

DATE 5/20/58

SH. 1 OF

COMPILED BY

PLK

TMC SPECIFICATION NO. S 372

TITLE: ELECTRICAL PARTS CHANGES REQUIRED TO

JOB

APPROVED

D.L.K. *[Signature]* MODIFY MSR-1 TO BECOME MSR-4

The MSR-4 is an improved and modified MSR-1. The sensitivity of the Audio Amplifier is increased which improves the operating level of the Second Mixer. An Output Level switch determines the operation of the Audio Amplifier for High Level, 2 watts, output into 600 ohms or 8 ohms; or either of two Low Levels, 150 Milliwatts into 600 ohms or 8 ohms and/or 1 Milliwatt into 600 ohms. The Low Level position sets the output for lowest distortion.

The Noise Limiter switch in its OFF position removes the Noise Limiter circuit completely, thereby eliminating its effect on the distortion figure.

Additional filtering in the power supply reduces the hum level.

Changes in the AVC circuit components improves the AVC operation

I. The following is a listing of parts symbolized on the schematic which have changed values. A procedure and drawings are required to make the actual changes since the parts and symbols have been relocated.

1. V6 changed to 12AT7
2. R30 changed to RV4ATRD105D (1 meg. ohms)
3. R32 changed to RC20GF474K (470K ohms)
4. R31 changed to RC20GF391K (390 ohms)
5. C24 changed to CC-100-16 (.01 ufd)
6. S-8 a ST-22K switch added (dpst)
7. C31 changed to CN-100-4 (0.1 ufd)
8. R63 changed to RC20GF473K (47K ohms)
9. R36 changed to RC30GF333K (33K ohms, 1 Watt)
10. R64 changed to RC20GF681K (680 ohms)
11. R65 changed to RC20GF272K (2.7 K ohms)
12. R66 changed to RC20GF681K (680 ohms)
13. C23 changed to CC-100-16 (.01 ufd)
14. S3 changed to ST-22N switch (dpdt)
15. R19 changed to RC20GF203K (20K ohms)
16. R20 changed to RC20GF104K (100K ohms)
17. C16 changed to CC26SL820J (82 uufd)
18. R69 a RC20GF203K (20K ohms) added
19. R5 changed to RC20GF331K (330 ohms)
20. R1 changed to RC20GF394K (390K ohms)
21. R3 changed to RC20GF104K (100K ohms)
22. R7 changed to RC20GF471K (470 ohms)
23. C57 a CP41HIF405V removed (4.0 ufd)
24. C49 changed to C49 A, B a CE-102 (40 ufd)
25. R4 changed to RC30GF223K (22K ohms, 1 Watt)
26. C57 changed to CC-100-16 (.01 ufd)
27. R67 a RC20GF105K added.

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II. MAJOR PART RELOCATIONS:

1. I. F. **input** jack J₁ relocated.
2. Relay Threshold R54 relocated in place of J₁.
3. Tone **Threshold** R60 relocated in place of R54.
4. Output Level switch (dpst) S-8 mounted in place of R60.
5. Insulated standoff mounted adjacent to socket V7.
6. Power supply filter capacitor C49 and C57 removed. Mounting hole for C49 enlarged to accommodate C49 A and B, a dual 40 **ufd** capacitor.

III. ELECTRICAL CIRCUIT CHANGES:

1. Audio Amplifier

- a. V6 - 12AU7 changed to 12AT7
- b. Audio Gain control, R32, disconnected from grid (pin 7) of Audio Output tube V7 and becomes R30 connected to grid of Audio Amplifier V₆ (pin 7)
- c. R32 becomes a 470K ohm resistor and connected to grid, pin 7, of V7.
- d. Audio Amplifier coupling capacitor changed from a .001 ufd to a .01 ufd.
- e. Audio feedback circuit consisting of S-8 Output Level switch and C31 a .01 ufd capacitor and R63 a 47K ohm resistor connected from plate of V7, pin 5, to cathode of V6B, pin 8.
- f. The cathode bias resistor R31 of V6B, pin 8, changed from 2.2K ohms to 390 ohms.
- g. Plate decoupling resistor R36 changed from 1K ohms 2 watt to a 33K ohm 1 watt and placed in plate line of Audio Amplifier V6B.
- h. The second half of S-8 Output Level switch connects output transformer secondary to Low Level pad consisting of R64 a 680 ohm resistor, R65 a 2.7K ohm resistor and R66 a 680 ohm resistor.

2. NOISE LIMITER:

- a. The Noise Limiter ON/OFF switch is replaced with

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a dpdt which disconnects the Noise Limiter circuit from the Audio Amplifier V6B when in its OFF position.

b. C23 changed to .01 ufd

3. 2ND MIXER:

a. Grid resistor R20 changed to 100K ohms.

b. Grid resistor R19 changed to 20K ohms.

c. C16 grid capacitor changed to 82 uufd.

d. R69 a 20K ohm resistor added to terminal No. 2 of Z₁.

4. I.F. AMPLIFIER:

a. Resistor R₁ changed to 390K ohms.

b. R3 changed to 100K ohms and connected from AVC ON/OFF switch S-2 to grid (pin 1) of I.F. Amplifier V2.

c. Cathode bias resistor R5 changed to 330 ohms.

d. Plate load resistor R4 changed to 22K ohms, 1 watt.

e. Cathode bias resistor R7 changed to 470 ohms.

5. MISCELLANEOUS:

a. Capacitor C57 a .01 ufd added to decouple 1st oscillator B⁺ line.

b. Resistor R67 added to grid (pin 2) of Relay Driver V10A.

IV.

In order for the above changed to be completed, the terminal boards must be rewired and certain interconnecting wires replaced in the cable harness.