

E24 error, or kVp imbalance, or KVFB errors

The suspect is noise on the kVp feedback signal.

Routing of the feedback cable from the high voltage transformer to the System Control pcb) so that it is as far from high current sources and the internal harness of the generator may be helpful.

A. Please define

- 1.the error occurs intermittently, and particularly if it occurs at higher power levels,
OR 2. if the error occurs on every exposure, regardless of power level or focal spot.

B. Scope the anode and cathode kVp feedback at the System Control board.

Channel 1 at the top of R71 for PkV (anode), and
Channel 2 at the top of R70 for NkV (cathode), each referenced to TP 2 pcb ground.

The signals should be of equal amplitude and opposite polarity. If one signal is extremely noisy or missing altogether, the high voltage tank or continuity of kVp feedback cable is suspect.

C1. Feedback circuit resistance.

Likewise you ought to confirm and record electrical resistance – kOhms – Ω from these same points through the divider circuit of the H.V. Transformer. Expected for a fully assembled system: (note: includes resistance of divider and board circuit).

TP2 to top of R71 for PkV (anode) = approx. 205 k Ω

TP2 to top of R70 for NkV (cathode) = approx. 270 k Ω

C2. If your values differ, disconnect H9 from the Control Board, and measure the transformer divider and board circuit separately. Board measures approx same as above.

Normally measuring the cable to the HV Transformer should show:

H9-1(NkV) to H9-3(gnd) = 9.6 k Ω

H9-2 (PkV) to H9-3(gnd) = 9.5 k Ω

H9-1 to H9-2 should measure sum = 19.2 k Ω

D. If you confirm signals to be noisy, adding two 0.0022 mfd (2200pf) capacitors as below may provide a definitive solution.

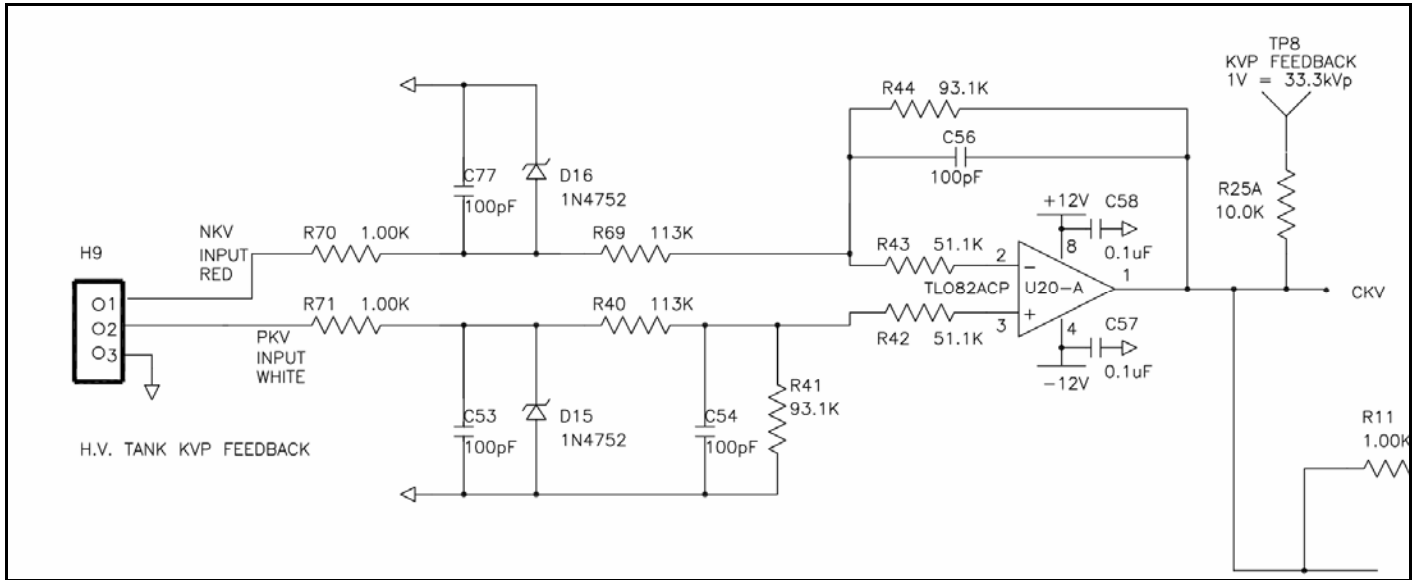
Solder the first cap across the top of R44A and the bottom of R46

Solder second cap across the top of R44B and the bottom of R46

20 kHz Generator Test Points.						kV Req Table	
SYSTEM CONTROLLER TEST POINTS						TP14 @ Expose	
TP	Pg	Description	Comments	Volts	Ohms toGnd	40 kV	
1	5	+ 5vdc		4.93	890 ohms	50 kV	
2	5	GND				70 kV	
3	5	+12vdc		11.71	3.5 k	90 kV	
4		kVpF	kV Frequency: 22.43 kHz	1.5d/0.8AC	5.33 M	110 kV	
5		AEC			49.8 k	125 kV	
6	5	--12 vdc			2.9 k	kV Fdbk Table	
7		Fil Current FB	Fil I, Fil Feedback: 1v= 1.04A	1.6 vdc Stby	626 ohms	TP8 @ Expose	
8		kVfeedback		1v = 33.3kV	60.8 k	40 kV	
9		mAfeedback	1 v = 100 mA		57.2 k	50 kV	
10		FIL F	Filament Frequency: 20.06 kHz	1.5d/0.8AC	5.32 M	70 kV	
11		REF		5.00 vdc	9.95 k	90 kV	
12		RXD1		0.7vdc	open	110 kV	
13		TXD1		0.7vdc	open	125 kV	
14		kVp R	Req kV reference, 1v = 33.3kV	see TableKV	198 k		
15		IPM Fault			10.8 k	Fil I Table	
16		FIL R	FIL Request: 1v = 1.25 A	See TableMA	4.6 M	TP7 @ Boost	
17		RCP			256 k	300 mA	2.88 vdc
18		RCM			188 k	200 mA	2.80 vdc
19		GND				100 mA	2.62 vdc
20		GND				50 mA	2.59 vdc
21		Vtest	Derived from Vref thru P6 pot.		4.3 k	Fil Req Table	
SYSTEM CONTROLLER POT's / ADJUSTMENT						TP16 @ Boost	
P1		kV PWM DT	GND<Ohms> U1-4	NOT Installed	OBSO	300 mA	3.40 vdc
P2		kV PWM Freq	GND<Ohms> U1-6			200 mA	3.35 vdc
P3		FIL PWM DT	GND<Ohms> U2-4	NOT Installed	OBSO	100 mA	3.28 vdc
P4		FIL PWM Freq	GND<Ohms> U2-6			50 mA	3.10 vdc
P5		Spare ACH	Derived from Vref.	NOT Installed	OBSO	mA Fdbk Table	
P6		V-test	Derived from Vref.			TP9 @ expose	
Feedback Circuit Verification			Fully Assembled System	H.V. Tank	Sys Controllr	300 mA	
H9-3	H9-4	Both Common	0.5 Ω			200 mA	
H9-3	H9-1	NkV	9.5k to 10k Ω			150 mA	
H9-3	H9-2	PkV	9.5k to 10k Ω			100 mA	
H9-3	H9-5	NmA				75 mA	
H9-3	H9-6	PmA				50 mA	



kV Feedback Error (E24) Troubleshooting



	Tank/cable	Sys Cntrl Circuit	Sys Cntrl Circuit	Sys Cntrl Circuit
H9 Connected	H9 Disconnected	H9 Disconnected	H9 Disconnected	H9 Disconnected
H9-3 to H9-2 (PkV)	H9-3 to H9-2 (PkV)	H9-3 to H9-2 (PkV)	Bottm R69 to Gnd	Top R69 Gnd
9.5 k Ω	10 k Ω	270 k Ω	270 k Ω	160 k Ω
H9-3 to H9-1 (NkV)	H9-3 to H9-1 (NkV)	H9-3 to H9-1 (NkV)	BottmR40 to Gnd	Top R40 to Gnd
9.5 k Ω	10 k Ω	205 k Ω	205 k Ω	93 k Ω