

POWER SYSTEMS
SUPPLY CIRCUIT
TRANSISTOR 60~ SUPPLY
756A PBX
J86464J

CHANGES

B. CHANGES IN APPARATUS

B.1 In App. Fig 1 under "amplifiers" transistor Q1 has been changed to 6A (Mfr. Disc.) or 9A.

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 In App. Fig 1 under "oscillator" reference to the apparatus codes has been removed.

D.2 In App. Fig 1 under "network" reference to the apparatus codes has been removed.

All other headings under Changes, no change.

1. PURPOSE OF CIRCUIT

1.1 To provide 60~ current to drive a KS-15757 interrupter motor required in the 756A PBX.

2. WORKING LIMITS

2.1 105-120 volts ac.
45-52 volts dc.

3. FUNCTIONS

3.1 To provide 60~ current at the voltage required to drive the synchronous motor of the KS-15757 interrupter for use in the 756A PBX.

4. CONNECTING CIRCUITS

This circuit was originally designed to connect to the following circuit.

4.1 SD-81331-01 - Transistor Transfer & Alarm Circuit.

DESCRIPTION OF OPERATION

5. General

5.1 Oscillator

The 60 cps oscillator consists of the network in FS2 and capacitors C1 & C2, inductor L1, and potentiometer R1 shown in FS1. It is an L-C tuned Colpitts type oscillator employing a single pnp junction transistor connected in the common collector configuration. Feedback is taken

from the emitter through the ADJ 60~ (FS1) potentiometer to the junction of capacitors C1 & C2 (FS1) of the tuned network. The oscillator output is taken from the emitter through capacitor C2 (FS2).

5.2 Driver Amplifier

The driver amplifier consists of the network shown in FS3, transformer T1 in FS1, and AMP 1 shown in FS4, this amplifier is a conventional common emitter type using a 6A pnp junction power transistor. Resistor R1 (FS3) is a series voltage dropping resistor to drop the 52 volt battery down to about 12 volts for the oscillator and the driver amplifier. Capacitor C1 (FS3) is a power supply by-pass capacitor.

5.3 Output Stage

The output stage consists of capacitors C3 & C4, resistors R3 & R4, and transformer T2 shown in FS1 and AMP 2 & AMP 3 shown in FS4. This stage is a common emitter push-pull amplifier with the transistors operated as switches. That is, they are driven alternately into saturation and to cutoff by the 60 cps signal from the driver amplifier. Thus the output from this stage is a 60 cps square wave. Capacitors C3 & C4 (FS1), and their respective bleeder resistors R3 & R4 (FS1), comprise a voltage divider to make efficient use of the available 52 volt battery without exceeding the transistor voltage rating. One capacitor is connected in series with the emitter-collector circuit of each transistor. Thus since the applied voltage divides equally one half of this voltage is applied to each transistor. The high value of capacitance (1000 UF) sustains the dc voltage during the interval that the transistor is cutoff. Resistor R2 (FS1) is a series resistor used to drop 52 volts down to 40 volts so that no more than 20 volts dc is applied to each transistor. Tap number 8 on transformer T2 (FS1) supplies a 10 volt signal for the transfer and alarm circuit. The 60~ square wave output from this stage is used to drive the synchronous motor.

5.4 Adjustments

Two adjustments are provided in this circuit. These are the ADJ 60~ and the R2 potentiometers (FS1). With no battery applied to the circuit, set R2 so that there

is 40 ohms in the circuit. First connect the motor to the generator output and then apply 52 volts dc to the circuit. Turn the ADJ 60~ potentiometer completely counter-clockwise and then slowly turn it clockwise until an ac voltmeter connected across the output reaches a peak at about 100-110 volts ac. A KS-14510, 11 Volt-Ohm-Milliameter, or equivalent is satisfactory for the voltage and resistance measurements. With these adjustments there will be approximately 38 volts dc across the capacitor voltage divider (C3-C4). Then the resistance of R2 can be decreased until the voltage across C3-C4 is no more than 40 volts. The output voltage will increase to 105-120 volts which is the desired operating range with 52 volt dc applied. In case the dc voltage across C3-C4 is greater than 40 volts dc the resistance of R2 should be increased to drop this voltage. The adjustment of R2 must be made when the generator is first installed. It should not be necessary to change this adjustment.

It may be necessary to readjust the ADJ 60~ potentiometer when networks (printed wire boards) are changed.

5.5 The networks shown in FS2 and FS3 are mounted on 1-1/2 by 4 inch printed wire boards and so may easily be replaced in case of failure of the transistors or other small components. Both the printed wire boards and their respective connectors are keyed so that only the correct board can be inserted in each socket.

The amplifiers shown in FS4 are 6A pnp power transistors mounted on a heat sink. The entire assembly can be changed with only a screwdriver.

CAUTION: Disconnect the battery supply before removing or inserting any of the networks (printed wire boards) or amplifiers. All continuity test on the networks or on the circuit when the networks and amplifiers are in place should be made with an ohm-meter.

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