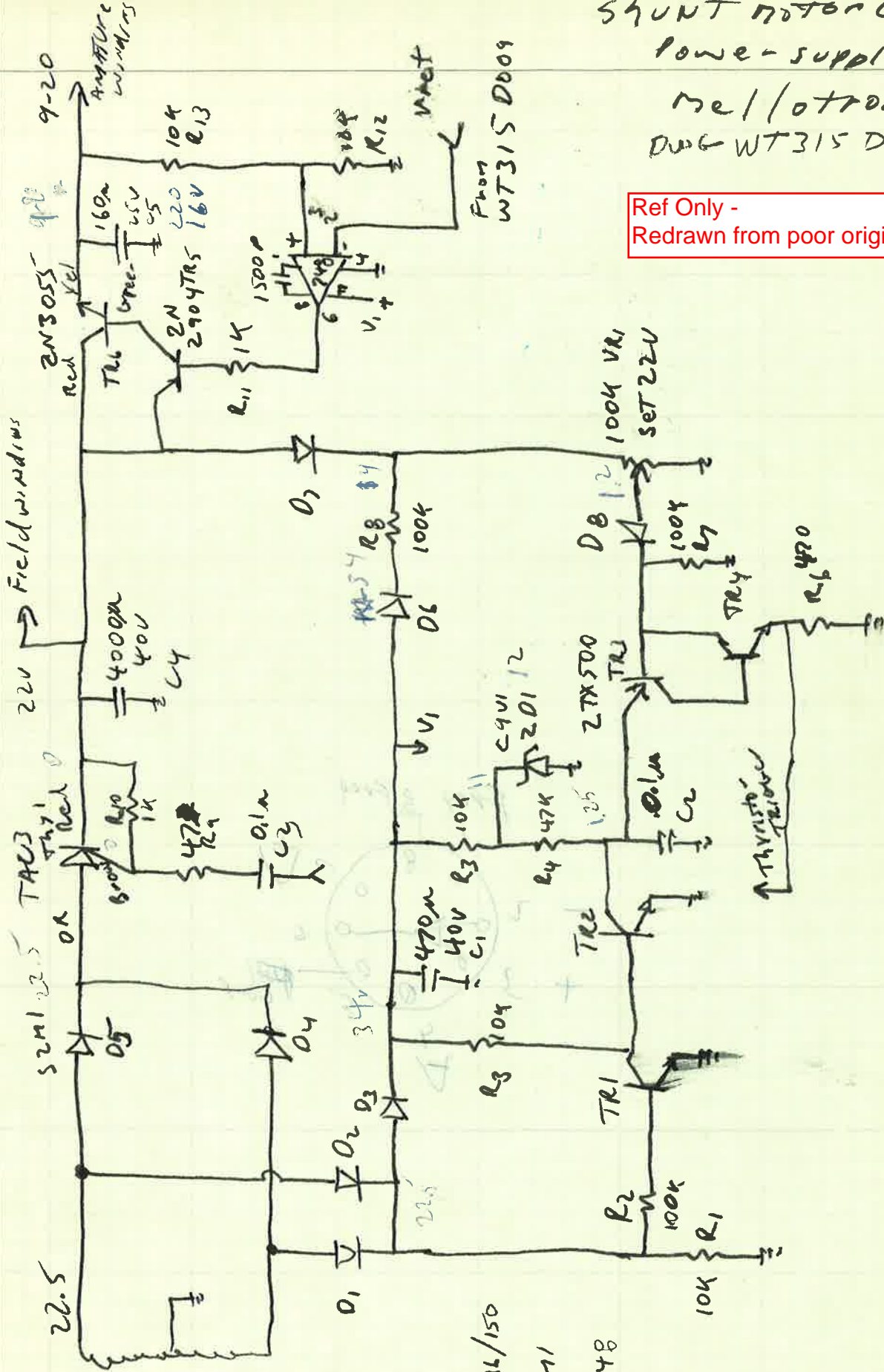
0V

INPUT



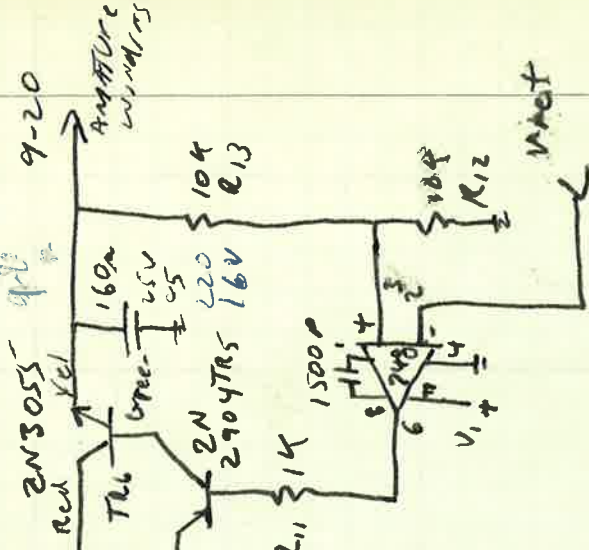
SHUNT MOTOR CONTROL  
 power supplies  
 Mel/OTROD  
 DWG WT315 D008

Ref Only -  
 Redrawn from poor original



NOTES  
 TR1 TR2 TR4  
 D1 D2 D3 SYX36/150  
 D4 D5 S2M1  
 Rest 1N4148

Field windings



From WT315 D009

220V

22.5V

22.5V

220V

220V



Reversed  
Engineered  
Sch and  
PCB Conn

