

# KENWOOD

SB-974

## SERVICE BULLETIN AMATEUR RADIO

SUBJECT

TS-440S PLL UNLOCK DUE TO PLL #1

DATE

08/08/90

The TS-440S Control unit supplies band information to four circuits in the transceiver. The circuits are the receiver front end Band Pass Filter (BPF), the antenna tuner (AT), the transmitter Low Pass Filter (LPF), and the VCO circuits on the RF board that are part of PLL #1.

There are ten receiver front end BPFs that are diode switched into operation. If one of the diodes (D4-D23) becomes shorted or leaky, the band information is felt at two BPFs at one time. The voltage going through the bad diode will loop back to the VCO circuit, antenna tuner circuit, and LPF circuit.

The unwanted voltage will then create one or more of the following symptoms:

- A. PLL unlock (the transceiver only displays decimals).
- B. No antenna tuner operation.
- C. Low receive sensitivity.
- D. Low or no transmit power output.
- E. Distorted transmit audio.
- F. RF feedback.

The most common symptom is PLL unlock. To test the diodes, remove the large shield on the RF board to expose the BPF circuits. Reset the transceiver by holding in the A=B button as the power is turned on. Even if the display only shows decimals, only the BPF for 14MHz should be turned on. Using a DC voltmeter, measure the voltage at coils L11, L15, L21, L28, L34, L40, L46, L52, L58, and L62. Only coil L52 should measure 8VDC. The other coils should read 0VDC. If one reads 0.5 - 8VDC, replace the two diodes in that BPF circuit.

### COIL/DIODE/FREQUENCY RANGE RELATIONSHIP:

|     |     |     |             |     |     |     |              |
|-----|-----|-----|-------------|-----|-----|-----|--------------|
| L11 | D4  | D5  | 0-0.5MHZ    | L15 | D6  | D7  | 0.5-1.6MHZ   |
| L21 | D8  | D9  | 1.6-2.5MHZ  | L28 | D10 | D11 | 2.5-4MHZ     |
| L34 | D12 | D13 | 4-6MHZ      | L40 | D14 | D15 | 6-7.5MHZ     |
| L46 | D16 | D17 | 7.5-10.5MHZ | L52 | D18 | D19 | 10.5-14.5MHZ |
| L58 | D20 | D21 | 14.5-22MHZ  | L62 | D22 | D23 | 22-30MHZ     |

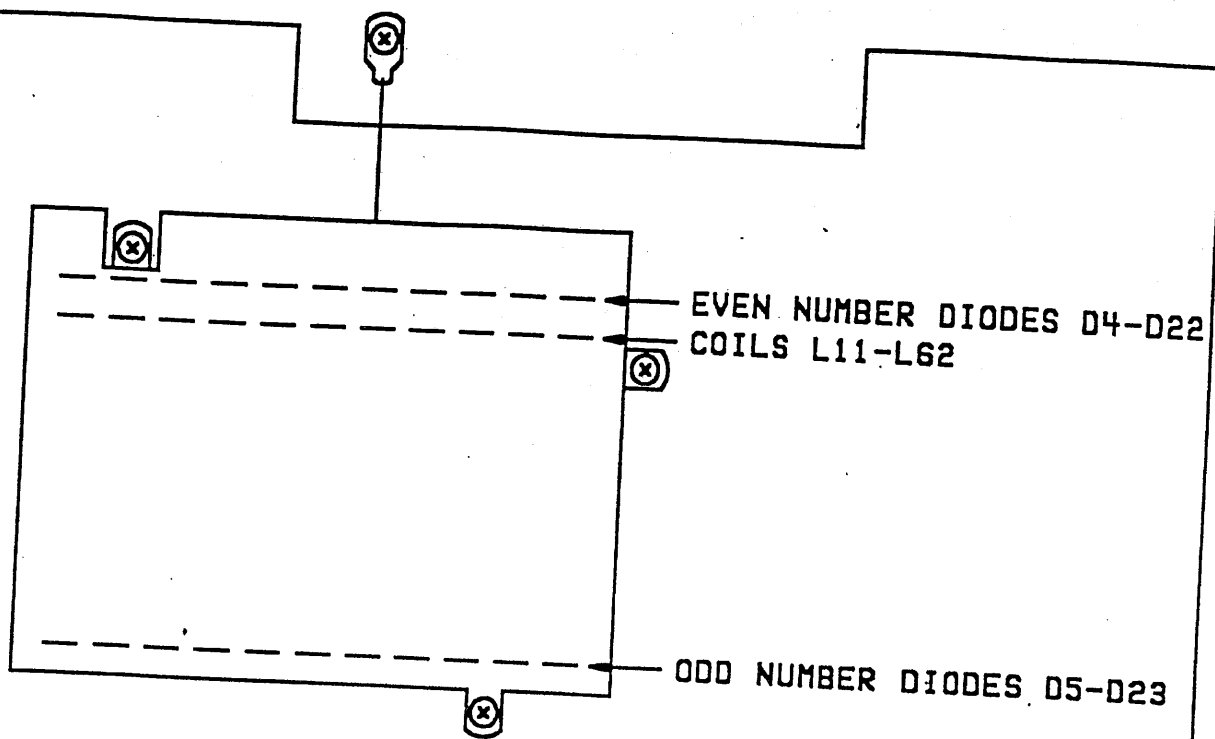
### REPLACEMENT DIODE PART NUMBER:

1S2588 OR 1SS91S: D4, 6, 8, 10, 12, 14, 16, 18, 20, 22  
BA282 D5, 7, 9, 11, 13, 15, 17, 19, 21, 23

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REMOVE THE SHIELD PLATE (4 SCREWS)  
TO ACCESS THE BPF COMPONENTS.

RF BOARD  
LOCATED ON BOTTOM OF TRANSCEIVER