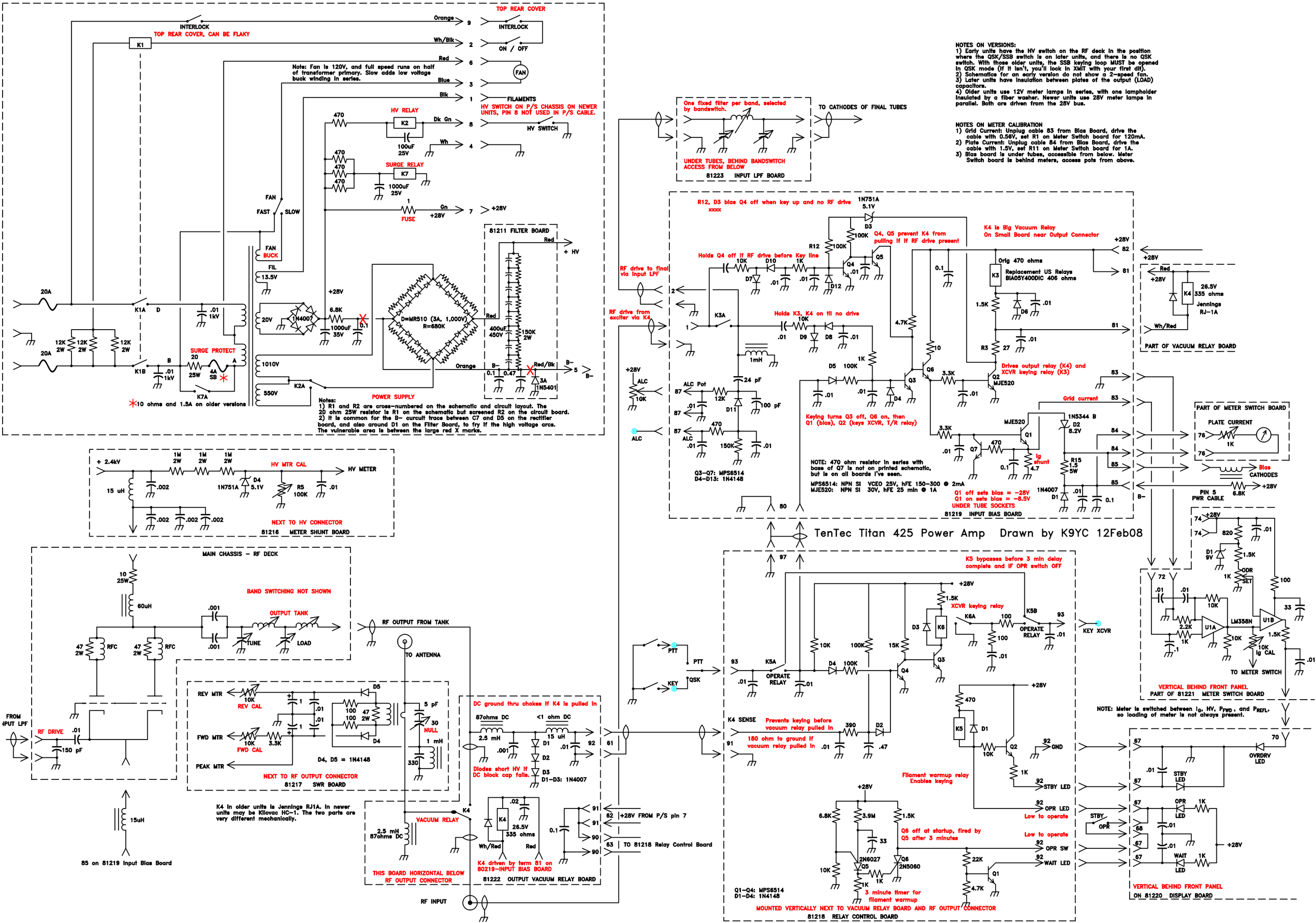
TenTec Titan 425 Power Amp Drawn by K9YC 12Feb08
TOP REAR COVER
INTERLOCK
TOP REAR COVER, CAN BE FLAKY
ON / OFF
FAN
FILAMENTS
HV SWITCH ON P/S CHASSIS ON NEWER UNITS, PIN 8 NOT USED IN P/S CABLE.
HV SWITCH
Note: Fan is 120V, and full speed runs on half of transformer primary. Slow adds low voltage buck winding in series.
HV RELAY
SURGE RELAY
FUSE
+28V
81211 FILTER BOARD
+ HV
POWER SUPPLY
SURGE PROTECT
10 ohms and 1.5A on older versions
Notes:
1) R1 and R2 are cross-numbered on the schematic and circuit layout. The 20 ohm 25W resistor is R1 on the schematic but screened R2 on the circuit board.
2) It is common for the B- curcuit trace between C7 and D5 on the rectifier board, and also around D1 on the Filter Board, to fry if the high voltage arcs. The vulnerable area is between the large red X marks.
One fixed filter per band, selected by bandswitch.
TO CATHODES OF FINAL TUBES
UNDER TUBES, BEHIND BANDSWITCH ACCESS FROM BELOW
81223 INPUT LPF BOARD
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.
R12, D3 bias Q4 off when key up and no RF drive
Q4, Q5 prevent K4 from pulling if if RF drive present
K4 is Big Vacuum Relay On Small Board near Output Connector
Holds Q4 off if RF drive before Key line
Holds K3, K4 on til no drive
Drives output relay (K4) and XCVR keying relay (K3)
Keying turns Q3 off, Q6 on, then Q1 (bias), Q2 (keys XCVR, T/R relay)
Q3-Q7: MPS6514
D4-D13: 1N4148
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
81219 INPUT BIAS BOARD
Orig 470 ohms
Replacement US Relays BIA05Y400DIC 406 ohms
PART OF VACUUM RELAY BOARD
PART OF METER SWITCH BOARD
PLATE CURRENT
Bias CATHODES
PIN 5 PWR CABLE
HV MTR CAL
HV METER
NEXT TO HV CONNECTOR
81216 METER SHUNT BOARD
MAIN CHASSIS - RF DECK
BAND SWITCHING NOT SHOWN
OUTPUT TANK
TUNE
LOAD
RF OUTPUT FROM TANK
TO ANTENNA
FROM INPUT LPF
RF DRIVE
REV MTR
REV CAL
FWD MTR
FWD CAL
PEAK MTR
D4, D5 = 1N4148
NEXT TO RF OUTPUT CONNECTOR
81217 SWR BOARD
K4 in older units is Jennings RJ1A. In newer units may be Kilovac HC-1. The two parts are very different mechanically.
85 on 81219 Input Bias Board
DC ground thru chokes if K4 is pulled in
87ohms DC
<1 ohm DC
Diodes short HV if DC block cap fails.
D1-D3: 1N4007
VACUUM RELAY
K4 driven by term 81 on 80219-INPUT BIAS BOARD
+28V FROM P/S pin 7
TO 81218 Relay Control Board
THIS BOARD HORIZONTAL BELOW RF OUTPUT CONNECTOR
81222 OUTPUT VACUUM RELAY BOARD
RF INPUT
PTT
QSK
KEY
KEY XCVR
K5 bypasses before 3 min delay complete and IF OPR switch OFF
XCVR keying relay
OPERATE RELAY
K4 SENSE
Prevents keying before vacuum relay pulled in
180 ohm to ground if vacuum relay pulled in
Filament warmup relay Enables keying
Q6 off at startup, fired by Q5 after 3 minutes
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
NOTE: Meter is switched between Ig, HV, PFWD, and PREFL, so loading of meter is not always present.
VERTICAL BEHIND FRONT PANEL
PART OF 81221 METER SWITCH BOARD
TO METER SWITCH
Low to operate
VERTICAL BEHIND FRONT PANEL
ON 81220 DISPLAY BOARD