WELLS-GARDNER K4600 FLOWCHART

THE GEEK PUB®

START HERE

BLANK SCREEN?

- NO → 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 → IS THE PICTURE SHRUNKEN/COLLAPSED?
    - YES → YOU LIKELY HAVE A VERTICAL DEFLECTION PROBLEM.

VERTICAL OUTPUT TRANSISTORS	
TR305	TR306
IF OK, CHECK TR301-TR307	
CAPACITORS	
C310, C311, C633	

- YES → F601
  - 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 DIODE
X601
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 THE BLUE LEAD OF TR502.
    IT SHOULD MEASURE +127 VDC.
    - LOW → VOLTAGE REGULATOR ISSUE
      CHECK TR501 AND TR502.
      CHECK CAPACITORS C605 AND C608.
    - +160 VDC → YOU LIKELY HAVE A HORIZONTAL DEFLECTION FAILURE.
      IF YOU HAVE ANOTHER WORKING K4600 MONITOR, SWAP THE SYNC BOARDS. DOES THE MONITOR WORK?
      - YES → CHECK TR351-TR354.
        CHECK C356, C359, AND C3652.
        CHECK FOR CRACKS AND BAD SOLDER JOINTS.
      - NO → MEASURE THE VOLTAGE AT THE METAL CASE OF TR601.
        - 0 VDC → CHECK FOR BAD OR COLD SOLDER JOINTS ON MAIN PCB.
        - +160 VDC → CHECK TR351-TR354.
        CHECK C356, C359, AND C3652.
        CHECK FOR CRACKS AND BAD SOLDER JOINTS.
  - 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.
      CHECK ZD201, ZD202, AND VR201.
    - NO → IS THE CRT NECK HEATER GLOWING?
      - NO → OPEN CRT HEATER CIRCUIT.
        CHECK R422 ON NECK PCB. CHECK PCBS FOR CRACKS AND COLD SOLDER JOINTS ON J402.

- YES → 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 THE BLUE LEAD OF TR502.
  - 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 ONLY. DO NOT JUMPER PINS 2 & 3 AS IS COMMONLY DONE.
      TEST TRANSISTORS TR201-TR203, TR210, TR308 AND CAPACITOR C315.
    - 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 ONLY. DO NOT JUMPER PINS 2 & 3 AS IS COMMONLY DONE.
        TEST TRANSISTORS TR201-TR203, TR210, TR308 AND CAPACITOR C315.

- YES → TOO MUCH COLOR? MISSING A COLOR?
  - YES → CHECK COLOR TRANSISTORS ON CARD PCB AND NECK BOARD PCB.

COLOR TRANSISTORS			
	RED	GREEN	BLUE
CARD PCB	TR206 TR209	TR205 TR208	TR204 TR207
NECK PCB	TR401	TR402	TR403

  - NO → SCREEN DARK ON LEFT AND BRIGHT ON RIGHT?
    CHECK CAPICTOR C625.
    - NO → IS THE PICTURE DISTORTED/CURVED?
      - YES → ELECTROLYTIC CAPACITOR FAILURE.
        THE MOST COMMON MONITOR PROBLEM. IT IS RECOMMENDED TO REPLACE ALL ELECTROLYTIC CAPICITORS.