WELLS-GARDNER K4900 FLOWCHART

THE GEEK PUB®

START HERE

BLANK SCREEN?

NO → IS THE PICTURE TOO SMALL?

YES → F501

BLOWN → LIKELY A SHORTED HORIZONTAL OUTPUT TRANSISTOR (HOT) AT Q352.

CHECK HOT WITH DIODE TEST ON MULTIMETER.

ALTERNATIVELY USE OHMS/CONTINUITY. CONNECT BLACK METER LEAD TO CHASSIS AND RED LEAD TO CASE OF HOT. OPEN OR HIGH RESISTANCE IS GOOD, SHORTED IS BAD.

→ CHECK FLYBACK TRANSFORMER

CHECK CAREFULLY FOR CRACKS IN THE CASING AND/OR BURN MARKS.

→ LIKELY SHORTED DIODES OR DEGAUSSING COIL

RECTIFIER DIODES	
D501	D502
D503	D504

RARE, BUT DIODES CAN BE DAMAGED IF MONITOR WAS OPERATED WITHOUT AN ISOLATION TRANSFORMER.

DEGAUSS COIL
(UNPLUG)
DEGAUSS COIL MAY RUB ON FRAME AND CAUSE SHORT

OK → CHECK THE REGULATED POWER SUPPLY AT RESISTOR R503 (150Ω 15 WATT LARGE WHITE CERAMIC)

150Ω 15W

THE TERMINAL CLOSEST TO THE FUSE SHOULD MEASURE +130 VDC.

- LOW → CHECK THE VOLTAGE AT THE OPPOSITE END OF R503. IS VOLTAGE APROXIMATELY +145 VDC?
  - LOW → ALTHOUGH RARE, CHECK FILTER CAPACITOR C505.
  - 0 VDC → CHECK R601 (MAY BE OPEN). CHECK FOR PCB CRACKS AND COLD SOLDER JOINTS IN THE AREA.
- +145 VDC → LIKELY A VOLTAGE REGULATOR FAILURE. TEST VR FOR SHORTS. TEST C507 AS IT IS A COMMON FAILURE POINT. TEST IC 501.
- +160 VDC → EXAMINE THE JUMPER WIRE J33 AND NEARYBY OTHERS ON THE 130V TRACE (PCB EDGE, UNDER CRT).
  - OK → YOU LIKELY HAVE A HORIZONTAL DEFLECTION FAILURE. CHECK FOR PCB CRACKS AND COLD SOLDER JOINTS, PAY CLOSE ATTENTION TO THE AREA AROUND THE FLYBACK.
    - OK → MEASURE THE VOLTAGE AT THE METAL CASE OF Q352.
      - 0 VDC → (back to EXAMINE THE JUMPER WIRE J33 AND NEARYBY OTHERS ON THE 130V TRACE (PCB EDGE, UNDER CRT).)
      - +160 VDC → CHECK TRANSISTOR Q351. TEST R636. CHECK IC301 (SUBSTITUTE FROM ANOTHER CHASSIS IF AVAILABLE). CHECK TRANSFORMER T351.

OK → TURN UP THE SCREEN CONTROL ON THE FLYBACK TRANSFORMER.

DO YOU SEE THE RASTER?

(JUST A WHITE SCREEN WITH DIAGONAL LINES RUNNING THROUGH IT)

- YES → CHECK TRANSISTORS Q201 AND Q202.
- NO → IS THE CRT NECK HEATER GLOWING?
  - NO → OPEN CRT HEATER CIRCUIT. CHECK R16 ON NECK PCB. CHECK PCBS FOR CRACKS AND COLD SOLDER JOINTS.

IS THE PICTURE TOO SMALL?

- NO → IS THE PICTURE PERFECTLY STABLE?
  - YES → TOO MUCH COLOR? MISSING A COLOR?
  - NO → IS THE PICTURE WAVING OR SHAKING (DOING A "HULA" DANCE)? SIDES OF THE SCREEN MAY BE MOVING IN AND OUT IN A WAVE PATTERN UP OR DOWN THE SCREEN.
    - YES → CHECK THE REGULATED POWER SUPPLY AT RESISTOR R503 (150Ω 15 WATT LARGE WHITE CERAMIC)
    - NO → IS THE PICTURE ROLLING FROM TOP TO BOTTON? (UNABLE TO LOCK *VERTICAL* HOLD)
      - YES → YOU HAVE A SYNC PROBLEM. MAKE SURE THAT THE COMPOSITE NEGATIVE SYNC FROM THE GAME PCB IS CONNECTED TO PIN 3 OF P201 ONLY. DO NOT JUMPER PINS 2 & 3 AS IS COMMONLY DONE. TEST TRANSISTOR Q301 AND CAPACITOR C315. TEST IC 301 (RARE).
      - NO → IS THE PICTURE SHIFTING LEFT TO RIGHT? (UNABLE TO LOCK *HORIZONTAL* HOLD)
        - YES → YOU HAVE A SYNC PROBLEM. MAKE SURE THAT THE COMPOSITE NEGATIVE SYNC FROM THE GAME PCB IS CONNECTED TO PIN 3 OF P201 ONLY. DO NOT JUMPER PINS 2 & 3 AS IS COMMONLY DONE. TEST TRANSISTOR Q301 AND CAPACITOR C315. TEST IC 301 (RARE).
- YES → IS THE PICTURE SHRUNKEN/COLLAPSED?
  - YES → YOU LIKELY HAVE A VERTICAL DEFLECTION PROBLEM.

VERTICAL OUTPUT TRANSISTORS	
Q301	Q303
RESISTOR	
R313 (MAY BE OPEN)	
SYNC PROCESSOR	
IC301 (RARE)	
CAPACITORS	
C306, C308, C311, C313	

TOO MUCH COLOR? MISSING A COLOR?

- NO → SCREEN DARK ON LEFT AND BRIGHT ON RIGHT? CHECK CAPICTOR C702.
  - NO → IS THE PICTURE DISTORTED/CURVED?
    - YES → ELECTROLYTIC CAPACITOR FAILURE. THE MOST COMMON MONITOR PROBLEM. IT IS RECOMMENDED TO REPLACE ALL ELECTROLYTIC CAPICITORS.
- YES → CHECK COLOR TRANSISTORS ON MAIN PCB AND NECK BOARD PCB.

COLOR TRANSISTORS	RED	GREEN	BLUE
MAIN PCB	Q203 Q206	Q204 Q207	Q205 Q208
NECK PCB	Q401	Q402	Q403