



# RANGER

## AR-3300

HF Mobile All-Mode Amateur Transceiver

### AR-3300 ALIGNMENT PROCEDURE

#### SYNTHESIZER

##### VCO

1. Set the radio to 29.9000MHz FM mode
2. Connect DVM to TP-1 and adjust T13 for 3.8 VDC.
3. Set the radio to 28.0000MHz. (Clarifier at mid-point)
4. Connect oscilloscope to TP-2.
  - a. Adjust VR3 for 17.305MHz in FM mode.
  - b. Adjust VR1 for 17.3075MHz in USB mode.
  - c. Adjust VR2 for 17.3025MHz in LSB mode.
5. Adjust T14 for output frequency of 28.0000MHz.
6. Connect frequency counter to TP-3 (high impedance probe).
  - a. Adjust T16 for 10.6925MHz in USB receive mode.
  - b. Adjust T17 for 10.6975MHz in LSB receive mode.
  - c. Adjust T15 for 10.6943MHz in CW receive mode.

#### RECEIVER

##### IF (10.695MHz)

1. Set radio to AM mode. Apply a 10.695MHz (AM modulated at 60%) signal from signal generator through a loop antenna to the area of Q2. (Output of signal generator should be about 12db Sinad)
2. Adjust T4, T5, T8, T9, and T10 for maximum AF output. (NOTE: any excessive signal generator output will activate AGC and cause a false alignment.)
3. Set the radio to CW mode, Signal generator to 0% modulation. Adjust T6 and T7 for maximum audio output.

##### NOISE BLANKER

1. Set radio as in IF alignment. Adjust T400 and T401 for maximum audio output.

##### FM QUADRATURE

1. Set the radio to FM mode. Apply a 10.695MHz (FM deviation at 1KHz) signal from signal generator through a loop antenna to the area of Q2. (Output of signal generator should be about 12db Sinad).
2. Adjust T18 for minimum Sinad.

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## HF Mobile All-Mode Amateur Transceiver

### ALIGNMENT PROCEDURE

~~RECEIVER~~ TRANSMITTER

#### FM MODE

1. Set radio to 28.0000MHz FM mode.
2. Adjust T19, T20, T21 and T22 for maximum RF output power.
3. Balance RF output between lowest and highest frequency with L6, L7 and L9.
4. Apply 1,000Hz tone to microphone and adjust VR4 for a maximum deviation of 1.5KHz.

#### SSB MODE

1. Set the radio to 28.0000MHz USB mode.
2. Set "MIKE GAIN" to minimum and adjust VR9 for minimum RF output.
3. Set "MIKE GAIN" to maximum and apply 1,000Hz tone to microphone. Adjust VR15 for maximum RF power output then back off until power drops slightly (about 2 watts).

#### AM MODE

1. Set radio to 28.0000MHz AM mode.
2. Adjust VR16 for 7 watts output power.
3. Apply 1,000Hz tone to microphone. Adjust VR17 for 95% modulation.

#### RF OUTPUT METER

1. Set radio to 28.0000MHz FM mode.
2. Adjust VR11 so that two LED bars are lit with 7 watts output power.

~~TRANSMITTER~~ Receiver

#### HIGH FREQUENCY

1. Set the radio to 28.0000MHz on AM mode.
2. Apply a 28.0000MHz (AM modulated at 60%) signal to antenna terminal.
3. Adjust T1, T2, and T3 for maximum AF output. (Output of signal generator should be about 12db Sinad).

#### IF NOISE

1. Set the radio to LSB mode and disconnect any input to antenna terminal.
2. Adjust R39 for an AF output of 0.2 VRMS with "AF GAIN" at maximum.

#### S METER

1. Set the radio to 28.0000MHz on FM mode.
2. Apply a 28.0000MHz signal to antenna terminal at 50db.
3. Adjust VR7 so that four LED bars are lit.
4. Set the radio to USB mode.
5. Adjust VR8 so that four LED bars are lit.