

## Smoother operation of coreless type motors (Faulhaber, Maxon and Escap (Porterscap))

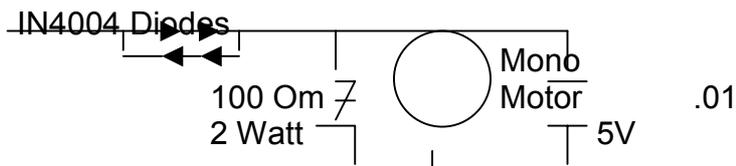
The Powerline RC1 can be used to operate these types of coreless motors straight out of the box without any modifications being carried out.

But after selling your birth right to the bank manager in order to buy a Porterscap RG-4 for your locomotive would it not be better to further ensure that your investment is further protected and will provide long service life.

Because the Powerline RC1, like most other train controllers that are currently available, do not provide a pure Direct Current (DC) to the track, but has a certain amount of Alternate Current (AC) ripple superimposed on it. For most locomotive motors, whether can or open frame, this is perfectly OK.

The coreless motors behave slightly differently and depending on the size of the motor, 1219-1616-2234 etc, some will appear to behave jittery (have the jitters) slightly speeding up and slowing down as the motor attempts to respond to the AC ripple.

The suggested modification to the loco is as follows.



The 100 ohms resistor is placed parallel across the motor wires has the effect of damping the response time of the motor and should stop the tendency to be jittery. Please note that on some motors this resistor may need to be changed for a smaller or larger value.

The IN4004 Diodes have a two fold effect as they help to slightly reduce the AC component coming from the train controller but will also lower the nominal output voltage of the train controller, so that the voltage tolerance of these coreless motors will not be exceeded when operating at full speed.

The capacitor is there to stop any interference the train may cause to any TV or radio.

This modification is suited for any other manufacturers train controller, not just the Powerline RC1. All parts are available from both Jaycar and Dick Smith.

Gerry Veldwyk.

### **Note:**

Many, actually most, train controllers have AC ripple super imposed over the DC current. This is used to give a better start or a little more power to a motor. Many people may remember a system known as auto-pulse, which was designed to give, cleaner starts and smoother take offs for locomotives. AC ripple is used at the lower voltages to give this affect and sometimes at the full speed end of the controller to give a little kick. It is not a fault or a leak and is meant to be there and does not cause any damage to popular can and open frame motors. This article is for the more sensitive and less popular coreless motors.