TMC SPECIFICATION				NO. QA
REV: X				
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TITLE:				

KIT453 PRELIMINARY INSTALLATION INSTRUCTIONS

PURPOSE

The purpose of KIT453 is to upgrade the RF AMPLIFIER PANEL CHASSIS ASSEMBLY (AX-104) by providing solid state replacements for the tube type rectifier (6X4) and the two OA2 regulator tubes resulting in a substantial amount of power recovered over long periods of operation, and increased reliability.

A further increase in power saved and long term reliability is afforded by reducing the quiescent idling current of both the P.A. and I.P.A. output tubes. When the PTT line is not grounded, i.e., no signal condition, the bias is increased sufficiently to reduce idling current in the DRIVER and the P.A. tube.

The installation should take approximately 6 man-hours.

TOOLS REQUIRED

#1 PHILLIPS HEAD SCREW DRIVER
#1 FLATHEAD SCREWDRIVER
MEDIUM DUTY WIRE CUTTERS
MEDIUM DUTY WIRE STRIPPERS
3/16 INCH DRILL BIT
1/8 INCH DRILL BIT
1/2 INCH ELECTRIC DRILL
1/2 INCH DRILL BIT
CENTER PUNCH
40W SOLDERING IRON
SOLDER
LIGHT DUTY LONGNOSE PLIERS
12 INCH RULER

KIT453 PARTS PROVIDED

SEE ATTACHED PARTS LIST

The first step is to install KIT453 in the R.F.C. drawer. It is necessary to route a single 22 gauge control wire to control the P.A. BIAS in the RELAY PANEL. Preparation of the RELAY PANEL is accomplished and then the wire is routed along the main cable run from J1001 to the RELAY PANEL P700 and secured with the tiewraps provided.

It is also necessary to route the PTT control line cable from the R.F.C. along the main harness to the left rear of the transmitter near J1007 (P.A.MONITOR) securing with the tiewraps provided, and to install a BNC chassis feed-through connector in the area of J1007.

Remove the R.F.C., RF AMPLIFIER PANEL CHASSIS ASSEMBLY, RELAY PANEL ASSEMBLY and the HIGH VOLTAGE RECTIFIER DECK.

Remove V2001 6X4 and V2002 and V2003 (the two OA2 tubes) from the RF AMPLIFIER PANEL CHASSIS ASSEMBLY.

With the KIT aligned directly over the three now vacant tube sockets drill two 3/16 mounting holes in the chassis corresponding to the support standoff TAKING CARE THAT THE NEW INSTALLATION DOES NOT INTERFERE WITH THE NORMAL OPERATION OF THE R.F.C. DRAWER.

Place rubber grommet EY102-3 in the predrilled hole closest to J2000 and pull the PURPLE, WHITE-PURPLE and the YELLOW through the grommet from the bottom of the chassis. With the supplied 6-32 screws mount the KIT to the CHASSIS.

Connect the PURPLE wire to R2004 on the side that goes to J2000 PIN G (2 YELLOW wires). Locate the 2 watt 470 ohm resistor R2011 and solder it to the same terminal of R2004 that the PURPLE wire went to. Solder the other end of R2011 to the opposite terminal of R2004 (ORANGE wire). Solder the WHITE-PURPLE wire to PIN 1 of XV2002.

Install the 2 watt 27Kohm resistor R2012 between PINS 2 and 3 of XC2001B. Solder the YELLOW wire to PIN 2 of XC2001B.

Locate the two zener diodes CR2001 and CR2002 (1N4007) and solder the anode of one of the diodes CR2002 to XV2001 PIN 7. Connect CR2002 cathode to PIN 8 of the same socket. Install the other diode CR2001 anode also to PIN 8 and solder. Solder the cathode of CR2001 to PIN 1 of XV2001B.

Drill a 1/2 inch hole about 1 inch above J2002 on the rear cover plate of the RF AMPLIFER CHASSIS PANEL ASSEMBLY. Install the JJ-127(BNC CHASSIS CONNECTOR) securing the harness to W1001 with the tiewraps provided. THIS IS THE PTT LINE CONTROL-INPUT FROM THE SIDE-RACK.

Drill a 1/8 inch hole midway between the silkscreened circuit symbol numbers R2008 and R2009. Mount one insulated standoff with the provided 4-440 machine screw and lock washer.

Locate R2008 (NEAR THE IPA BIAS ADJUST CONTROL) and lift it off ground. Locate the 2 watt 15Kohm resistor R2013 and the .1 disk capacitor C2023 as provided. Solder one end of each of these components to the ground lug R2008 was removed from. Locate the previously installed GREY wire in the area of J2002. Place a grommet through the predrilled hole closest to J2002. Pull the GREY wire through the grommet from the bottom over to R1008. Solder the junction of the new 15Kohm(R2013) resistor and .1 microfarad disk capacitor(C2023) to the standoff along with the lifted end of R2008

Solder the remaining PINK wire located near J2002 to PIN G J2002.

This completes the KIT453 installation in the RF AMPLIFIER PANEL CHASSIS ASSEMBLY. DO NOT REPLACE ANY DRAWERS UNTIL INSTRUCTED

With the RELAY PANEL removed from the transmitter replace the jumper grounding one side of R702 with the 2 watt 15Kohm resistor R713 and the .1 microfarad disk capacitor(C701) soldered together in parallel.

Carefully solder the PINK wire to PIN G of J700 on the RELAY PANEL. Using the tiewraps provided lace the PINK wire along the wire-harness to the junction of R702 and R713 and solder.

This completes the installation in the RELAY PANEL.

Next it is necessary to install a control cable from P1011 G on the RF AMPLIFIER PANEL ASSEMBLY to J1011 PIN G on the MAIN FRAME then from P1000 PIN G on the main frame to PIN G J700 on the RELAY PANEL. This procedure requires the installation crew to disassemble and make solder connections on 38 pin connectors. Careful soldering techniques must be used in order to assure proper operation and longterm

reliability of the KIT once it is installed. This procedure is accomplished with the connecting cable W-1000 removed from the transmitter.

Unplug P1010 and disassemble the connector to expose the solder pins inside. Very carefully solder an appropriate length of the PINK wire to PIN G. Reassemble the connector with the wire extending out the back of the connector. With the tie-wraps supplied lace the wire along the cable to the main frame P1011 where the connector must also be opened and the PINK wire soldered to PIN G. The PINK wire must now be soldered to PIN G J1001 and PIN G J700 of the RELAY PANEL.

Starting at the R.F.C secure the PTT control line to the main cable harness with tiewraps, routing it to the left rear of the transmitter in the area of J1007.

Drill a 1/2 inch hole near J1107. Install the BNC CHASSIS FEEDTHROUGH JJ-172 onto the PTT control line. Insert JJ-172 into 1/2 inch hole.

Locate the SIDERACK PTT input line from the KEY source and connect it to the PTT control line input just installed.

This completes the installation procedure for KIT453. Reinstall all drawers and assemblies complete with covers and restore transmitter to normal operation for final test.

Engineering Bulletin

SOLID STATE AND BIAS OFF KIT 453

The Technical Materiel Corporation offers a solid state replacement kit (Kit 453) for its AN/FRT-39 and the AN/FRT-93 transmitters. Kit 453 is designed to replace two (2) OA2 voltage regulators, and the 6X4 rectifier both of which are used in the AX104 power supply compartment of the AN/FRT-39 transmitter. This kit also introduces a "BIAS OFF" mode of operation.

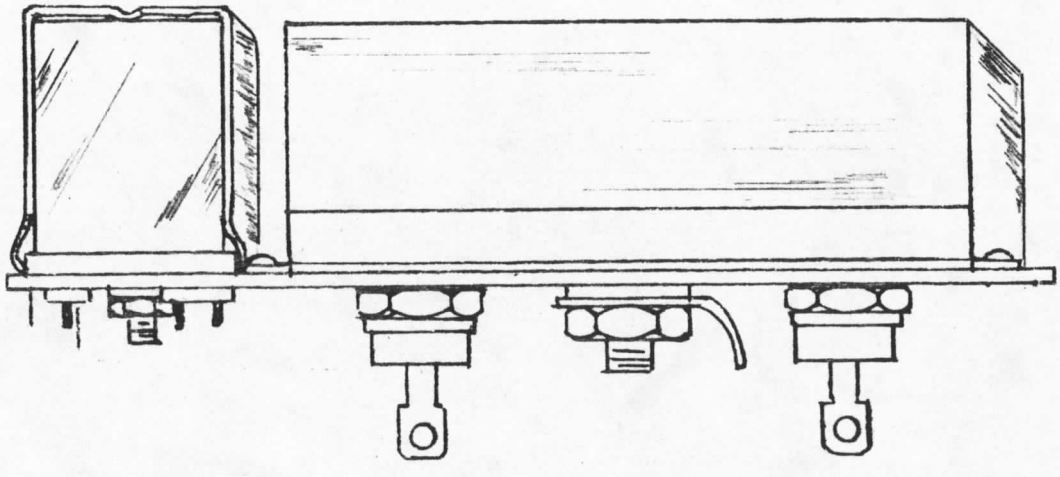
The purpose of Kit 453 is to further increase the reliability of the AN/FRT-39 and AN/FRT-93 transmitters. Kit 453 also provides a "Bias Off" mode of operation, which will increase power conservation during key-up operation.

Points of Interests for Kit 453 are as follows:

1) Replaces 6X4 rectifier tube and (2) OA2 bias regulators with solid state devices. These solid state devices will increase the long term reliability of the transmitters.

2) Increases bias voltage, which aides in the control of the quiestant current. This will be helpful when operating with rebuilt 4CX5000A final tubes.

3) Adds a "BIAS OFF" mode of operation to the transmitter. This will be a significant contribution in conserving power.



THE TECHNICAL MATERIEL CORPORATION

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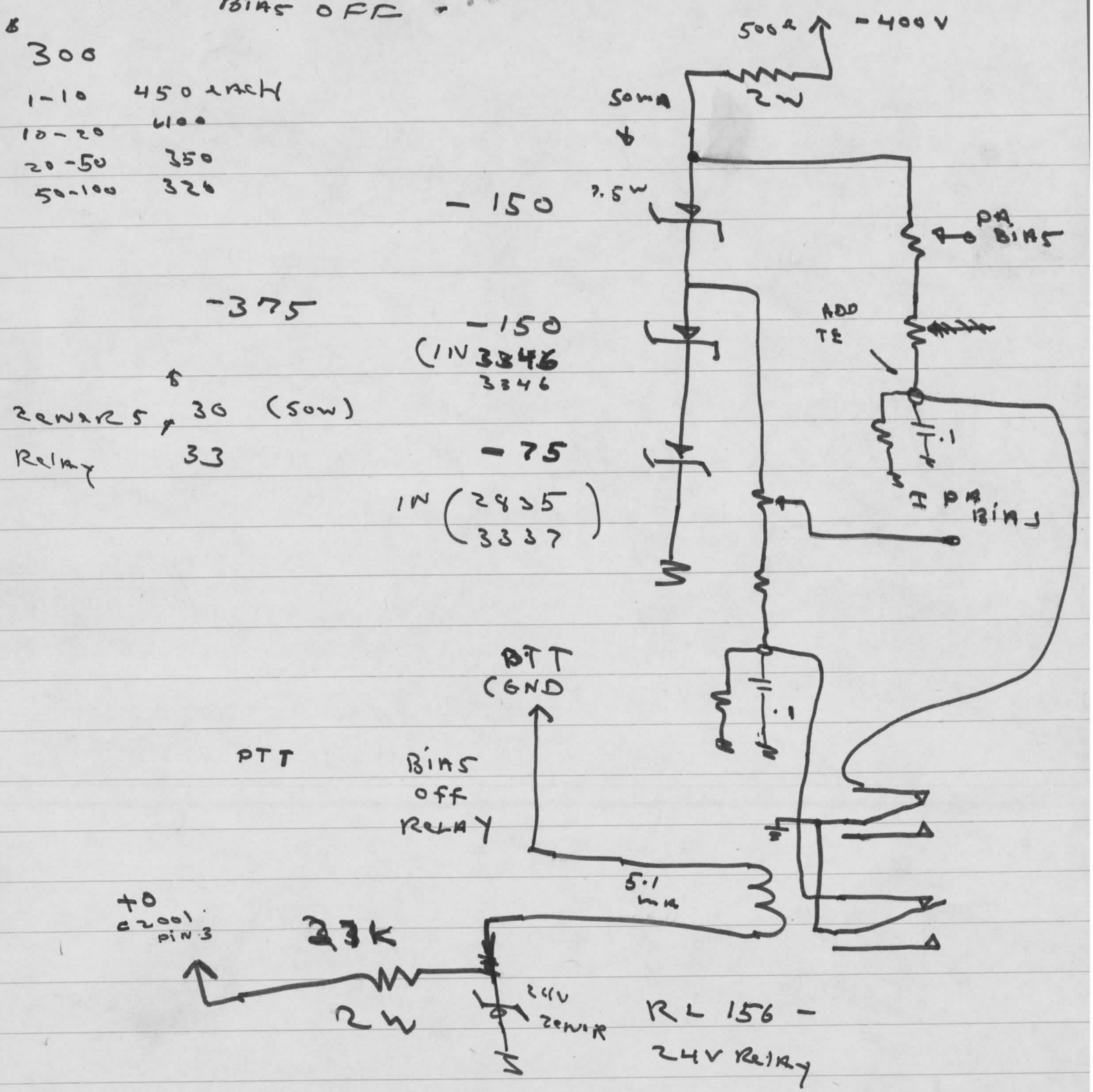
KIT 453

BIAS OFF

AX104 FOR Power supply



300

1-10 450 each

10-20 400

20-50 350

50-100 326

ZENER 5, 30 (50W)

Relay 33

KIT BIAS OFF

Replace 6X4 with Solid State device (IN4490)

Replace OA2 with Solid State device and Relay

TO work in conjuction w/ MMX-( )

3-25-81