NOTES ON VERSIONS:
1) Early units have the HV switch on the RF deck in the position where the QSK/SSB switch is on later units, and there is no QSK switch. With those older units, the SSB keying loop MUST be opened in QSK mode (if it isn't, you'll lock in XMIT with your first dit).
2) Schematics for an early version do not show a 2-speed fan.
3) Later units have insulation between plates of the output (LOAD) capacitors.
4) Older units use 12V meter lamps in series, with one lampholder insulated by a fiber washer. Newer units use 28V meter lamps in parallel. Both are driven from the 28V bus.

NOTES ON METER CALIBRATION
1) Grid Current: Unplug cable 83 from Bias Board, drive the cable with 0.56V, set R1 on Meter Switch board for 120mA.
2) Plate Current: Unplug cable 84 from Bias Board, drive the cable with 1.5V, set R11 on Meter Switch board for 1A.
3) Bias board is under tubes, accessible from below. Meter Switch board is behind meters, access pots from above.

One fixed filter per band, selected by bandswitch.

TO CATHODES OF FINAL TUBES

UNDER TUBES, BEHIND BANDSWITCH ACCESS FROM BELOW

81223 INPUT LPF BOARD

R12, D3 bias Q4 off when key up and no RF drive
xxxx

1N751A 5.1V

D3

100K

R12 100K

Q4, Q5 prevent K4 from pulling if RF drive present

K4 is Big Vacuum Relay
On Small Board near Output Connector

+28V 82

Orig 470 ohms

K3 Replacement US Relays BIA05Y400DIC 406 ohms

81

+28V

Red

+28V

K4 26.5V 335 ohms Jennings RJ-1A

Wh/Red

PART OF VACUUM RELAY BOARD

Holds Q4 off if RF drive before Key line

10K D10 1K

D7 .01 .01 D12

Q4 .01 Q5

0.1

1.5K D6 .01

R3 27 .01

RF drive to final via Input LPF

2

RF drive from exciter via K4

1

K3A

Holds K3, K4 on til no drive

10K

.01 D9 D8 .01

4.7K

10

1mH

24 pF

D5 100K 1K

Q6 3.3K

Q3 Q2 MJE520

.01 .01 D4 .01

Drives output relay (K4) and XCVR keying relay (K3)

83

+28V

ALC

10K

ALC Pot

87

12K

.01

87

D11

100 pF

470

87

ALC

.01

150K

.01

ALC

Q3–Q7: MPS6514
D4–D13: 1N4148

Keying turns Q3 off, Q6 on, then Q1 (bias), Q2 (keys XCVR, T/R relay)

Grid current

83

MJE520

1N5344 B

D2 8.2V

Q1

3.3K

.01

Q7

470

0.1

Ig shunt 4.7

R15 1.5 5W

84

84

85

85

PART OF METER SWITCH BOARD

PLATE CURRENT

76

1K

76

Bias

CATHODES

+28V

1N4007

D1

.01

0.1

B–

PIN 5 PWR CABLE

6.8K

NOTE: 470 ohm resistor in series with base of Q7 is not on printed schematic, but is on all boards I've seen.

MPS6514: NPN SI VCEO 25V, hFE 150–300 @ 2mA
MJE520: NPN SI 30V, hFE 25 min @ 1A

Q1 off sets bias = –28V
Q1 on sets bias = –8.5V
UNDER TUBE SOCKETS

80

81219 INPUT BIAS BOARD

TenTec Titan 425 Power Amp Drawn by K9YC 12Feb08

97

K5 bypasses before 3 min delay complete and IF OPR switch OFF

+28V

1.5K

XCVR keying relay

K6A 100 K5B 93

D3 K6

OPERATE RELAY .01

KEY XCVR

PTT

PTT

KEY

QSK

93 K5A

OPERATE RELAY .01

10K 100K 15K

D4 100K

Q4 Q3

74 +28V

74

820 .01

D1 9V

1.5K

ODR SET 1K

72

.01 .01

10K

100

33

2.2K

U1A LM358N U1B

1K

10K

1.5K

.1

10K Ig CAL

.01

TO METER SWITCH

VERTICAL BEHIND FRONT PANEL
PART OF 81221 METER SWITCH BOARD

NOTE: Meter is switched between I_G, HV, P_{FWD}, and P_{REFL}, so loading of meter is not always present.

+28V

470

K5 D1

Q2 92 GND

10K

1K

92 STBY LED

Filament warmup relay Enables keying

92 OPR LED

Low to operate

K4 SENSE

Prevents keying before vacuum relay pulled in

390 D2

180 ohm to ground if vacuum relay pulled in

.01 .47

91

81

62 +28V FROM P/S pin 7

63 TO 81218 Relay Control Board

+28V

6.8K 3.9M 1.5K

33

Q6 off at startup, fired by Q5 after 3 minutes

Low to operate

92 OPR SW

92 WAIT LED

10K

2N6027 Q5

Q6 2N5060

1K 1K

22K

Q1

4.7K

3 minute timer for filament warmup

Q1–Q4: MPS6514
D1–D4: 1N4148

MOUNTED VERTICALLY NEXT TO VACUUM RELAY BOARD AND RF OUTPUT CONNECTOR

81218 RELAY CONTROL BOARD

67 70

OVRDRV LED

.01

STBY LED

67

67 OPR 1K

LED

STBY OPR

68

.01

67

.01

+28V

67 WAIT 1K

LED

VERTICAL BEHIND FRONT PANEL
ON 81220 DISPLAY BOARD