
ANU-2 Power Supply

Standby Power Supply.

Standby voltage is developed directly off the AC input to Bridge Rectifier D602. D602 produces 16V that is dropped across R604 to provide power for Power Relay RY601 and Relay Drive Q601/C. The 16V is also used by Standby 5V Regulator IC601 to produce the 5V that powers System Control IC101 and ROM IC102 on the A Board, and SIRCS Sensor IC51 on the H Board. ***No power is applied to the switching regulator at this time since D601 is inoperative.***

Main Power Supply.

At Power ON, System Control IC101/pin 7 goes HIGH and turns ON Relay Drive Q601. RY601 closes. With the relay closed, Bridge Rectifier D601 produces 150V at connector A-61/pin 1. This voltage is routed via connector G-61 and SRT T651/pins 4--7 to Switching Regulator IC651/pins 1 and 3 on the G Board. *The oscillator within this IC is activated* and it begins to induce pulses via L1 into SRT T651. Feedback to the oscillator is provided by the FB winding.

The pulses induced into T651 secondary windings are rectified to produce most of the voltages needed to operate the set. Variations in the oscillator's frequency will vary the output voltages of the SRT transformer.

Voltage Regulation

Voltage regulation is accomplished by monitoring the 135V supply and using its fluctuations to vary the oscillator's frequency in the following manner:

- Regulator IC653 holds Isolator IC652/pin 2 (Cathode) at 74.6V. IC652/pin 1 (Anode) is held positive with respect to the cathode via R674. Fluctuations on the 135V line are reflected across R674 at IC652/pin 1, thereby changing the current through the LED between pins 1 and 2. As this current changes, the current in the transistor between pins 3 and 4, and Q611 changes. This varies the voltage across R656 at Switching Regulator IC651/pin 8, thereby changing the oscillator's frequency.

An increase on the 135V line increases the oscillator's frequency and lowers the output voltage, while a drop on the 135V line lowers the frequency to increase the output voltage.

The oscillator frequency is approximately 64kHz with a black screen and approx 48kHz with a color bar pattern.

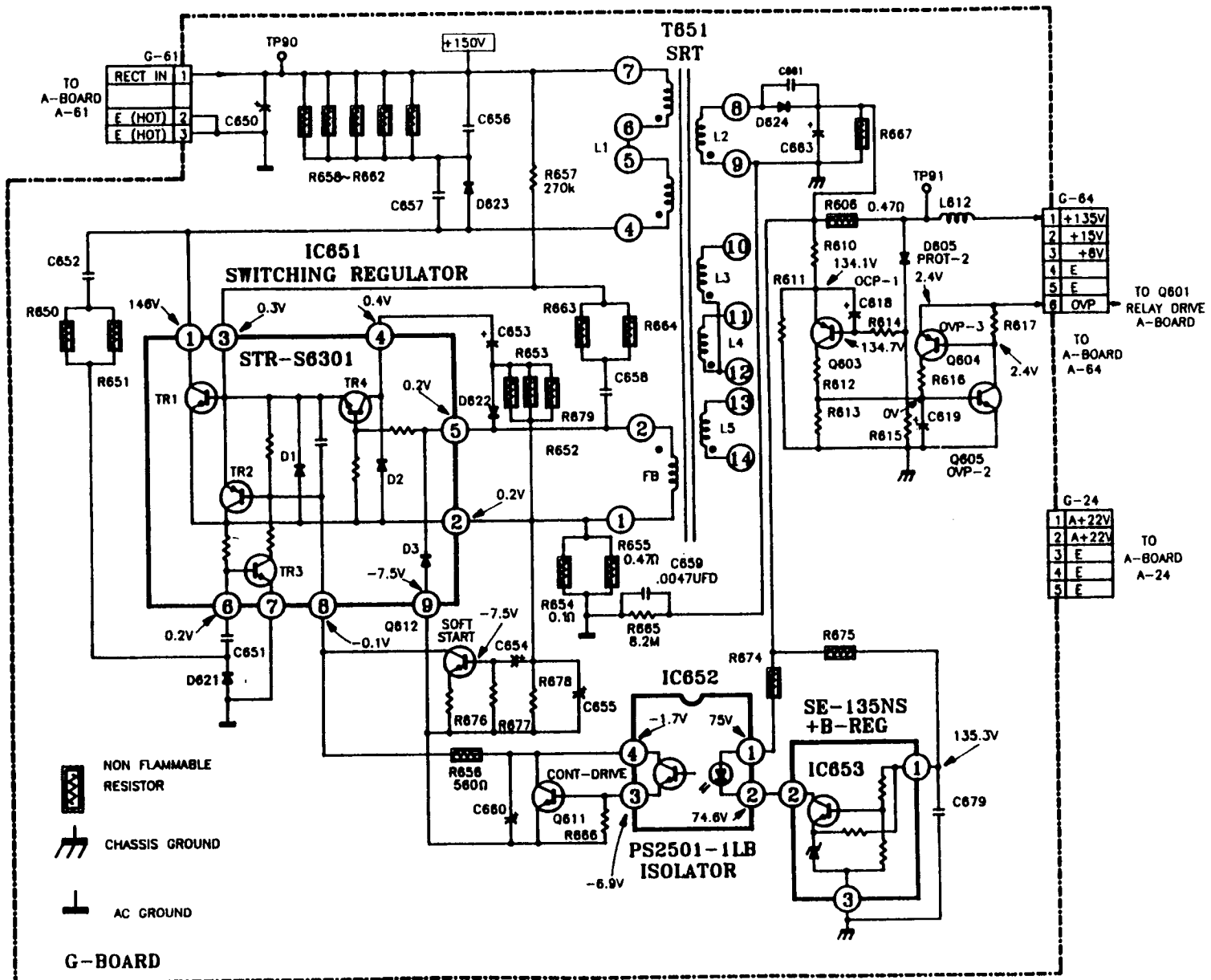
Protection

Overcurrent protection for the 135V line is provided by Q603, Q604 and Q605. An overload on the 135V line will increase the voltage drop across R606 and turn ON Q603. This will activate the latch circuit of Q604 and Q605 that will place a LOW on Relay Drive Transistor Q601/Base. (A Board). Q601 switches OFF, the Power Relay RY601 is disabled, and the set shuts down. The latch circuit will remain in this state until the set is switched OFF, and then ON.

Soft Start

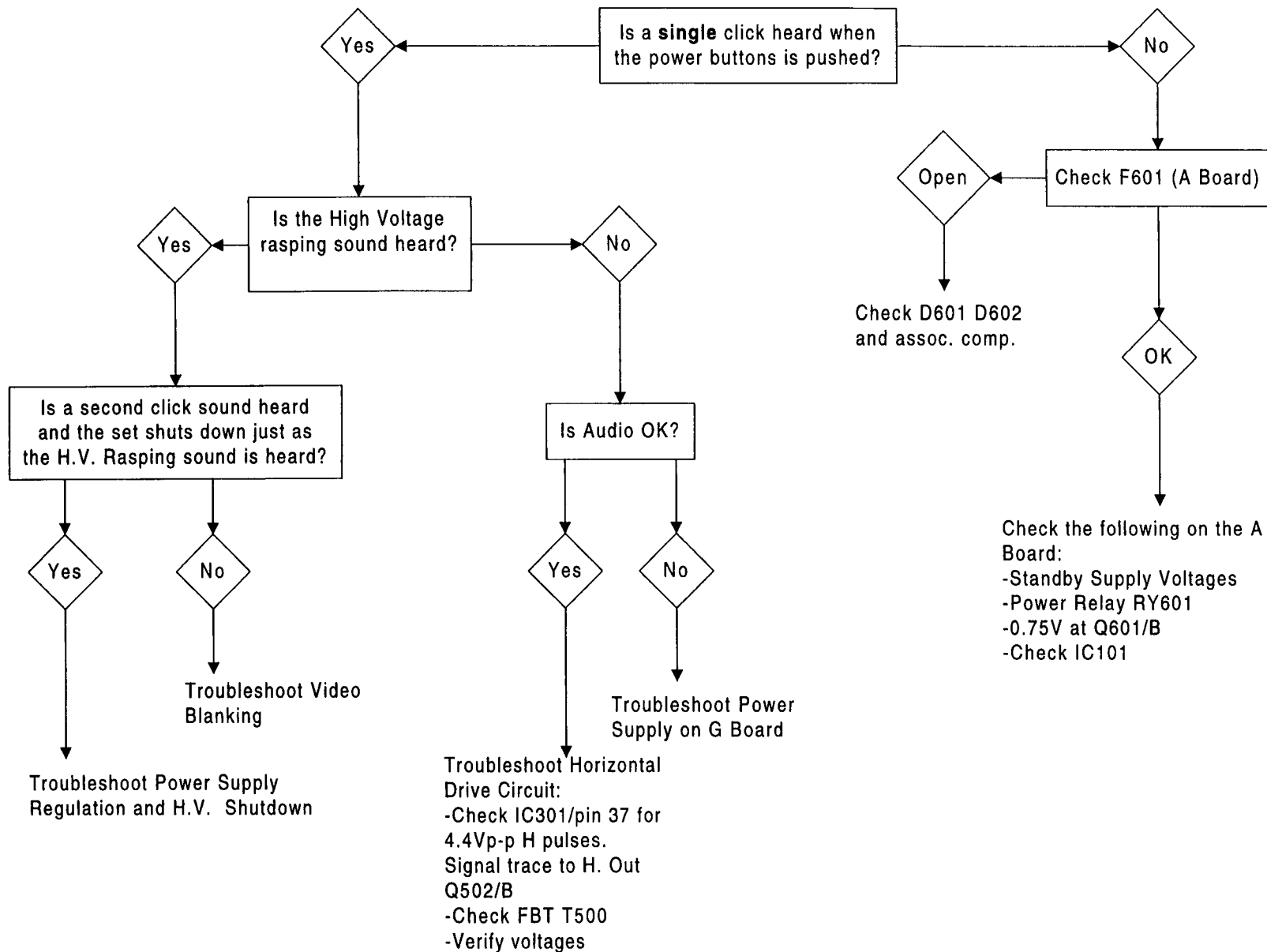
The Soft Start circuit is used to reduce initial turn ON stress placed on the circuits within Switching IC651. The stress results from the high current surges that occur as the filter capacitors charge up. Also, it prevents false triggering of the protection circuits.

When power is first applied to SRT T651, Q612 is turned ON via the FB winding at pins 1 and 2. How long it stays ON is determined by the exponential voltage of the RC components on its base. During Q612 ON time it bypasses the control drive voltage at IC651/pin 8, and gradually activates the switching regulator. In so doing the voltages produced by the power supply increase gradually also.



SWITCHING POWER SUPPLY

60
ANU-2 Chassis
 No Picture/No Power



ANU-2
TROUBLESHOOTING THE POWER
SUPPLY (G BOARD)

