CHAPTER 3
INSTALLATION PROCEDURES

3.1 INTRODUCTION

This chapter contains the information required for installation of the TEX150 exciter and for preliminary checks.

3.2 UNPACKING

Remove the unit from its packaging and before any other operation, check for any damage that the unit may have suffered in transit and that all front and rear panel controls are functioning.

3.3 INSTALLATION

1)Check that the line voltage selector is correctly set for the local supply. If not, remove the cover on which the voltages are printed and rotate it until the required value corresponds to the arrow, and reinsert it. Check also that the fuse (1 Fig.2) mounted inside the cover is present and in order.

The current capacity of the fuse are as follows:

220-240 V - 6.3 A
100-120 V - 12 A

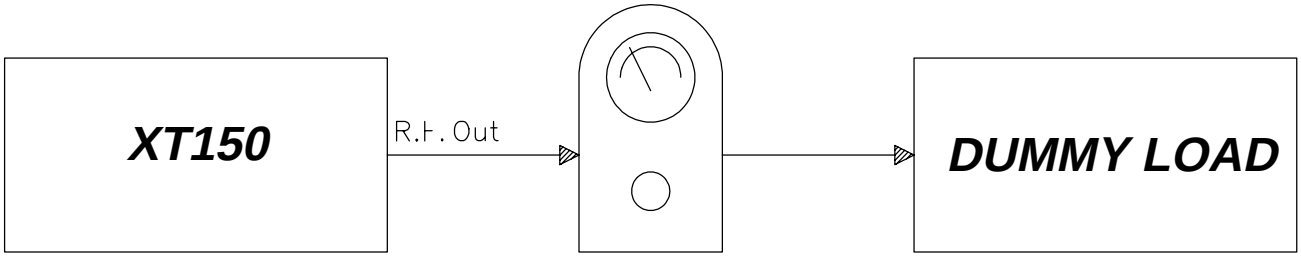
2)Now ensure that the PWR ADJ control (9 Fig.1A or 5 Fig.1B) is rotated fully anti-clockwise, using a small screwdriver. N.B. The control is a ten-turn potentiometer so care should be taken to verify the minimum position.
Units are usually shipped with this control already at minimum.

WARNING: When the unit is switched on with the control at its minimum position, power output is about 10W.

3)Connect a dummy load with a power rating of at least 150 W continuous to the RF output, situated on the rear panel of the unit. It is advisable to connect a bypass wattmeter in series with this load in order to verify the accuracy of the unit's own internal wattmeter (see SETUP 1).

WATT-METER

SETUP 1



4)Connect a switch, via a cable, to the REMOTE 3 connector (4 Fig.2) on the rear panel so that the switch is able to short the central conductor to its screen. Leave the switch in the short-circuit position.

5)Switch the unit's ON/OFF switch (13 Fig.1A or 9 Fig.1B) to the OFF position.

6) Connect line power to the unit via the VDE socket (2 Fig.2).

Note: It's essential that the unit be properly earthed to ensure both the safety of the operator as well as the correct functioning of the equipment.

7)Switch the power On switch (13 Fig.1A or 9 Fig.1B) to the ON position and check that the three green internal voltage led (7 Fig.1A or 3 Fig.1B) and the red UNLOCK led (15 Fig.1A or 11 Fig.1B) are all on. Select the desired operating frequency using the corresponding selector. The red UNLOCK led should switch off within 30 seconds, indicating that the oscillator has locked onto the operating frequency. The frequency selector comprises five figures of which the three to the left of the decimal point represent (from left to right) hundreds of MHz, tens of MHz and MHz. The two figures to the right of the decimal point represent (from left to right) hundreds of KHz and tens of KHz.

Eg: 098.45 = ninety eight megahertz and four hundred and fifty Kilohertz.
Eg: 103.94 = one hundred and three Megahertz and nine hundred and forty Kilohertz.

Furthermore, if a frequency is selected beyond the two limits of the 87.5-108 MHz band, the amplifier will continue to work even through the displayed frequency no longer corresponds to the operating frequency of the unit.

Note: Transmitting outside the legal band (87.5-108 MHz) is an offence and may lead to prosecution.

8)After having verified that the UNLOCK led is switched off and that the unit is therefore locked to the selected operating frequency, switch the switch connected to the REMOTE connector so as to remove the short circuit between the central conductor and ground. The RF output is now enabled and should correspond to a power level of about 10W. To check this reading, select FWD on the meter selector and read the power from the 200 W FSD scale.

9)Using a small screwdriver, rotate the PWR ADJ control clockwise; the power output should increase progressively to a maximum of 100W. Check the value with the bypass wattmeter which should be within ±10%.

10)With the power output at 150W, select a new operating frequency well away from the current value. Eg: 107 MHz: the UNLOCK led should switch on and the power output should fall to zero at the same time. Only when the UNLOCK led switches off (unit locked to new frequency) should the power output resume its previous level.

11) Automatic power control check

It is advisable to start this procedure with the operating frequency set to 87.50 MHz. When locked to this frequency, the PWR ADJ control should be adjusted for an output power of 50 W. Now, with no further adjustment of the PWR ADJ control, change the operating frequency in steps of 4-5 MHz, ensuring that the output power remains constant at 50 W.

12) SWR alarm check

For this test, adjust the PWR ADJ control for a power output of 10W. Disconnect the output load and check that the S.W.R. led switches on. Now adjust the PWR ADJ control to check that the unit switches on again at a reflected power level of about 20 W. Turn the PWR ADJ control for maximum power and check that the reflected power does not exceed 50 W. Re-connect the output load and check that REF falls to zero, the SWR led switches off and that PWR FWD jumps to 150 W.

13) Now short circuit the central conductor of the REMOTE input to ground and the output power should drop instantly to zero. Removing the short should cause the power output to return, gradually, to its previous level.

14) Deviation reading check

The maximum input sensitivity is determined by the position of the INPUT LEVEL control. In the -12/+9 position, the sensitivity will depend on the L/mpx and R/mono controls. Put the selector in the DEV position. Connect a low-distortion audio generator to the LEFT and RIGHT inputs. Inject a 400 Hz tone at a level of 0dBm ($775mV_{RMS}$= $2.2V_{pp}$).Put the INPUT LEVEL control in the 0dBm position. Select stereo mode (the corresponding led will switch on). Enable the PILOT using the relevant switch (the green led will switch on). With the selector in the R/MONO position, check that the reading is 0b, measured on the +3dB FSD scale. Repeat the operation for the L/MPX. Check that the deviation reading is 100%.

3.3

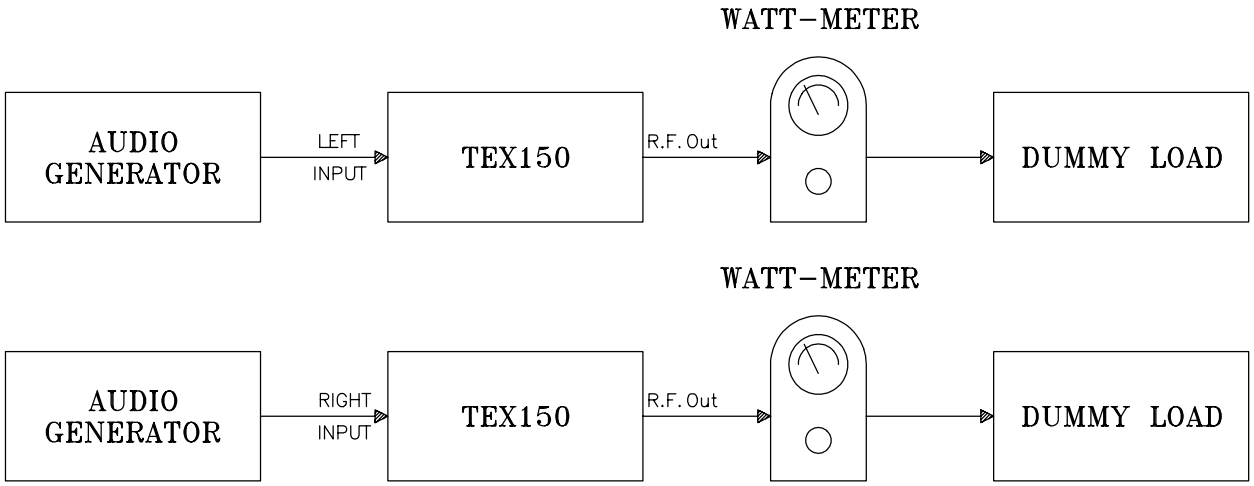
1) Inject the pilot tone checking that the corresponding led switches on.

3.4 OPERATION USING THE INTERNAL STEREO ENCODER (Only for Stereo Ver.)

1) Inject the pilot tone checking that the corresponding led switches on.

2) Select STEREO operation confirmed by the corresponding led.

3) Select the sensitivity of the audio LEFT/RIGHT inputs to match the signal level being supplied to the unit. (CONT..PG.27)
4) Connect the signal source to the LEFT/RIGHT inputs. These are balanced inputs (see SETUP 2).



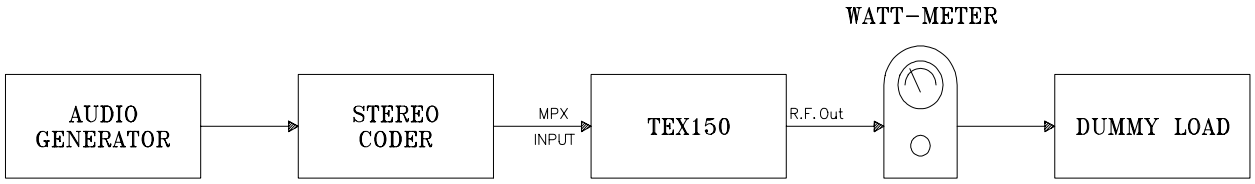
SETUP 2

5)Check on the internal analog meter that the L/R signal levels are those expected, selecting the desired input with the corresponding control.

6)The effective modulation level may be measured on the analog multimeter by selecting DEV with the corresponding selector.

3.5 CONNECTION OF AN EXTERNAL STEREOPHONIC SOURCE

1)Connect the stereo source's output to the MPX input of the unit (see SETUP 3).



SETUP 3

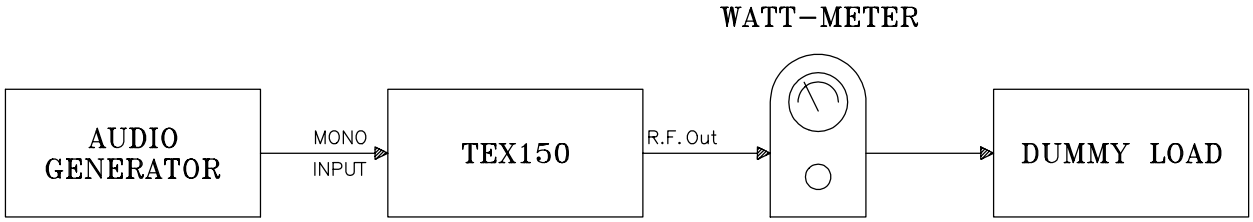
2)Adjust the stereo encoder to obtain just the 19 KHz subcarrier output and ensure the total absence of signals on the left and right inputs of the encoder.

3)Adjust the output level of the encoder to obtain the correct level as displayed on the analog meter of the TEX150.

4)Inject audio signals into the left and right inputs of the encoder and adjust the sensitivity of the input to obtain a peak reading of MAX=75KHz with both channels enabled.

3.6 MONOPHONIC TRANSMISSION

1)Connect the signal source (audio mixer, receiver, compressor etc.) to the MONO input. This input is unbalanced (see SETUP 4).



SETUP 4

2)Select the desired INPUT LEVEL.

3)Adjust the signal level of the equipment connected to the TEX150 (with the audio signal present) for a peak reading of DEVIATION MAX 75 KHz.

Note that international standards permit a maximum deviation (DEV MAX) of 75 KHz for frequency modulated, radiophonic transmissions. Exceeding this limit will only result in the degradation of signal quality.
In the case of mono transmissions, the stereo input is available for frequencies between 15 KHz and 100 KHz (i.e. subcarriers for SCA, RDS etc.).

CHAPTER 4
MAINTENANCE PROCEDURES

4.1 SAFETY REQUIREMENTS

WARNING WARNING WARNING WARNING WARNING WARNING WARNING WARNING

When the exciter is operational, removing the top cover will expose lethal voltages on the line voltage selector and heavy currents on the power supply filter terminals and power transistors. Use insulated tools for any type of maintenance work and do not touch any internal components when the exciter is switched on.

Ensure that the exciter is disconnected from the line supply before carrying out any maintenance work.

MAINTENANCE LEVEL 1

4.2 ROUTINE MAINTENANCE

The only routine maintenance required by the TEX150 is the periodic replacement of the cooling fan and the removal of accumulated dust. The period between such action will depend on ambient operating conditions such as temperature, air-borne dust levels and humidity. It is advisable to check the unit every 6 months and to replace noisy or worn fans. Fans should be replaced as a matter of course after no more than 18 months of operation.

MAINTENANCE LEVEL 2

4.3 STEREO ENCODER CARD REPLACEMENT

1)Open the top and bottom covers of the unit.

2)Disconnect connectors J1, J3 and J4.

3)Unscrew the four nuts fixing the card on internal chassis.

4)Unscrew the screw inside the INPUT LEVEL knob and slide it off.

5)Raise the card from its supports, simultaneously sliding the switches and the INPUT LEVEL switch pivot from the panel.

4.4 RF POWER AMPLIFIER TRANSISTOR REPLACEMENT

For this module it's only possible to replacement the transistors:

1)Open the top cover of the unit.

2)Open the top cover of the RF power amplifier.

3)Unscrew the two fixing screws of the device (BGY33, MRF317 or SD1480).

4)Remove the broken transistor.

NOTE: During replacement of broken devices it's necessary to pay attention to device's pin position and insertion, to check that the device's fixing screws aren't in short-circuit and to check that the soldering is good and without impurities.

NOTE: Interpose between devices and heat-sink an electronic silicone compound.

4.5 VCO REPLACEMENT

1)Open the top cover of the unit.

2)Disconnect connectors CN1, CN2, J1, J3 and J4.

3)Desolder the two wires connected on J2 and J5 of the VCO Card.

4)Unscrew the fixing screws of the VCO card metal box on the internal chassis.

5)Remove the metal box.

NOTE: For any adjustment is sufficient remove the top and bottom covers of the metal box.

4.6 AUDIO INPUT CARD REPLACEMENT

1)Open the bottom cover of the unit.

2)Disconnect connectors CN1, and CN2.

3)Unscrew the nuts of the two connectors BNC1 and BNC2 situated on the rear panel.

4)Unscrew the two screws fixing the telemetry terminals block, situated on the rear panel.

5)Desolder the six wires (placed on EC1 and EC2) connecting the Audio Input Card to the two audio connectors, RIGHT (mono) and LEFT (MPX).

6)Slide the card out.

4.7 MAIN POWER SUPPLY'S TRANSISTORS REPLACEMENT

1)Open the top and bottom covers of the unit.

2)Remove from flat cable clamp the flatwire fixed on heat-sink.

3)Unscrew the two fixing screws of the components U1 and D1 of the switching power supply (pay attention to device insulator).

4)Unscrew the two fixing screws of the two rectifier bridges.

5)Unscrew the fixing screws of the heat-sink and raise the top part of heat-sink paying attention to cabling.

6)Desolder the device's pins.

7)Carefully lift out the device.

NOTE: During replacement of broken devices it's necessary to pay attention to device's pin position and insertion, to check that the device's fixing screws aren't in short-circuit and to check that the soldering is good and without impurities.

NOTE: Interpose between devices and heat-sink an electronic silicone compound.

4.8 METER CARD REPLACEMENT

1)Open the top and bottom covers of the unit.

2)Unscrew the four fixing screws of the front panel.

3)Unscrew the nut inside the measurement selector situated on the front panel and the selector fixing nut.

4)Disconnect connectors CN1, CN2, CN3, CN6 and CN7 situated on the Meter card.

5)Disconnect the faston CN4.

6)Remove the card paying careful attention to the various leds and adjustments.

4.9 FREQUENCY SELECTOR CARD REPLACEMENT

1)Open the top cover of the unit.

2)Unscrew the four fixing screws of the front panel.

3)Disconnect connector CN1 situated on the Contraves card.

4)Unscrew the two card's fixing screws on the front panel.

5)Remove the Contraves card.

4.10 PLL CARD REPLACEMENT

1)Open the top and bottom covers of the unit.

2)Disconnect connectors CN1, J2, and J5, desolder the two wires connected on J1 and J3 of the PLL Card.

3)Unscrew the fixing screws of the PLL card metal box on the internal chassis.

4)Remove the metal box.

NOTE: For any adjustment is sufficient remove the top and bottom covers of the metal box.

4.11 MONO/MPX CARD REPLACEMENT

1)Open the top and bottom covers of the unit.

2)Disconnect connectors JP1, JP2 and JP3.

3)Unscrew the four nuts fixing the card on internal chassis.

4)Unscrew the screw inside the INPUT LEVEL knob and slide it off.

5)Raise the card from its supports, simultaneously sliding the switches and the INPUT LEVEL switch pivot from the panel.

4.12 ALARMS CARD REPLACEMENT

1)Open the top and bottom covers of the unit.

2)Disconnect connectors JP1 and JP2 of the Stereo Coder card (or Mono/MPX card) to ease the removal of the Alarms card.

3)Disconnect connectors CN1, CN2, CN3 and CN4.

4)Unscrew the fixing screws of the card on the internal chassis.

5)Remove the card.

4.13 SWITCHING POWER SUPPLY 1 REPLACEMENT

1)Open the top and bottom covers of the unit.

2)Disconnect connector J1 on the Switching card.

3)Unscrew the two fixing screws of D1 and U1 devices, placed on the heat-sink.

4)Unscrew the fixing screws of the Switching card.

5)Remove the card.

NOTE: During replacement of broken devices it's necessary to pay attention to device's pin position and insertion, to check that the device's fixing screws aren't in short-circuit and to check that the soldering is good and without impurities.
Interpose between devices and heat-sink an electronic silicone compound.

4.14 SWITCHING POWER SUPPLY 2 REPLACEMENT

1)Open the top covers of the unit.

2)Disconnect connector J1 on the Switching card.

3)Unscrew the two fixing screws of D1 and U1 devices, placed on the heat-sink.

4)Unscrew the fixing screws of the Switching card.

5)Remove the card.

NOTE: During replacement of broken devices it's necessary to pay attention to device's pin position and insertion, to check that the device's fixing screws aren't in short-circuit and to check that the soldering is good and without impurities.
Interpose between devices and heat-sink an electronic silicone compound.

4.15 LOW PASS FILTER REPLACEMENT

1)Open the top and bottom covers of the unit.

2)Disconnect output SMA coonector.

3)Desolder input cable and metal box.

4)Remove metal box.

4.16 DIRECTIONAL COUPLER REPLACEMENT

1)Open the top and bottom covers of the unit.

2)Disconnect SMA input connector.

3)Desolder three wires connecting to METER100 card.

4)Unscrew the fixing screws of the two connectors on the rear panel.

5)Remove the card.

4.17 FAN REPLACEMENT

1)Open the top and bottom covers of the unit.

2)Unscrew the fixing screws of the rear panel to ease fan removal, paying attention to connecting wires.

3)Unscrew the fixing screws of the R.F. Power Amplifier on the rear panel.

4)Unscrew the fixing screws of the fan on the rear panel.

5)Desolder the two supply wires of the fan.

6)Remove the fan.

4.18 ANALOG METER REPLACEMENT

1)Open the top and bottom covers of the unit.

2)Unscrew the fixing screws of the front panel to ease Meter removal, paying attention to connetcing wires.

3)Disconnect connector CN3 on the METER card.

4)Unscrew the fixing screws of the analog meter on the front panel.

5)Remove the analog meter.

4.19 TRANSFORMER REPLACEMENT

1)Open the top and bottom covers of the unit.

2)Desolder transformer's wires on VDE socket, disconnect the fastons on the rectifier bridges.

3)Remove fastons' wires (previously disconnected) from the upper part of the equipment.

4)Unscrew the fixing bold of the transformer.

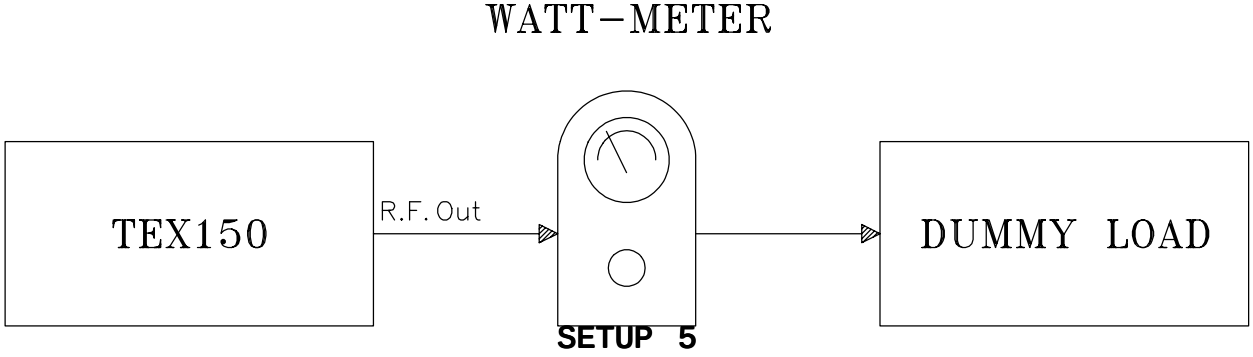
5)Remove the transformer paying attention to rubber insulators, (Pay attention to replace correctly rubber insulators).

CHAPTER 5
CALIBRATION PROCEDURE

THESE PROCEDURES SHUOLD ONLY BE CARRIED OUT BY HIGHLY SPECIALIZED TECHNICIANS USING THE CORRECT EQUIPMENT. MAINTENANCE ERRORS CAN CAUSE SERIOUS DAMAGE TO THE UNIT AND WILL AUTOMATICALLY MAKE THE WARRANTY VOID.

5.1 STEREO CODER CALIBRATION

It will be necessary to check and recalibrate the following parameters after replacement of the Stereo Encoder card (see SETUP 5):



SETUP 5

1)Select 0dBm on the INPUT LEVEL selector (encoder and pilot tone inserted).

2)Connect a low distortion, sine-wave, audio generator to the left and right inputs.

3)Connect a 50 Ohm 300 W load to the RF output of the TEX150.

4)Connect the -40dB tap to the F.A.M. (or other modulation analyzer).

5)Connect a stereo MEAS-decoder to the rear FM-MPX output of the F.A.M.

6)Switch on the TEX150 and wait for the PLL to lock.

7)Adjust the audio output of the generator to 0dBm ($2.2V_{pp}$=$775mV_{RMS}$ 400Hz).

8)Select, with the appropriate control, a reading of Right (MONO) and adjust P8 on the encoder to obtain 0dB.

8A)Repeat the operation for Left (MPX), adjusting P7.

9)With the FAM in FM, P+ mode, and with a 30Hz-200KHz audio filter, check that the deviation is 75KHz. If not, adjust trimmer R35, situated on the Main card, accordingly.

9A)Remove the audio signal from both channels, leaving the pilot tone inserted, and check that the deviation is between 6.5KHz and 8KHz (typically 7.5KHz). Adjust P6 if necessary.

10)Remove the audio signal from one channel.

N.B. Check that the generator output is still at 0db.

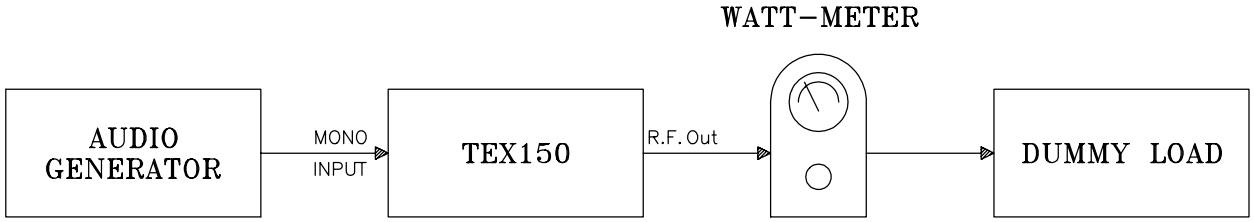
Now measure the stereo separation with the Stereo Meas-Decoder, which, with a 400Hz signal, should be better than 45dB. Repeat the operation for the other channel. Should the separation figure be different for the two channels (a difference of upto 3dB is acceptable), adjust trimmer P4 on the Encoder card accordingly.

5.2 VCO CARD CALIBRATION

After having replaced the VCO Card and relevant connectors, carry out the following procedure:

MONO VERSION

1)Connect an audio generator to the Mono input or MPX (see SETUP 6).



SETUP 6

2)Switch on TEX150, select a frequency at 98MHz and select 0dBm on the INPUT LEVEL selector (pilot tone inserted).

3)Connect a 50 Ohm, 300 W dummy load to the RF output.

4)Connect the F.A.M. or other modulation analyzer to the -40dB tap.

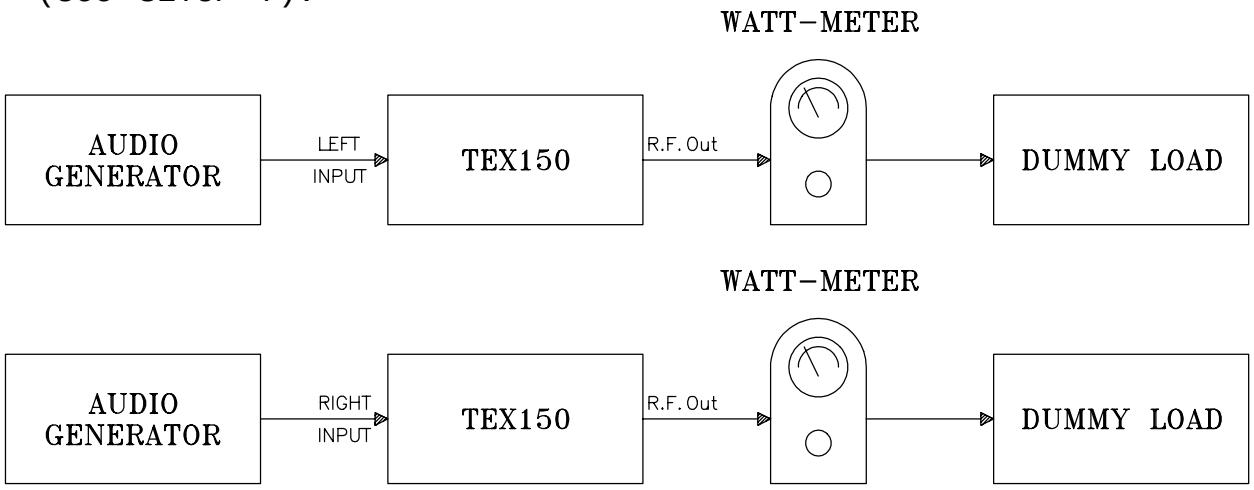
5)Inject a 400Hz, 0dBm (775mV$_{rms}$=2.2V$_{pp}$) tone into the Mono (or MPX) input.

6)Configure the FAM to measure deviation with the 30Hz-200KHz/FM/P+ filters and check that it is 75KHz. If not, adjust trimmer R15 accordingly.

7) Verify correct value on TEX150's analog meter.

STEREO VERSION

1) Connect an audio generator to the Left and Right inputs (together) (see SETUP 7).



SETUP 7

2) Switch on TEX150, select a frequency at 98MHz and select 0dBm on the INPUT LEVEL selector (pilot tone inserted).

3) Connect a 50 Ohm, 300 W dummy load to the RF output.

4) Connect the F.A.M. or other modulation analyzer to the -40dB tap.

5) Inject a 400Hz, 0dBm ($775V_{rms}$=$2.2V_{pp}$) tone into Left and Right inputs.

6) Configure the F.A.M. to measure deviation with the 30Hz-200KHz/FM/ P+ filters and check that it is 75KHz.
If not, adjust trimmer R15 accordingly.

7) Verify correct value on TEX100's analog meter.

NOTE: The audio generator used in these tests must have a distortion figure better than 0.01%.
Perform this test at the operating frequency of the exciter.

5.3 R.F. POWER AMPLIFIER MODULE CALIBRATION

No calibration is required after the replacement of this card.

5.4 POWER SUPPLY CALIBRATION

No calibration is required after the replacement of these two cards (Main power supply and switching power supply).

5.5 AUDIO INPUT CARD CALIBRATION

No calibration is required after the replacement of this card.

5.6 METER CARD CALIBRATION

All meter readings should be calibrated after the replacement of any card:

1)Inject a 400 Hz, 0dBm pilot tone into the Left (or Right) input. (see SETUP 7 for Stereo Version, or see SETUP 6 for Mono Version)

2)Connect a bypass wattmeter between the RF output and a 50 Ohm, 300W dummy load.

3)Adjust the power output to 150W.

4)With the selector, select the following measurements and make adjustments according to the table below:

MEASUREMENT	VALUE	FSD	TRIMMER	NOTE
R(MONO)	0dB	+3dB	R6	
L(MPX)	0dB	+3dB	R5	
FWD PWR	150W	200W	R8	
REF PWR	10W	50W	R7	1
DEV	VAR	100KHz	R4	
SWR LED	---	---	R23	

NOTE:

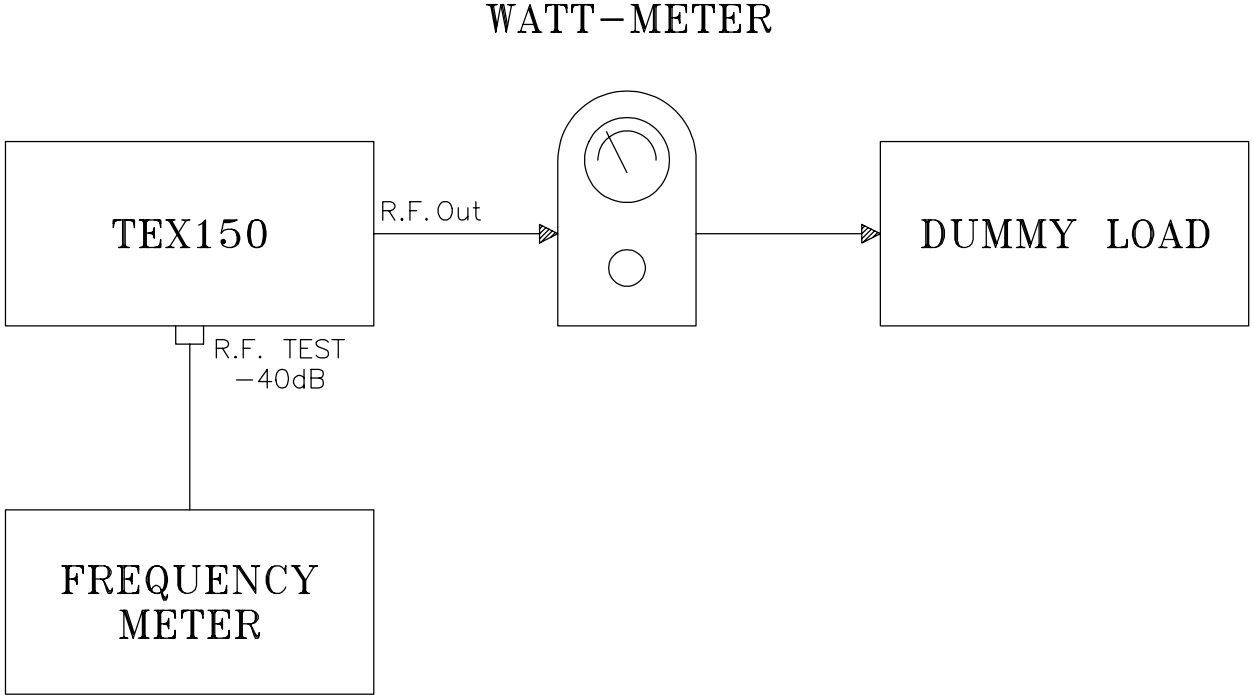
1. Disconnect the load for this measurement only and adjust PWR ADJ for 50W of direct output power.

5.7 FREQUENCY SELECTOR CARD CALIBRATION

No calibration is required after the replacement of this card.

5.8 PLL CARD CALIBRATION

After having replaced the PLL card, carry out the following procedure (see SETUP 8):



SETUP 8

1) Switch on the equipment and select the frequency of 98MHz.

2)Wait 10 minutes to have thermal stabilization of the equipment.

3)Unscrew the fixing screws of PLL's metal box and open the cover near to VCO metal box.

4)Check with frequency meter if the frequency setted is right. If the frequency read on frequency meter is different from frequency setted on the contraves , adjust variable capacitor C2 on PLL card.

5.9 ALARMS CARD CALIBRATION

After having replaced the alarms card, carry out the following procedure:

A) Internal AGC Adjustment

1)Connect a 50 Ohm, 300 W dummy load to the RF output.

2)Adjust output power at minimum turning PWR ADJ trimmer (9 Fig.1a or 5 Fig.1B) completely anticlockwise and then switch on the equipment.

3)Turn trimmer R2, placed on Alarms card, completely clockwise.

4)Increase output power until maximum through PWR ADJ (9 Fig.1A or 5 Fig.1B) trimmer (clockwise).

5)Adjust variable capacitor C2 on Directional Coupler to read, through a voltmeter between Directional Coupler's REF contact and GND (see as reference Directional Coupler Layout), minimum voltage value.

6)Adjust R2 to obtain a reading of 150W on external wattmeter.

7)Select with Meter Selector (11 Fig.1A or 8 Fig.1B) the FWD position.

8)Adjust trimmer R8 on METER card to read 150W on TEX150's analog meter.

B) Internal VSWR Adjustment

1)Connect a 50 Ohm, 300 W dummy load to the RF output.

2)Adjust output power at minimum turning PWR ADJ trimmer (9 Fig.1A or 5 Fig.1B) completely anticlockwise and then switch on the equipment.

3)Turn trimmer R7, placed on Alarms card, completely clockwise.

4)Disconnect external dummy load, increase output power until 150W turning PWR ADJ trimmer (9 Fig.1 or 5 Fig.2) clockwise. O u t p u t power must increase slowly because the protection is working.(If this doesn't happen, suspend all operation e contact the seller)

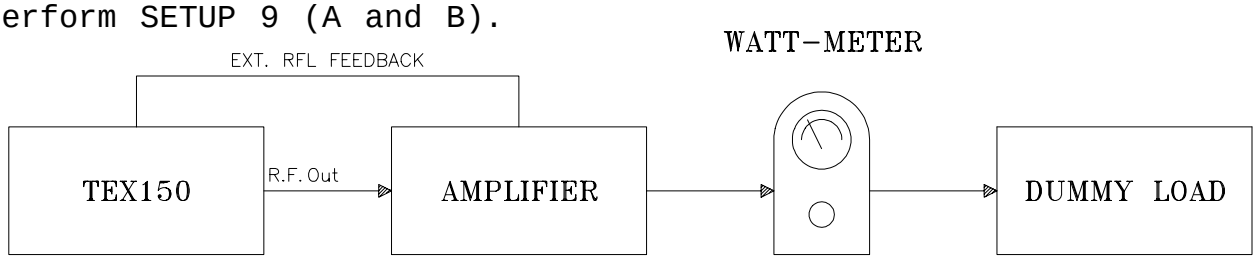
5)Adjust R7 to obtain a reading of 10W on external wattmeter.

6)Select with Meter Selector (11 Fig.1A or 8 Fig.1B) the REF position.

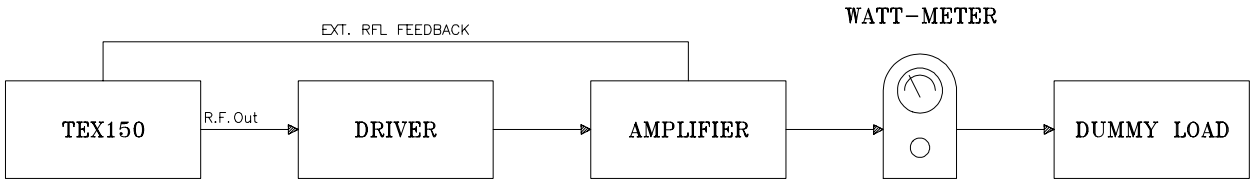
7)Adjust trimmer R7 on METER card to read 10W on TEX150's analog meter.

C) External AGC Adjustment

1)Perform SETUP 9 (A and B).



SETUP 9A



SETUP 9B

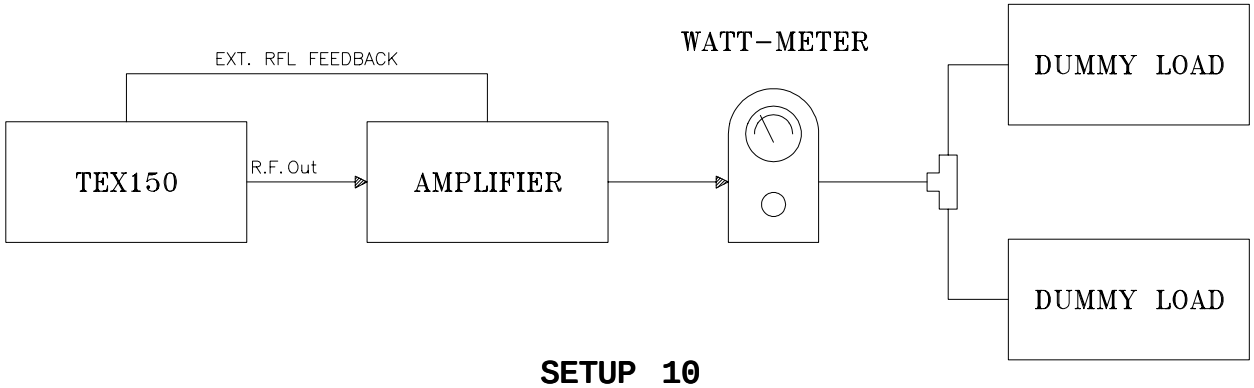
2)Adjust output power at minimum turning PWR ADJ trimmer (9 Fig.1 or 5 fig.2) completely anticlockwise and then switch on the equipment.

3)This adjustment it's necessary when TEX150 is connected as exciter or driver for a power amplifier. Therefore, it's necessary to have on last amplifier of the system an output voltage proportional with antenna output forward power and connect this signal to REMOTE1 (3 Fig.2). Increase TEX150's output power with PWR ADJ (9 Fig.1) to have the necessary output power to drive the next stage of the system (e.g. for a 1KW amplifier, read 1050W on external wattmeter).

4)Turn trimmer R16, until to have maximum output power of the power amplifier on external wattmeter (e.g. 1000W). In these conditions is possible to control output power into the range of 50W presetted,protecting the equimpment against voltage variations).

D) External VSWR Adjustment

1)Perform SETUP 10.



SETUP 10

2)Adjust output power at minimum turning PWR ADJ trimmer (9 Fig.1A or 5 fig.1B) completely anticlockwise and then switch on the equipment.

3)This adjustment it's necessary when TEX150 is connected as exciter or driver for a power amplifier. Therefore, it's necessary to have on last amplifier of the system an output voltage proportional with antenna output reflected power and connect this signal to REMOTE2 (6 Fig.2).

4)Turn trimmer R12, until to have an output power of the power amplifier on external wattmeter (e.g. 900W, -10%).

In these conditions is possible to control output power into the range of ±10% presetted, protecting the equimpment against VSWR variations).

E) Temperature Alarm Adjustment

1)Perform SETUP 11.

2)Adjust output power at minimum turning PWR ADJ trimmer (9 Fig.1A or 5 fig.1B) completely anticlockwise and then switch on the equipment.

3)Increase output power until 150W turning PWR ADJ trimmer (9 Fig.1A or 5 Fig.1B) clockwise.

4)Turn trimmer R23, until to have on pin 3 of U4 a voltage included between 265 and 275 mV. In these conditions temperature protection starts at 70°C. Adjust R23 until output power begins to decrease.

5)Then, adjust R25 until SWR/TEMP led indicator (8 Fig.1A or 4 Fig.1B) starts to blink.