

**MUSIC MAN, INC.**  
1338 State College Parkway  
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(714) 956-9220  
Telex 692-397

SERVICE BULLETIN #1

*RD-100 & RD-65 - HD150 & HD75*

Section I DRIVER TRANSISTOR BIAS CALIBRATION PROCEDURE

- A. This applies to all models containing the following circuit boards: DB-2, DB-3, DB-4, GP-1, GP-2, GP-3, GP-3A, GD-1, GD-2, and GD-2A.
- B. Adjustment is as follows:
1. Turn the amplifier to "on" with the Hi/Lo Standby switch in the Hi position. No signal.
  2. Using a voltmeter measure the voltage from emitter to ground on each of the two driver transistors. Across the 3.9 OHM emitter resistors is a convenient measuring point.
  3. Adjust the bias trimpot (TR-1) until you read 25mv DC across the 3.9 OHM emitter resistors. If there is a difference in voltage between the emitters of the two driver transistors, set the lower of the two to 25mv. The higher of the two should not exceed 55mv DC.

NOTE: Use only a 1458 op amp to drive the output section.

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Section II GRID BIAS CALIBRATION

*HD-130 & HD65*

- A. This applies to all models using a grid drive. (12AX7 driver tube).
- B. Adjustment is as follows:
1. Turn the amplifier to "on" with the Hi/Lo Switch in the Hi position. No signal.
  2. Using a volt meter, measure the voltage from cathode (pin 8) to ground on the output tubes. Across the 10 $\Omega$  cathode resistor is a convenient measuring point.
  3. Adjust the bias trimpot located farthest to the right (looking from the front) on the GB-1 and BB-1 circuit boards until you read .5 volts DC across the 10 OHM cathode resistor.

NOTE: Be sure tubes are warmed up before adjusting the bias voltage.

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## SERVICE BULLETIN #1 cont.

### Section III TREMELO CALIBRATION

A. This applies to the GB-1 circuit board only.

B. Adjustment is as follows:

1. Apply a 1KHZ sine wave at 50mv RMS to the #1 input of the effects channel. Turn the tone controls, master volume, tremelo intensity and speed to maximum. Reverb at 0. Bright and deep switches off. The amplifier may remain on "standby" as the power amp section does not need to be on to perform this calibration.
2. Using an oscilloscope monitor the output of the GB-1 preamp board. The purple wire at the right side of the GB-1 board is a convenient point for this.
3. Remove the low frequency oscillator transistor (2N3391) and turn the tremelo modulation trimpot to full counter clockwise. The tremelo modulation trimmer is the trimpot second to the left (looking from the front) on the GB-1 circuit board.
4. Turn up the channel volume until you achieve 4 volts peak to peak at the output of the preamp. (purple wire)
5. Slowly turn the tremelo modulation trimmer clockwise until both halves of the sine wave reach their lowest amplitude. (Just before phase reversal) The pattern on the scope should resemble fig. 1.
6. Replace the low frequency oscillator transistor and the pattern on the scope should resemble fig. 2.

Scope setting -.1v/cm .2ms/cm

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SERVICE BULLETIN #2

PHASOR LDR CALIBRATION PROCEDURE

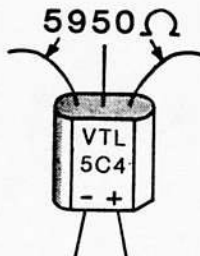
A. This applies to the following models:

2275 - 75 )  
2275 - 150 )  
2475 - 75 )-----GB-2 Circuit Board  
2475 - 150 )

All RP models - GP3 and GP3A circuit boards.

B. Calibration is performed in the following manner:

1. Remove the low frequency oscillator IC chip from it's socket. This is IC#7 on 2275 and 2475 (GB-2) circuit boards. It is IC#7 on all RP (GP-3A) circuit boards.
2. Connect a clip lead from the positive 16 volt power supply to the .1 integrator capacitor. This is pin 7 of IC#7 on all 2275 and 2475 (GB-2) circuit boards and pin 1 of IC#7 on all RP (GP-3A) circuit boards.
3. With no signal through the amp, measure the DC resistance between the two outer leads of each of the two LDR's (VTL-5C4) as shown.



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### SERVICE BULLETIN #2 cont.

4. By adjusting the 100K trimpot the resistance reading should be set to 5950 OHMS. The trimpot is TR-1 on all RP (GP-3A) circuit boards and TR-2 on all 2275 and 2475 (GB-2) circuit boards. If the LDR's have different measurements the lower of the two should be set at 5950 OHMS and the second higher reading should be no higher than 6950 OHMS. If there is a difference larger than 1000 OHMS, the LDR's should be replaced with a matched pair. (Available from Music Man)
5. Remove the clip lead and replace the low frequency oscillator chip and the phasor will be adjusted to factory specifications.

FIG. 1

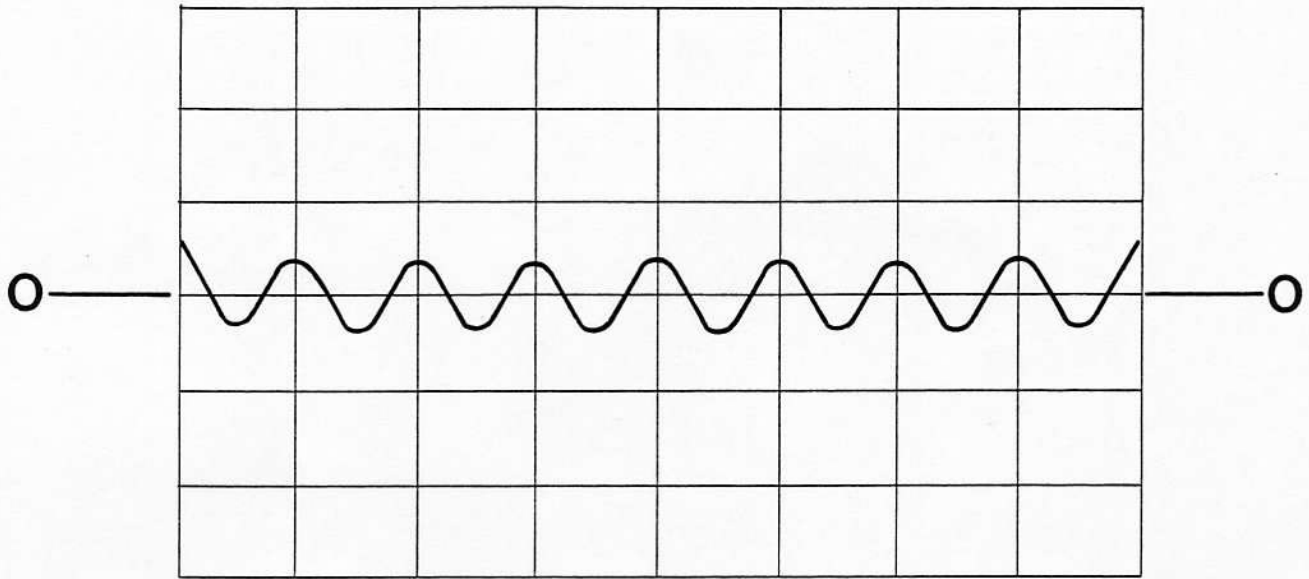
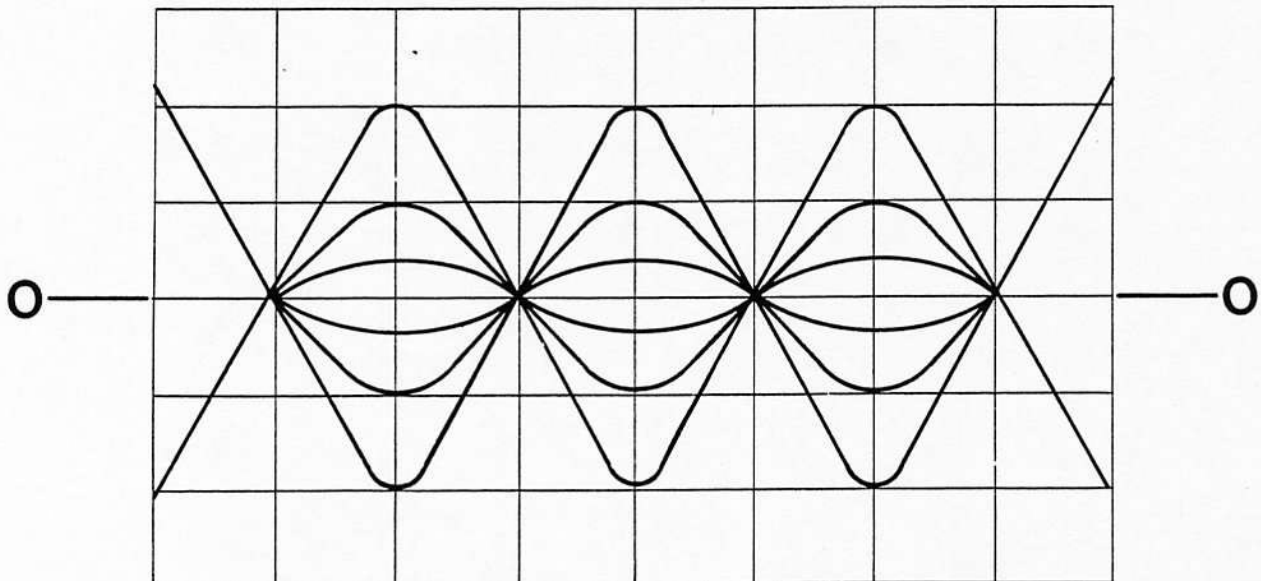


FIG. 2



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SERVICE BULLETIN #3

TRANSFORMER REPLACEMENT LISTING (starting with the most current)

10-00557-5000	5-75 Output transformer; used to replace all 65 watt and 75 watt. Also used to replace 3-65.
10-00541-3000	4-130 Output transformer; used to replace all 130 watt and all 100 watt. (such as RD & RP)
10-00561-5000	6-150 Output transformer; used to replace all 150 watt.
10-00585-0000	8-50 Output transformer; used to replace 50 watt. (RD-50)
10-00516-5000	100-65 Power transformer used to replace all 65 watt and 75 watt having the "Hi Stby. Lo" switch on the front panel. (as opposed to "Hi <u>Off</u> Lo")
10-00521-3000	200-130 Power transformer used to replace all 130 watt and all 150 watt having the "Hi Stby. Lo" switch on the front panel. (as opposed to "Hi <u>Off</u> Lo")
10-00575-0120	7-50 Power transformer used to replace all 50 watt. (RD-50)
OBSOLETE	1-65 Power transformer used to replace all 65 watt only having the "Hi <u>Off</u> Lo" switch on the front panel.
OBSOLETE	2-130 Power transformer used to replace all 130 watt only having the "Hi <u>Off</u> Lo" switch on the front panel.

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SERVICE BULLETIN #4

ALTERNATE TRANSFORMER WIRING

- A. This wiring should be used when replacing the 1-65 and 2-130 power transformers with the 100-65 and 200-130 power transformers in the following models:

2100-65  
2100-130  
2275-65 --- containing the DB-2 solid state driver board  
2275-130  
2475-65  
2475-130

NOTE: Be sure to read instructions all the way through before beginning work.

- B. Replacement is as follows:

1. Cut the replacement transformer leads to the following lengths:

Black-----	6"	*Orange-----	1"
Black/red-----	9"	*Black/yellow-----	1"
Brown-----	5"		
Red-----	5"		
Red/yellow-----	7"		
Orange-----	4"		
Yellow-----	4"		
Green-----	8"		
Green/yellow---	8"		

\* Apply heat shrink tubing over the ends of the remaining 1" orange and yellow/black leads as they will not be used.

2. After removing the original 1-65 or 2-130 power transformer there will be a wire and a .047 capacitor remaining on the Hi/Lo power switch on the front panel. Disconnect the wire from the Hi/Lo power switch and leave the other end of it connected to the ground switch on the rear panel. Cut the wire to a length of 4 inches and connect it to the empty lug of the standby switch on the rear panel. Remove the orange wire from the remaining lug of the standby switch and cut it off at the RB-1 rectifier board. Attach one side of the replacement power transformer primary winding (red/black) to the empty lug on the standby switch.

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### SERVICE BULLETIN #4 cont.

3. Disconnect the remaining wire from the pilot lamp on the front panel and disconnect its other end from the ground switch. Attach the remaining transformer primary wire (black) in its place at the ground switch. This will leave the pilot lamp with no wires attached until step 5.
4. Remove the .047 capacitor from the Hi/Lo power switch on the front panel. Using fig. #1 as a guide, attach an 8 inch length of 18 gauge white wire from the center lug of the Hi/Lo power switch to point "F" on the RB-1 rectifier board. The RB-1 rectifier board is located in the right rear corner. (looking from the front)
5. Attach the brown secondary transformer winding to the bottom lug of the Hi/Lo power switch. Attach the red secondary transformer winding and a 39K  $\frac{1}{2}$ Watt resistor to the top lug of the Hi/Lo power switch. Attach the other side of the 39K resistor to one side of the pilot lamp. Use heat shrink tubing over the exposed leads of the resistor.
6. Attach the red/yellow secondary transformer winding and a 12 inch piece of 22 gauge yellow wire to the remaining lug of the pilot lamp. Attach the other end of the 12 inch yellow wire to point "B" on the RB-1 rectifier board.
7. Attach one of the orange secondary transformer windings to point "I" on the RB-1 rectifier board.
8. Attach the yellow transformer center tap winding to point "D" on the RB-1 rectifier board.
9. Attach the two green filament windings to the terminal strip in the same place as the originals. (On the 200-130 power transformer there are two windings for each side of the filaments. Attach yellow/green to yellow/green and green to green.) Use wire ties and "bundle" the wires in a neat fashion. Refer to fig. #2 to check wiring before turning on the amp.

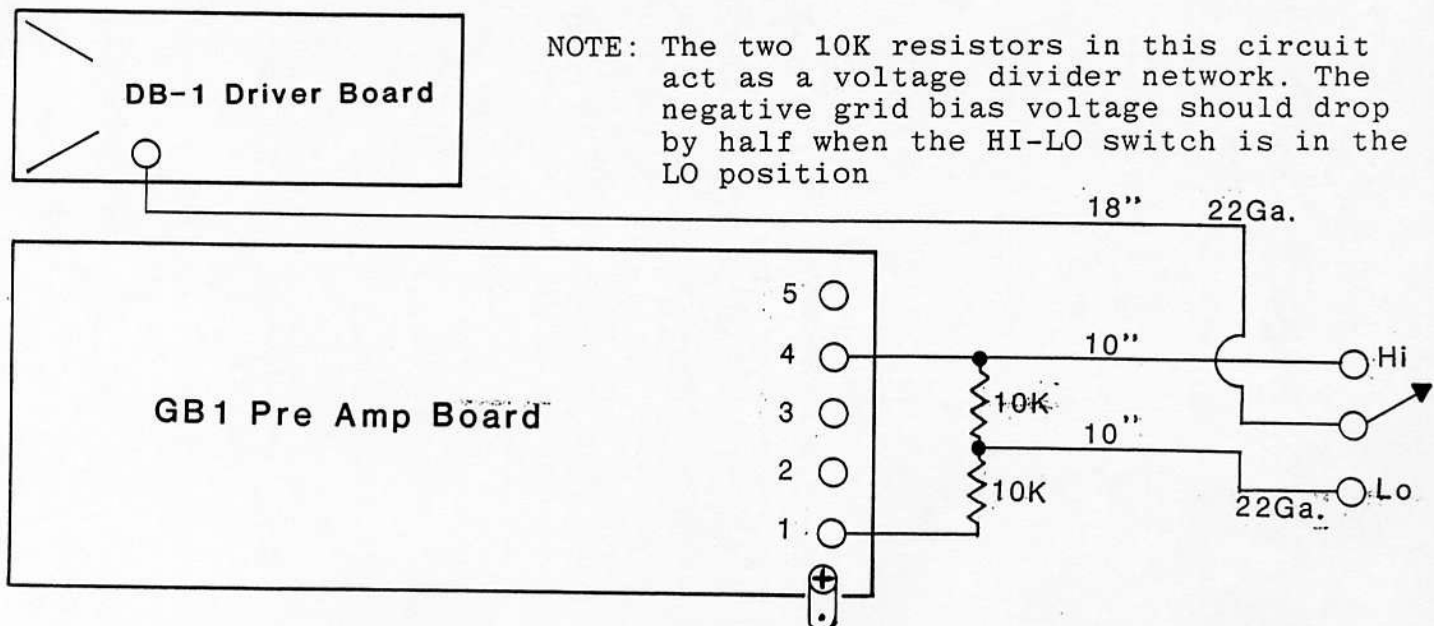


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## SERVICE BULLETIN #4 cont.

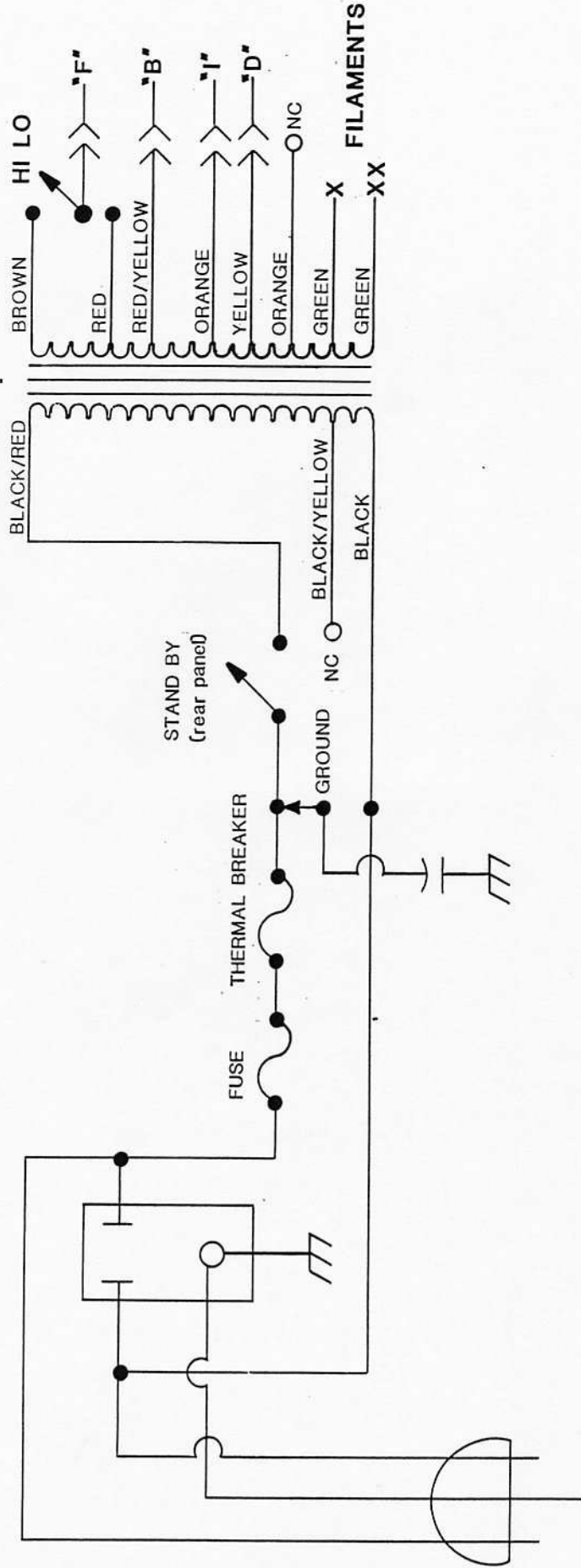
NOTE: Only complete the following steps if the amplifier contains a 12AX7A driver tube and has not had a DB-2 modification.

10. Replace the SPDT center-off front panel HI-LO switch with a DPDT center-off switch. Wire one half of the switch as previously described. Wire the other half of the switch as described in the following steps.
11. Twist the leads of two 10K $\frac{1}{2}$ W resistors together so that they form a series configuration. Attach one end of a 10" inch piece of 22 gauge wire to the point at which the two resistor leads are twisted together. Attach the other end of the wire to the upper lug of the HI-LO switch on the front panel. Attach the remaining lead of one of the 10K resistors to eyelet #4 located on the far right side of the GB-1 preamp circuit board. (Looking from the front and counting from front to back.) There will be a grey wire soldered to eyelet #4. Cut this wire to a length of 10" inches leaving one end soldered to eyelet #4. Attach the other end to the bott. lug of the HI-LO switch. Attach the lead of the remaining 10K resistor to eyelet #1.
12. Attach an 18" inch length of 22 gauge wire to the center lug of the HI-LO switch. Attach the other end of the wire to the eyelet on the DB-1 driver board where the grey wire from the GB-1 preamp board used to connect.

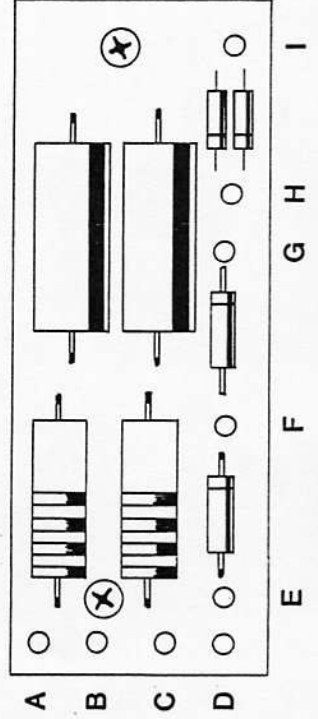


**FIG. 2**

**TRANSFORMER  
(100-65 200-130)**



**RB-1 RECTIFIER BOARD**



**FIG. 1**

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SERVICE BULLETIN #5

RF INTERFERENCE MODIFICATIONS

2 Channel Amplifiers

65/130 Reverb Models Only:

1. (a) Install solder lug to chassis with output transformer mounting screw (located below footswitch jacks).
- (b) Solder .0015mf ceramic capacitor from solder lug to footswitch jack ground lug.
- (c) Install solder lug onto power transformer mounting bolt with extra kep nut.
- (d) Solder .05mf ceramic capacitor from solder lug to ground eyelet on rectifier board (corner eyelet).
2. (a) Install a solder lug on the main PC board under the bottom center board mounting screw.
- (b) Solder a .0015mf ceramic capacitor from the solder lug to the reverb spring jack ground. This can be done by soldering to the top lead of 1K resistor near the return jack.

65/130 All Models:

1. Check for a .05mf ceramic capacitor installed from power supply ground (bottom right corner eyelet) to chassis ground (solder lug under corner PC board mounting screw). If it is missing, install one.
2. A very successful deterrent to RF is replacing the LM307H ICs with those of a bifet type such as the LF351H manufactured by National Semiconductor and others. These do not rectify RF. You may get by just replacing the input amplifiers, the reverb spring amplifier and the summing stage.
3. If the bifet ICs are unobtainable, a temporary solution would be to install 100pf capacitors from pin 2 to pin 3 of various ICs. This is a partial deterrent to RF especially when applied to the input amplifiers. A .001mf ceramic can be installed on the reverb return spring amplifier (pins 2 and 3).

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## SERVICE BULLETIN #5 cont.

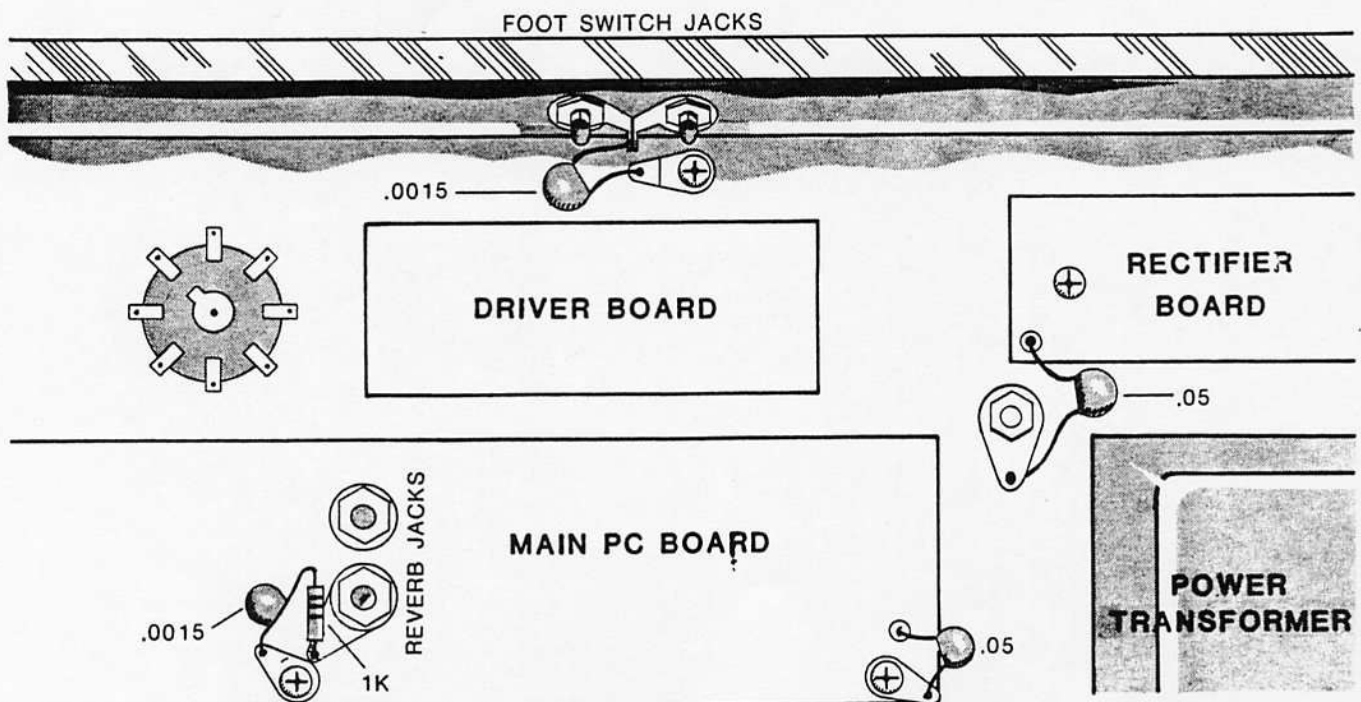
4. Installation of .1mf ceramic capacitors from supply lines to ground will help eliminate RF and voltage spikes from appearing on the supply lines.

### RP - RD Series

#### All Models

1. (a) Install a solder lug on the main circuit board under the center board mounting screw.  
(b) Solder a .0015mf capacitor from this lug to circuit board ground (trace surrounding RCA phono jacks).
2. A very successful deterrent to RF is to replace some of the LM1458N ICs with a bifet type. These do not rectify RF. A suggested replacement is a National LF353N. RCA, Texas Instruments and others may have a similar bifet replacement that is applicable. Possible replacement areas are the input stage, the hi-gain stage and the reverb stages.
3. Texas Instruments Bi-Fet IC # TLO-72 is available from Music Man as a sub for LF-353N.

### RF MODIFICATION DRAWING



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SERVICE BULLETIN #6

OUTPUT TUBE GLITCH MODIFICATION

This applies to all Music Man amplifiers requiring 6L6GC tubes. Due to a change in design characteristics of the Phillips ECG tubes, some Music Man amplifier models will show signs of instability or output glitches when using these tubes. These tubes are identifiable by the double getter arrangement on the top of the electrodes. The instability usually will occur at an input frequency of approximately 70 to 150 Hz as you approach full output. The instability is temperature related and the tubes must warm up approximately 2 to 3 minutes. The glitches occur anywhere on the wave and are not to be confused with crossover distortion which is normal when the output begins to clip, or preamp popcorn noise.

To eliminate the problem, solder a 470k  $\frac{1}{4}$  watt resistor from pin 8 to pin 2 on the 6L6 tube socket. Install one resistor for each push/pull pair in 150 watt versions and one resistor per socket in 65, 75, and 100 watt versions.



SERVICE BULLETIN #7

MUSIC MAN DRIVER TRANSISTORS

JE1692 Transistor Specification.

The JE1692 transistor is a type 2N6292 transistor for a minimum gain of 70 at 2 amps of collector current. Any TO220 transistor meeting or exceeding the following specs should work as a replacement. The majority of off the shelf 2N6292 transistors will also work as most will meet the gain spec without testing. Furthermore any TO220 transistor meeting or exceeding the following specs will work as a replacement. (It is recommended to use these in pairs.)

	<u>Type</u>	<u>IC Max</u>	<u>VCEO</u>	<u>ft Min</u>	<u>Hfe Min</u>
2N6292	NPN	7Amp	70V	4mhz	70

UPDATE TO JE1692 TRANSISTOR SPECIFICATION

2N6488 SHOULD BE USED AS THE BEST REPLACEMENT FOR THE JE1692.

THIS IS THE DRIVER TRANSISTOR THAT IS USED IN THE BASE AMPS HD-75 AND HD-150 AND IS A SUPERIOR PART.

2N6488 NPN 15AMP 80V