Midland Radio 71-3200A/B VHF Base Tech II

7.0 ALIGNMENT PROCEDURES

7.1 RECEIVER UNIT

1. Pre-selector and Post-selector Filters

   Both the pre-selector and post-selector filters have been pre-tuned at the factory, so no alignment is required.

2. FVR001/FVR002 Alignment

   FVR001 adjusts the squelch tight level

   FVR002 is used to set the voltage at TP001 to 2.5 Volts DC

3. VCO Alignment

   The VCO is pre-aligned at the factory to cover the full A or B sub-band. However, if you need to re-adjust the VCO following a repair, set the VCO control voltage at TBD to 10.5 Volts DC by adjusting the coil winding spacing of L303 at the high end of the sub band.

7.2 TRANSMITTER UNIT

1) FVR201 Alignment

   This potentiometer adjusts the transmit modulation level. Carefully align this potentiometer to obtain as flat of deviation response as possible from the lowest to the highest frequency supported by the transmitter.

2) FVR202 Alignment

   This potentiometer determines low frequency (below 300Hz) deviation.

   When either or all of POCSAG, CTCSS and DCS are used, it is necessary to adjust this pot to provide enough deviations at low modulation frequencies.

3) FVR203 Alignment

   This potentiometer adjusts the maximum transmit deviation.

4) FVR204 Alignment

   This potentiometer sets the transmitter maximum output power level.

5) VCO Alignment

The VCO is pre-aligned at the factory to cover the full A or B sub-band. However, if you need to re-adjust the VCO following a repair, set the VCO control voltage at TBD to 10.5 Volts DC by adjusting the coil winding spacing of L303 at the high end of the sub band.

7.3 POWER AMPLIFIER UNIT

1) FVR501 Alignment

This potentiometer is used to adjust the minimum reverse power detection point when the transmit antenna port is terminated with 50 ohm load.

2) FVR502 Alignment

This potentiometer is used to set the threshold point for reverse power detection.

3) FVR503 Alignment

This potentiometer is used to set the threshold for transmit low power alarm detection.

4) FVR504 Alignment

This potentiometer is used to set the maximum transmit power level of the Power Amplifier Unit. Do not exceed 120 Watts or the radio's FCC type acceptance, whichever is lower.

7.4 LOGIC UNIT

1) VR401 Alignment

This is the digital pulse code rotary switch on the Front Panel Unit used to set the volume.

2) VR402 Alignment

This is the digital pulse code rotary switch on the Front Panel used to set the squelch level.

3) FVR401 Alignment

This potentiometer, located on the Front Panel Unit and accessible from the front of the radio assembly, is used to fine-adjust the Hi-Power Level of the transmitter.

4) FVR402 Alignment

This potentiometer, located on the Front Panel Unit and accessible from the front of the

radio assembly, is used to fine-adjust the Lo-Power Level of the transmitter.

7.5 DESCRIPTION OF CIRCUITS TO STABILIZE OUTPUT FREQUENCY

The transmitter uses a TCVXO (Temperature Compensated Voltage Controlled Crystal Oscillator) to generate 12.00MHz reference frequency for the transmitter PLL and VCO circuit. The accuracy of the TCVXO is less than +/- 0.00015% over the range of –30 degree C to +60 degree C.

7.6 DESCRIPTION OF CIRCUIT TO SUPPRESS SPURIOUS EMMISSIONS AND LIMIT MODULATIONS

A multiple pole Low Pass Filter is used after the final power amplifier stage within the Power Amplifier Unit. It is designed to sharply attenuate spurious and harmonics frequencies above the highest frequency in the sub-band of the radio.

Modulation limiting is performed by Tx audio processor AK2344 located on the Logic Unit. Internal limiting/compression amplifier provides excellent limiting with minimum distortion. In addition to modulation limiting, this device contains all circuitry to perform pre-emphasis, band pass shaping and CTCSS encoder.