

VARIABLE FREQUENCY POWER SUPPLIER PS1/27

General Description

The PS1/27 was designed especially for disk reproducer RP2/6. It comprises essentially an oscillator, a power amplifier and transformers, which provide an a.c. output variable in frequency from about 15 to 90 Hz and allowing the turntable speed to be varied from about 10 to 80 r.p.m. The unit has a large base tray for main components and a front panel with two operational controls.

The base tray is 16½ in wide by 23 in deep, and has two wooden runners on which it slides into a drawer space in the plinth under the RP2/6. The tray carries:

- (a) An ISEP frame containing the variable frequency oscillator OS3/5 and the power amplifier AM1/37.
- (b) A mains transformer T1.
- (c) An output transformer T2.

Both the oscillator and the amplifier slide into the frame from the rear. A large heat sink on the amplifier projects beyond the back edge of the tray.

The front panel is 19 in wide by 6 in high, and is attached to the base tray. It carries:

- (a) A four-pole switch having two positions, *Fixed* (up) and *Variable* (down), with corresponding neon indicators. When the switch is on *Fixed*, the RP2/6 motor is connected to the a.c. mains and the variable frequency power supplier is inoperative; when the switch is on *Variable*, the power supplier is energised and the motor connected to its output.
- (b) A speed control knob, which varies the oscillator frequency.

There are three fuses on the rear of the power amplifier (but facing toward the front of the power supplier). The two upper fuses are in the positive and negative d.c. supplies of the amplifier itself, while the lower fuse is in a d.c. supply from the amplifier to the oscillator. The rating of all three fuses is 4.0 amps; under no circumstances should fuses of a rating higher than 4 amps be used.

The PS1/27 is connected to the RP2/6 by a multicord lead of sufficient length to allow the power supplier to be completely removed from the drawer space under the reproducer. This lead has a 12-way Multicon plug at the RP2/6 end and a 12-way Multicon socket at the PS1/27 end. No other external connections are necessary.

References

Power amplifier AM1/37.
Variable frequency oscillator OS3/5.
Disk reproducer RP2/6*.

Circuit Description (Fig. 1)

With switch SA in the *Fixed* position as shown in Fig. 1, the motor of the reproducer is energised from the 50-Hz mains supply via SA1 and SA4. With the switch in the *Variable* position, the power amplifier, AM1/37, is energised by the mains transformer, T1. A d.c. feed of -36 volts to the oscillator, OS3/5, is provided by the local d.c. power supply in the amplifier.

The frequency of the oscillator is controlled by the two-gang variable resistor, R1/R2, the speed control, which is included in the Wien-bridge circuit of the oscillator. The oscillator output, which at 50 Hz is about 0.4 volt r.m.s., is fed to the power amplifier and thence via the output transformer, T2, to the Garrard 401 motor.

The output voltage at the secondary of T2 varies from about 100 volts at 15 Hz to 360 volts at 90 Hz, and this variation, together with the effect of capacitor C1, results in an almost constant current of about 95 mA in the motor. (C1 has been fitted solely to reduce the volt-ampere requirements of the amplifier at the higher frequencies.)

The inductors L1 to L3, suppressors SUP1 to SUP3 and capacitor C2 are fitted to reduce switching clicks.

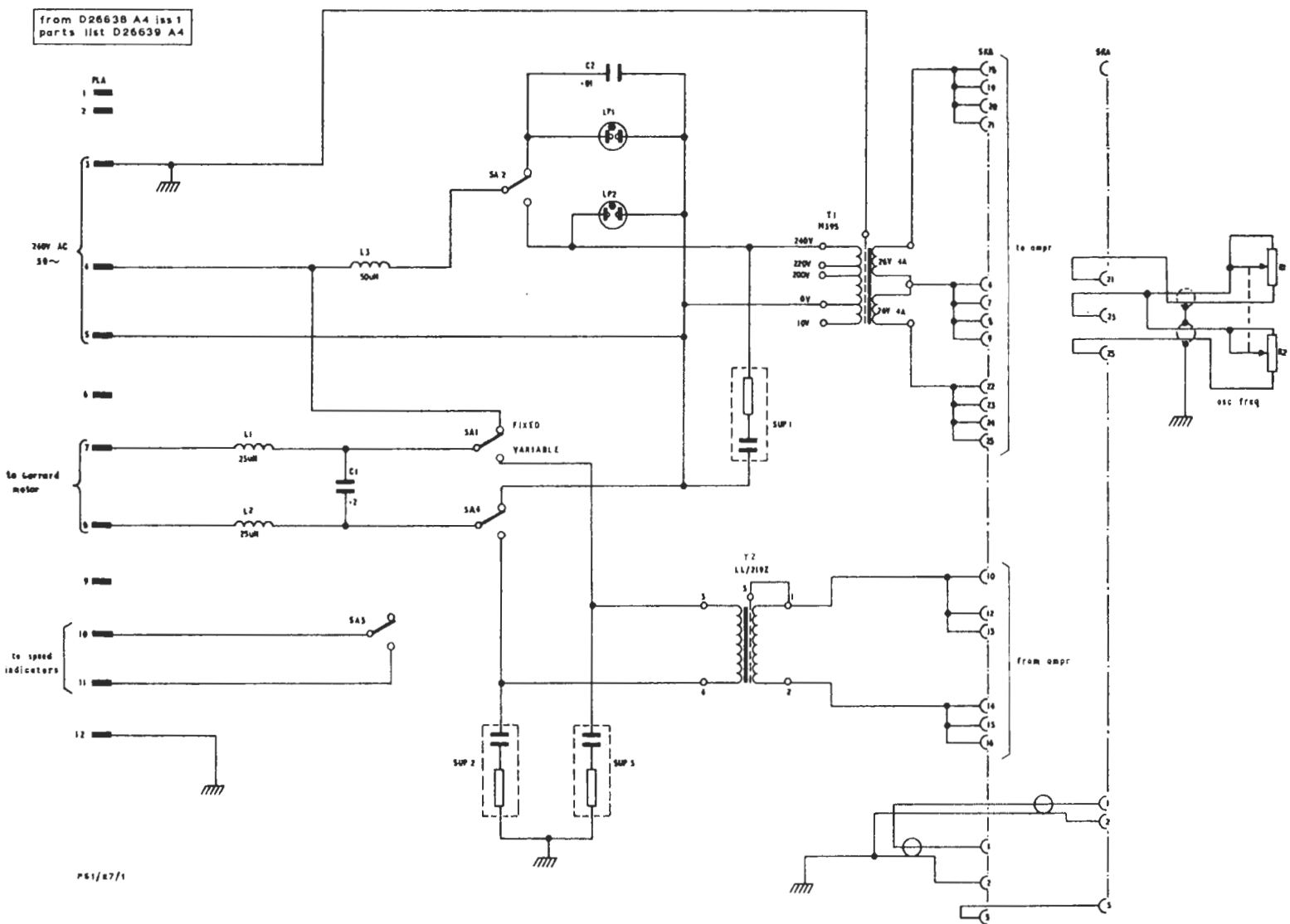
When the PS1/27 is installed in the RP2/6, this power supplier remains inoperative until both the mains switch and the motor switch on the reproducer are in the *On* position. Also, when the switch SA is in the *Variable* position, both the 33 and 45 lamps on the reproducer are caused to light simultaneously by SA3 as a warning that the turntable speed may not be either 33½ or 45 r.p.m.

Maintenance

Amplifier Output Voltage Adjustment

1. Set the speed control to give an output frequency of 50 Hz. (It is sufficiently accurate to do this by means of the stroboscope on the reproducer turntable.)
2. Using an Avometer Model 9, measure the output voltage at T2 secondary (tags 3 and 4). The result should be 240 ± 5 volts r.m.s.
3. Adjust if necessary using the gain control R13 on the bottom front of the OS3/5 oscillator card.

* Designs Department Technical Memorandum No. 1.51(70).



from D26638 A4 iss 1
parts list D26639 A4

1 P.A
2

240V AC
50~

to forward
motor

to speed
indicators

ps1/27/1

Fig. 1. Circuit of the PS1/27

Amplifier Balance Adjustment

1. Set the speed control to give an output frequency of 50 Hz as before.
2. Using an Avometer Model 9 on its 3-volt d.c. range, measure the d.c. voltage across the primary of T2 (tags 1 and 2). The result should be zero ± 0.1 volt.
3. Remove any out-of-balance by very gentle adjustment of the *Offset* control R5 on the

AM1/37 amplifier. This control is accessible through a hole in the ISEP frame.

NOTE:—No adjustment of the *Offset* control should be carried out until the power supplier has been running for at least 30 minutes.

Other Tests and Adjustments

See the Instructions on the AM1/37 and OS3/5.

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