WIDE-RANGE FORMERS OF THREE-PHASE
VOLTAGE AND THEIR APPLICATION

THE SCHEME OF a three-phase voltage sine waveform generator, reconstructed in the range of frequencies 50-500Hz is given here.

Traditional three-phase voltage generators, as a rule, are capable to work only on one fixed frequency, which essentially narrows the area of their practical application.

A fairly simple three-phase voltage generator of a sine-form with smooth frequency adjustment can be created on the basis of a broadband RC generator of sine voltage (microcircuit DA1-DA3) developing output voltages with a phase displacement of 90°. At the connection to the generator of an electronic analogue of Scott's transformer (microcircuit DA4-DA5), a three-phase signal is formed on the output of the device. **Figure 1** shows a practical scheme of a three-phase voltage generator adjusted by frequency in the range of 50-500 Hz.

The working frequency of the generator is defined by the expression:

$$f = \frac{1}{2\pi RC}$$

where R = R7 + R8 = R9 + R10; C = C1 = C2.

The frequency of generation can be calculated from the expression:

$$f[Hz] = \frac{4825}{R[kOhm]}$$

The frequency of the generator can be smoothly changed within the limits of the decade by adjustment of a double potentiometer R7R9 and step-like by switching frequency-setting elements – the capacitors C1, C2. Capacitor C0 is intended to simplify the start-up of the generator. Using the switch SA1, it is possible to stimulate the E1 signal on the input of the device from the external generator, however fine tuning of the potentiometers R7R9 is necessary for reception of the needed phase displacements. ■
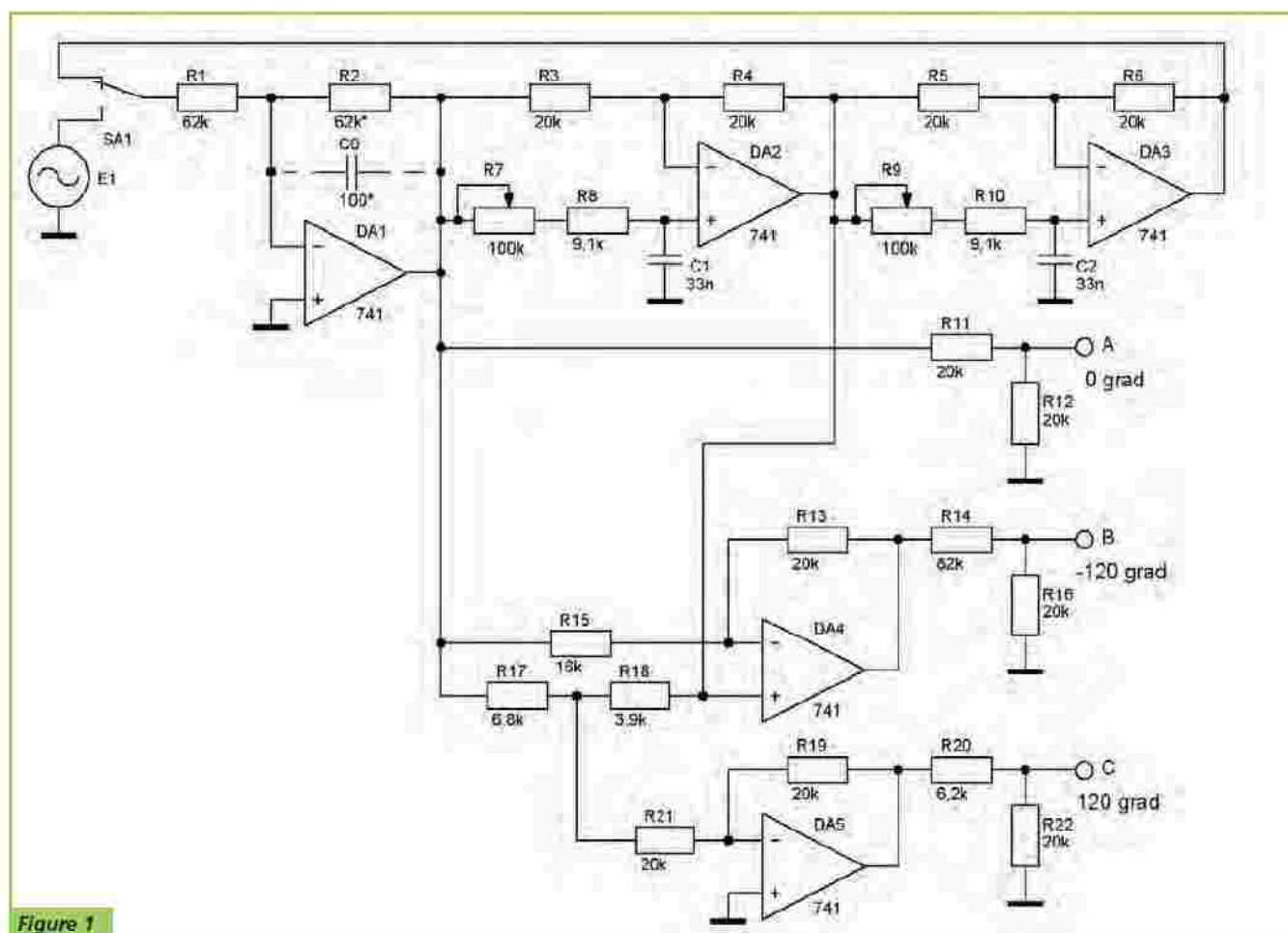
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Figure 1