

MODEL 585 ALIGNMENT

(I) PLL ALIGNMENT - REQUIRES 100 MHZ SCOPE

A. REFERENCE OSCILLATOR BOARD (81336) PG.6-32

- (1) PLUG IN 100 MHZ SCOPE TO CONNECTOR (27) (SCOPE 50 OHM TERM.)
- (2) PEAK L6-L7-L8-L6-L7-L8, UNPLUG SCOPE.
- (3) PLUG 500 MHZ FREQUENCY COUNTER INTO CONNECTOR (27).
- (4) ADJUST C1 FOR 84.00000 MHZ \pm 5 HZ.
- (5) CHECK CONNECTORS (85), (86), & (88) FOR 2.1000 MHZ.

B. MINOR LOOP BOARD (81337) PG.6-40

- (1) SET RECEIVER ON 1.0000 MHZ USB.
- (2) TUNE TO .9999 MHZ USB.
- (3) HOOK 100 MHZ SCOPE X10 SCOPE PROBE TO PIN 7 OF U1. THIS POINT IS EASILY MEASURED AT EITHER END OF THE JUMPER TO THE RIGHT OF U1.
- (4) CHECK LOCK PULSE ON SCOPE .1MS @ .2V/DIV. MAKE SURE PULSE IS STABLE. TUNE BACK AND FORTH FROM .9999 TO 1.0000 MHZ.
- (5) CHECK VOLTAGE AT POINT (TP) ON .9999 MHZ. THE VOLTAGE SHOULD BE 7.5 TO 8.0 VOLTS (TP) NEAR Q2.
- (6) CHECK VOLTAGE AT POINT (TP) ON 1.0000 MHZ. THE VOLTAGE SHOULD BE 2.0 TO 3.0 VOLTS.

C. REFERENCE OSCILLATOR BOARD (81336) PG.6-32

- (1) HOOK SCOPE (TERMINATED TO 50 OHM) (X10) TO CONNECTOR (89)
- (2) PEAK COILS L10-L11-L12 WITH RECEIVER ON 1.0000 MHZ USB
- (3) TUNE BACK AND FORTH FROM 1.0000MHZ TO .9999 MHZ. THE PEAK VOLTAGE SHOULD NOT CHANGE ON THE DISPLAY. IF THE VOLTAGE CHANGES BETWEEN 1.0000 MHZ & .9999 MHZ, THE COILS L11-L12-L13 ON THE MINOR LOOP NEED TO BE RE-TUNED SLIGHTLY. TUNE L11 FIRST UNTIL THERE IS NO DIFFERENCE BETWEEN 1.0000 MHZ & .9999 MHZ. THE FREQUENCY AT CONNECTOR (89) SHOULD BE 44.70000 WHEN THE RECIEVER IS AT 1.0000 MHZ USB.

D. MAJOR LOOP BOARD (81338) PG.6-36

- (1) HOOK SCOPE PROBE (TERMINATED TO 50 OHMS) (X10) TO COLLECTOR OF Q19. SET SCOPE FOR MAX SENSITIVITY. UNHOOK CABLE #90 ON MAJOR LOOP. ADJUST WHITE TRIM POT ON U3 FOR MINIMUM PATTERN ON SCOPE DISPLAY. UNHOOK PROBE. HOOK UP #90.
- (2) SET RECIEVER ON 30.0000 MHZ USB. HOOK SCOPE PROBE (X10) ON PIN #3 CONNECTOR (82) (SCOPE SET ON .1 MS @ .2V/DIV.) CHECK LOCK PULSE FOR STABILITY AND VOLTAGE ON TP (NEAR Q3 & Q1) SHOULD BE 7.5 - 8.0 V DC.
- (3) SET RECEIVER ON 22.0000 MHZ USB. CHECK LOCK PULSE ON SCOPE FOR STABILITY. CHECK VOLTAGE ON TP FOR 2.0 - 3.0 VDC
- (4) TUNE TO 21.9999 MHZ USB. CHECK LOCK PULSE ON SCOPE FOR STABILITY. CHECK VOLTAGE ON TP FOR 7.5 TO 8.0 VDC.
- (5) SET RECEIVER ON 14.0000 MHZ USB. CHECK LOCK PULSE ON SCOPE FOR STABILITY. CHECK VOLTAGE ON TP FOR 2.0 TO 3.0 VDC.
- (6) TUNE TO 13.9999 USB. CHECK LOCK PULSE ON SCOPE FOR STABILITY. CHECK VOLTAGE ON TP FOR 7.5 TO 8.0 VDC.
- (7) SET RECEIVER ON 7.0000 MHZ USB. CHECK LOCK PULSE ON SCOPE FOR

- STABILITY. CHECK VOLTAGE ON TP FOR 2.0 TO 3.0 VDC.
- (8) TUNE TO 6.9999 MHZ USB. CHECK LOCK PULSE ON SCOPE FOR STABILITY. CHECK VOLTAGE ON TP FOR 2.0 TO 3.0 VDC.
 - (9) SET RECEIVER ON .1000 MHZ USB. CHECK LOCK PULSE ON SCOPE FOR STABILITY. CHECK VOLTAGE ON TP FOR 2.0 TO 3.0 VDC.

(II) TX AUDIO/BFO BOARD (81339) PG.6-66

A. BFO

- (1) HOOK FREQUENCY COUNTER TO CONNECTOR (46)
- (2) SET RECEIVER TO 14.100 MHZ LSB MODE.
- (3) UNPLUG #24 ON LOW LEVEL DRIVER BOARD (81340).
- (4) ADJUST CAPACITOR C4 FOR 9.003000 MHZ +/- 5HZ.
- (5) SET RECEIVER TO RTTY MODE (SHIFT CW).
- (6) ACTIVATE RTTY XMIT WITH RTTY KEY JACK (MAKE SURE THE TX OUT-TX EN JUMPER IS IN.)
- (7) ADJUST CAPACITOR C6 FOR 9.000875 MHZ.
- (8) PLACE A VOLTAGE (5-12 VDC) ON THE MARK/SPACE JACK.
- (9) ADJUST CAPACITOR C10 FOR 9.000705 MHZ.
- (10) UNPLUG MARK/SPACE & RTTY KEY CABLES.
- (11) SET RECEIVER TO USB MODE.
- (12) ADJUST CAPACITOR C7 FOR 9.000000 MHZ.
- (13) SET RECEIVER TO TUNE MODE.
- (14) ADJUST CAPACITOR C9 FOR 9.000700 MHZ.
- (15) RECONNECT #24 ON LOW LEVEL DRIVER.

B. CARRIER PEAK & NULL (50 OHM TERM)

- (1) CONNECT SCOPE PROBE TO CONNECTOR #37.
- (2) PLACE RIG IN TUNE MODE.
- (3) PEAK COIL T1.
- (4) PLACE RIG IN USB MODE AND KEY WITH NO MIC GAIN.
- (5) ADJUST POTS R40 & R41 FOR MINIMUM CARRIER PATTERN ON SCOPE. THIS PROCEDURE CAN BE DONE WITH THE SCOPE PROBE ON THE ANTENNA CONNECTOR AND ALL CABLES (#46 & #37) CONNECTED.

(III) SET PBT CENTER FREQUENCY

A. PBT BOARD (81333) PG.6-22

- (1) HOOK COUNTER PROBE (X10) ON L3' (T3 SIDE).
- (2) CENTER FRONT PANEL PBT CONTROL.
- (3) CHECK FREQUENCY OF 15.30000 MHZ OSC.
- (4) SWING OSCILLATOR WITH FRONT PANEL CONTROL. SHOULD SWING AT LEAST +/- 1.6 KHZ.
- (5) IF SWING IS LESS THAN 1.6 KHZ, SWING OSCILLATOR TO HIGH END AND ADJUST C22 FOR A FREQUENCY GREATER THAN 15.3016.
- (6) RE-CENTER FRONT PBT CONTROL AND CHECK CENTER FREQUENCY. IF IT IS OFF, ADJUST R18 TO 15.30000 MHZ.

+1.70
-2.20

(IV) TRANSMITTER TUNE UP.

A. SWR NULL (LOW PASS FILTER 81341). PG.6-6

- (1) PLACE UNIT ON LEFT SIDE.
- (2) SET UNIT TO 14.1000 MHZ.
- (3) PUT UNIT INTO TUNE MODE AT FULL OUTPUT INTO DUMMY LOAD.
- (4) WITH DIGITAL VOLTMETER, CHECK VOLTAGE ON PIN 2 OF PLUG 12 (REF

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VOLTAGE) ON 2ND MIXER (81332) AND ADJUST C4 (SWR NULL) ON LOW PASS FILTER (81341) FOR MINIMUM VOLTAGE (0-.3 VOLTS).

(5) TAKE UNIT OUT OF TUNE.

B. ALC SET (2ND MIXER 81332) PG. 6-18

- (1) TURN R57 ON 2ND MIXER (81332) FULL CCW.
- (2) TURN R47 ON 2ND MIXER (81332) FULL CCW.
- (3) MAKE SURE FRONT PANEL RF PWR CONTROL IS AT MAXIMUM.
- (4) PUT UNIT INTO TUNE MODE, THROUGH WATT METER INTO DUMMY LOAD.
- (5) ADJUST R47 CW UNTIL WATT METER (EXTERNAL) READS 100 WATTS.
- (6) MAKE SURE METER SWITCH IS IN FWD POSITION.
- (7) ADJUST R59 UNTIL METER READS 100 WATTS.
- (8) TAKE UNIT OUT OF TUNE.

C. I LIMIT SET (2ND MIXER 81332) PG. 6-18

- (1) TURN R57 ON 2ND MIXER (81332) FULL CW.
- (2) UNPLUG CABLE 12 FROM 2ND MIXER.
- (3) PUT UNIT INTO TUNE MODE, INTO DUMMY LOAD.
- (4) ADJUST R57 UNTIL EXTERNAL AMMETER READS 20.5 AMPS.
- (5) PLACE 585 METER SWITCH IN THE IC POSITION.
- (6) ADJUST R58 UNTIL 585 METER READS 20 AMPS.
- (7) TAKE UNIT OUT OF TUNE.
- (8) PLUG UP CABLE #12.

D. SWR SET (2ND MIXER 81332) PG. 6-18

- (1) HOOK UP 2:1 LOAD INTO ANTENNA JACK.
- (2) PUT UNIT INTO TUNE MODE.
- (3) PLACE 585 METER SWITCH IN THE REF POSITION.
- (4) ADJUST R60 UNTIL 585 METER READS 2:1.
- (5) TAKE OUT OF TUNE.

E. POWER OUT CHECK

- (1) TEST POWER OUT ON ALL BANDS (1.8 - 28.0 MHZ). SHOULD BE BETWEEN 90 - 105 WATTS IN TUNE POSITION.
- (2) TEST POWER OUT ON ALL BANDS WITH 2-TONE AND CHECK FOR CLEAN WAVE FORM ON SCOPE. AVERAGE POWER OUT SHOULD BE BETWEEN 45 - 55 WATTS.

F. CW WAVE FORM CHECK.

- (1) HOOK UP KEYS (WITH ADJUSTABLE SPEED) TO KEY JACK ON REAR PANEL.
- (2) PLACE UNIT IN CW MODE.
- (3) HOOK SCOPE PROBE (X10) TO THE ANTENNA OUT CONNECTOR, (CAPACITIVELY COUPLED).
- (4) SET SCOPE TO MEASURE IN 1 MSEC. TIME.
- (5) ACTIVATE KEYS IN CONTINUOUS DIT MODE AND ADJUST SPEED FOR A LOCKED SIGNAL ON SCOPE.
- (6) CHECK RISE/FALL TIME FOR 2.5 - 3 MSEC.
- (7) IF ANOTHER RISE/FALL TIME IS DESIRED, ADJUST R29 ON THE CONTROL BOARD (81335) PG. 6-44

G. ALC ACTION CHECK

- (1) PLACE 585 INTO EITHER USB OR LSB MODE (PTT).
- (2) HOOK UP MICROPHONE TO 585 AND ADJUST MIC GAIN FOR ALC. CHECK ALC ACTION ON ALL BANDS. MIC GAIN WILL PROBABLY VARY FOR EACH BAND.

H. VOX CHECK

- (1) PLACE 585 INTO EITHER USB OR LSB MODE (VOX).

- (2) ADJUST VOX GAIN ON REAR PANEL UNTIL TRANSMITTER IS ACTIVATED.
- (3) HOLD MIC 6 INCHES (15CM) AND ADJUST ANTIVOX UNTIL TRANSMITTER DROPS OUT.
- (4) WHILE TALKING INTO MIC, ADJUST VOX DELAY FOR DESIRED DROP OUT.

I. PROCESSOR CHECK.

- (1) WITH PROCESSOR OFF, ADJUST MIC GAIN FOR ALC.
- (2) WITH PROCESSOR ON, ADJUST PROCESSOR GAIN ON FRONT PANEL FOR PROCESSOR METER TO READ IN THE MIDDLE OF THE BLACK AREA.
- (3) ADJUST R81 ON TX AUDIO/BFO (81339) PG.6-66 FOR A LITTLE MORE ALC ACTION.

(V) RECEIVER TUNE UP.

A. CHECK RECEIVER SENSITIVITY.

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| (1) FREQUENCIES: | 1 MHZ (AM) | 3.5UV FOR 10 DB S/N |
| | 2.3 MHZ (SSB) | .15UV FOR 10 DB S/N |
| | 3.4 MHZ | " |
| | 5.7 MHZ | " |
| | 7.0 MHZ | " |
| | 14.0 MHZ | " |
| | 18.4 MHZ | " |
| | 28.0 MHZ | " |

- (2) IF UNIT HAS FM OPTION, PLACE UNIT IN FM MODE ON 28.1000 MHZ. CHECK SENSITIVITY FOR 10VC 12DB SINAD.
- (3) IF RECEIVER SEEMS WEAK, START WITH THE IF COILS L5 & L7 IF/AF (81334) PG.6-26 AND PEAK FOR MAX SIGNAL. THEN WORK BACK TO PBT COILS L20, L19, & L18 AND PEAK FOR MAX. SIGNAL. (PBT BOARD 81333) PG.6-22.
- (4) IF RECEIVER STILL SEEMS WEAK, CONTINUE TO THE 2ND MIXER (81332) PG.6-18 AND PEAK COILS T5, L2, L1. THEN PEAK COILS ON THE 1ST MIXER (81331) PG.6-14, L10, L9, L8, L11, & T3.

B. "S" METER CHECK

- (1) TUNE RECEIVER TO 14.100 MHZ USB
- (2) BEFORE CHECKING "S" METER, LET UNIT WARM UP FOR AT LEAST 30 MINUTES.
- (3) IF METER DOES NOT READ ZERO, ADJUST R55 ON IF/AF BOARD (81334) FOR ZERO. CHECK ZERO BY TURNING ABC OFF & ON AND SEE IF METER POINTER MOVES. IF IT DOES, ADJUST R55 AGAIN & RE-CHECK.
- (4) SET SIGNAL GENERATOR FOR A 50 UV CARRIER AND ADJUST R57 ON IF/AF (81334) FOR AN S9 READING.

C. NOISE BLANKER CHECK.

- (1) INJECT IGNITION TYPE NOISE (PULSE) INTO ANTENNA CONNECTOR.
- (2) ACTIVATE NOISE BLANKER AND ADJUST NOISE BLANKER WIDTH UNTIL STATIC WEAKENS.
- (3) ADJUST L6 & L7 ON LOW LEVEL DRIVER BOARD (81340) FOR MAXIMUM STATIC QUIETING.