

Fig. 6.8. Meter resistor panel, underside view

wiring of master potentiometer components, using 20 s.w.g. tinned copper wire and sleeving.

READOUT METER ASSEMBLY

Make up the meter resistor panel shown in Figs 6.7 and 6.8, and attach to the meter terminals. Solder D1 and D2 to MP/SK1 and RM/SK2, then complete S10 and resistor panel wiring.

As centre-zero voltmeters with 10-0-10 and 3-0-3 scale calibrations are not readily available, a scale will have to be made. Perhaps the most satisfactory way of fabricating a new and really accurate meter scale is to draw it two to four times full size, photograph it, and then have the resulting negative enlarged back to the original size on glossy photographic paper. The enlarging can be done commercially if the oversize drawing carries a thick black line to represent a length of 1in on the finished scale, just outside the scale perimeter.

When taking the photograph, ensure that the camera lens is in line with the centre of the scale card, and that the film plane is parallel to the surface of the oversize drawing, to prevent optical distortion.

Another tip, use white Formica for the drawing, as then mistakes in ink can be erased without leaving unsightly grey areas.

To remove the existing scale from the meter, prise off the transparent meter front, and carefully remove the scale card by undoing the two holding screws. Measurements can then be taken for preparing the oversize drawing.

To fit the new scale, cut out the photographic reproduction and paste it over the old scale, with edges and mounting holes of both scales properly registered.

SETTING UP MASTER POTENTIOMETER AND READOUT METER

With red, green, and blue p.v.c. covered wires, connect the master potentiometer tag strip (Fig 6.7) to the solder tags on the power pack output terminals. Also, temporarily link the rear of MP/SK2 to the green earth wire. Rotate VR20 spindle fully clockwise and patch MP/SK2 to SK3, MP/SK5 to SK6, MP/SK1 to SK4, and link RM/SK2 to VS1/SK1. Switch on the computer and S6, and adjust VS1 for an exact +10V. Now obtain a null on the readout meter by setting VR1 on the voltage divider bracket, from the back of UNIT "B" box.

Repeat for VR2 with an input of +1V by transferring the patching lead plug from MP/SK6 to SK7, and again for VR3, SK8, with an input of -1V, and VR4, SK9, with an input of -10V.

After that, while still nulling with a -10V input, rotate VR20 spindle slightly clockwise, until the meter pointer just begins to move away from zero. Place the large knob on VR20 spindle, with the transparent plastic cursor aligned with the "10" division, and tighten the grub screw. Set VR20 cursor to the "5" division and check for null with an input of -5V. It may be necessary to slightly re-position VR20 knob on the spindle, and trim VR1-VR4 again to minimise errors.

Calibration of the readout meter is straightforward. Apply a selection of known voltages to RM/SK1 and

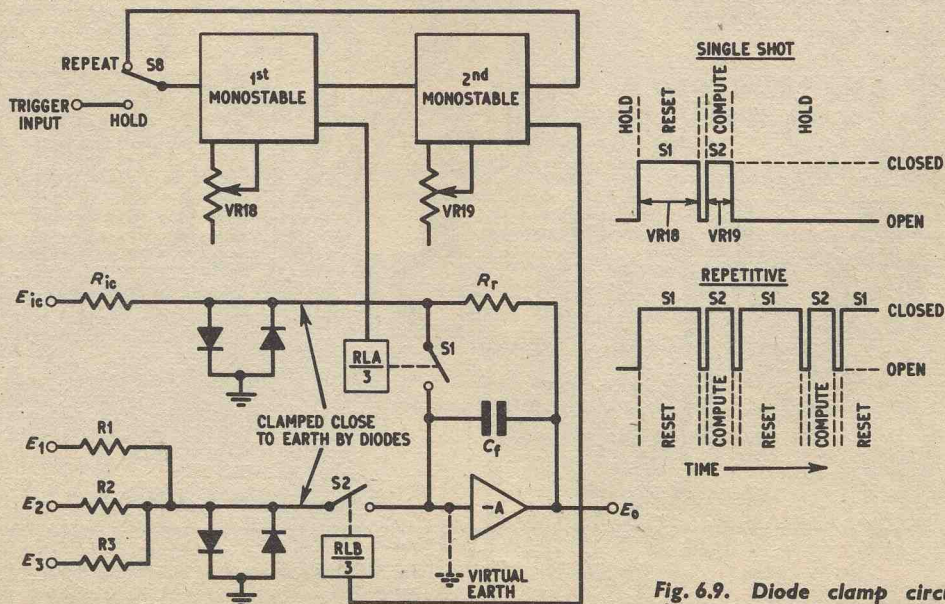


Fig. 6.9. Diode clamp circuit, showing principle of operation