

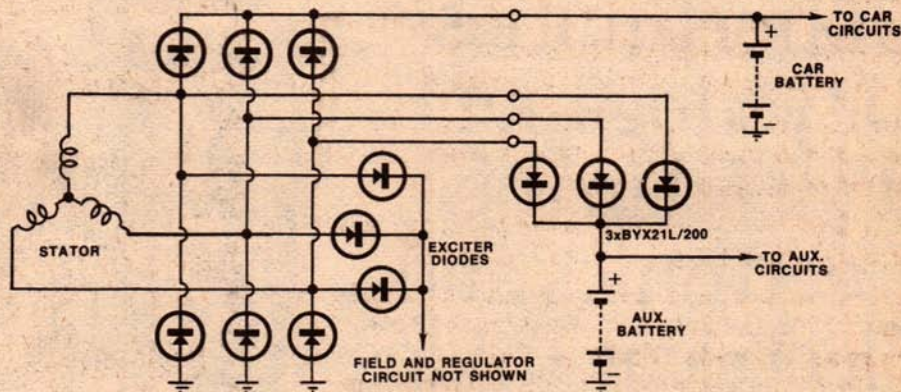
Caravan DC power — a better way

In the past I have been asked to instal an auxiliary battery to a car for supplying power to a caravan. The auxiliary battery was to be isolated from the car battery to prevent the car battery from discharging when power was being taken from the auxiliary battery. My first installation used the same circuit as commercially available. I found this method to have a number of disadvantages and so I have since used a method of my own which I have never seen used elsewhere.

As may be seen from the circuit, the battery charging circuit has not been interfered with in any way. As a result of not adding any series diodes, the voltage regulation of the alternator is as standard, giving a good battery charge even when towing a caravan at night. Another benefit is that only the auxiliary battery current flows through the isolating diodes, allowing the use of a smaller heat sink.

With this method it is however necessary to bring out the three AC wires from the alternator. This is quite simple to do, but some care must be taken. To do this I mounted a three hole Belling Lee terminal block on the side of the alternator. This allows the alternator to be removed at any time without having a long loom hanging from it. It is not necessary to use the large electrician's terminal block, the size used in radio projects is sufficient.

Before removing the alternator, decide the area in which the block should be located for ease of getting a screwdriver in to fasten the loom. After removing and disassembling the alternator, find a position where holes can be drilled and tapped without damag-



ing the internal components of the alternator. Drill and tap the two mounting holes (I used 6BA) and fasten the block to the side of the alternator.

Now locate the three stator winding ends. These will be where the diodes are connected. Solder on three wires to bring the AC out and feed them through the rear ventilation hole. I used 23/.0076" wire. Route the wires close to the case so the field (rotor) will not catch them. Remember to retain the brushes when reassembling the alternator. There is a hole behind the brushes for holding them with some stiff wire.

The diodes are mounted on a heat-sink insulated from chassis. A 3 or 4 inch heatsink will be sufficient, as not much heat is produced. I used press fit diodes and insulated the heatsink, but stud mounting diodes with mica washers would allow the heatsink to be uninsulated. Use heavy wire to connect to the battery. I used 70/.0076".

The battery may be located in either the car or the caravan. If the battery is

in the caravan, power may be used while the car is disconnected but when the caravan is not being used the battery should be charged periodically. If however, the battery is mounted in the car it will be charged whenever the car is running. It will however be necessary to have the caravan cable connected to the car to get power.

To summarise the advantages and disadvantages of each system, the earlier one has the advantage of being useable with a DC generator but the disadvantages are poor voltage regulation, large heatsink in well ventilated situation required, and wiring modifications to the battery charging circuit are necessary. With the new system, the advantages are that the car battery circuit remains as standard, voltage regulation remains standard, and only a small heatsink required. The disadvantages are that it cannot be used on cars with a DC generator, and disassembly of the alternator is required.

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