5.0 Alignment If alignment is necessary, perform only the applicable steps below.

5.1 Observe the Exciter Current Meter, with no crystal installed, the unit should draw 125-200mA in the transmit mode.

Check operation of the audio processing stages by connecting an oscilloscope probe to the wiper of the deviation control. With an input at E201 from an external audio generator, the waveform should be a clean sine-wave, turning into square wave as the input audio level is increased. Adjustment of the deviation control should produce up to 7 or 8 volts of peak to peak audio at this point. When proper operation of these stages has been confirmed, set the deviation control at its mid-point and check for the modulated signal on a nearby receiver or deviation meter.

Install the crystal in its socket and key the transmitter. The indicated exciter current consumption should be noticeably higher, (about 1.2 Amp. @ 6W out, and about 1.6-2.2 Amp. @ 10W out for the 220MHz board.) A VHF RF power meter connected to the antenna connector should now indicate some RF output. Tune all trimmer capacitors for maximum RF output. C277 and C278 in the input circuit of the 30W power amp. stage are adjusted for maximum drive to the device (indicated by final collector current), while C282 is adjusted for maximum power output consistent with good efficiency, (minimum collector current. Normally, CW adjustment). When tuning this stage, observe that tuning the output trimmers in one direction, (normally CCW), will cause a sharp rise in collector current with only a small change in output power. This indicates a decline in stage efficiency and should be avoided. When operating properly, the stage should draw 2.7 to 3.5 amps (at 13.8V) for 30W output, and, in no case should the stage collector current be allowed to exceed 3.5 amps. Always tune the amplifier for maximum output efficiency and minimum white noise. Don't hesitate to loose a watt or two of output if a large current savings or white noise reduction can be obtained. The reduced current will result in increased long term reliability!

Tuning the system duplexer while the repeater transmitter is activated can cause very high VSWR conditions to be presented to the final amplifier stage. Always observe final collector current (on the front panel meter) when tuning the duplexer, and keep transmissions short when VSWR conditions are high.

REPLACING TRANSMIT CRYSTAL: If the crystal is replaced and it cannot be zeroed on frequency, change the value of C269 on the terminals near the crystal. If the TX frequency is too high, increase the value of C269. If it is too low, decrease the value of C269. (Typical range: 50 to 400pF.)

5.2 SETTING TRANSMITTER DEVIATION: SCR1000 Repeater
Set front panel RPT. AUDIO pot at full CW. Apply a strong signal to the receiver input (100 µV min.) modulated ±5KHz with a 1KHz tone. Set the DEVIATION Adj. pot (R212) for the desired max. deviation. (Typically 6 or 5KHz MAX.) Then set the RPT. AUDIO pot at the 12 o'clock position. Set the generator dev. for ± 4KHz, and set the A.F. Input Level pot (R218) for 4KHz transmitter deviation.