



Figure 6. The practical wiring diagram for the power supply. Obviously care must be taken with connections, especially with respect to the transformers and power transistors. Errors in this area will not become visible until the smoke clears!

shorting links can be placed between +U and +Us, and -U and -Us.

Construction

The maximum output current of the circuit as shown here is 3 A at 35 V but in principle different current ratings are possible. It must be remembered that any change in this direction must be accompanied by a change in the ratings of both C9 and C10. The limiting factor is the maximum collector/emitter voltage capability of transistors T2...T5. This is 60 V for the 2N 3055. The other deciding factor will of course be the current rating of the transformer for the power output stage. The maximum output of the power supply is a factor $\frac{1}{\sqrt{2}}$ of the current supplied by the transformer which explains why a 4 A trans-

former is required to achieve an output of 3 A.

The three power transistors in parallel are used because each 2N 3055 cannot dissipate more than 50 W. The consideration is that when the output voltage is at 0 V the maximum dissipation required is the maximum level of the rectified voltage multiplied by the maximum current. For an output of 1 A at 35 V only one 2N 3055 would be sufficient. One more power transistor can be added without any modification to the circuit providing that the correct value for the emitter resistor is calculated. A 2°C/W heatsink is needed for each power transistor or a 1°C/W for each pair. Capacitor C12 is mounted directly onto the output terminals as shown in figure 6. Do not mount the resistors R4 and R16 initially as their value will depend on the maximum output voltage and cur-

rent. For this reason it will not be possible to mount the printed circuit board into the case until test and calibration is completed. Set P1 to maximum, switch on and connect a multimeter to the output of the circuit. By trial and error find the actual value of R4 which gives the maximum required output voltage. This can be done by connecting different resistors in parallel to R5. When the correct value has been found it can be soldered in place on the board. Repeat the exercise with P2 and R16 (in parallel with R15) until the maximum current level is found.

The remaining calibration is that of the meters by adjustment of P3 and P4. It is possible to build the power supply using only one meter. In this case a 2 pole 2 way switch connected to points x, y and z is required to switch between volts and amps.