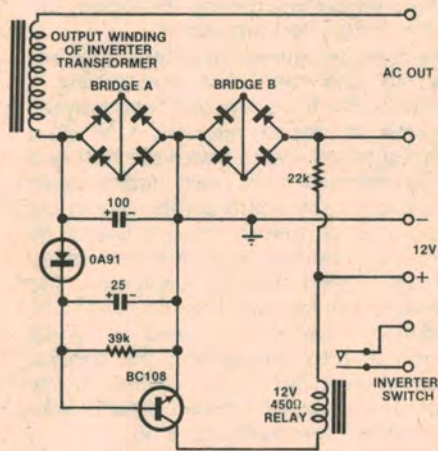


Auto-start for 12-230V AC inverter

Where the output of an inverter is to be used some distance from the battery and inverter, there is the problem of the "no load" current. This is a particular problem with intermittent use. The circuit shown is an addition I have made to the 12-230V Inverter as described in February, 1979. The circuit has been devised so that the inverter will only operate when a load is switched across the AC output. The idea could be useful in low energy solar powered installations where the inverter may make AC available at several locations.

The AC terminals of the bridge rectifiers are connected to the circuit, whereas the DC terminals are short-circuited, to form AC zeners. A bias is then developed across bridge "B" through a 22k resistor from the 12V supply. When a load is switched across the AC output, this bias is fed round via the transformer winding and diode, to the base of the BC108. This is sufficient to turn on the BC108 and pull in the relay.

The 100 μ F capacitor cancels the effective capacitance of long AC lines and



prevents "lock on". The 25 μ F capacitor prevents the relay from chattering and dropping out as the inverter starts. The diode is necessary as the AC component tends to take over the hold in once the inverter starts. The full load power loss through the two bridges is about 1%. There is a fraction of a second delay in

the start and stop but this is no problem. The standing current is under 1mA.

The relay contacts must be heavy enough with a self-oscillating type of circuit to break the main 12V supply. Otherwise, the rest of the components are not critical and may be substituted for similar types. The diode should be germanium as this will pass on more of the available bias. The bridge rectifiers need to carry the maximum output current of the inverter but they can be low voltage types as they are not seeing any high voltage peaks. The neutral end of the output transformer is not directly earthed but it is connected to earth via bridge "A". There is only a little over one volt difference between the two points, so this should not be a problem.

I have built the 12-230V Inverter, as well as several self-oscillating ones and this circuit has been successfully used on both types.

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