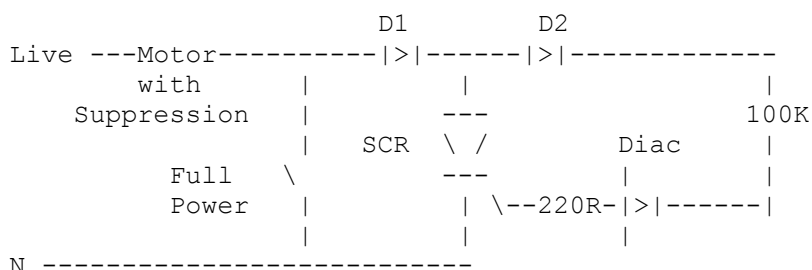# Motor Speed Controller

Here is a simple circuit I use for a pillar drill. It suffers from speed variation due to mains fluctuations. And is only suited for AC/DC (e.g. brush) motors, and must not be used on AC Induction motors!

```
                            D1          D2
Live ---Motor----------|>|------|>|-------------
        with       |          |                 |
     Suppression   |         ---              100K
                   |   SCR   \ /      Diac       |
          Full     \         ---        |        |
          Power     |         |  \--220R-|>|------|
                    |         |          |
N ------------------------
```

My drill motor was only 500Watt so...

D1 is 1N5403 (50A peak), D2 is 1N4003
C is a 0.1uF (63v)
DIAC any 20v device (higher voltage = less control at low RPM.)
220R is optional depending on the sensitivity of the SCR.
SCR is a 3A 400V device (50A peak)
it can be a Triac as D1 inhibits wrong way conduction.
 (mine used to blow up until I added the diode.)
Switch shorts out controller for full Power.
Multi turn low speed control is a preset pot in my design.

This circuit attempts to put DC out to the motor 50 times a second, every other half cycle (half power). How much DC depends on the preset setting & the motor back emf. Hence the power/torque has some feedback feature unlike just phase control, & enables variable torque loads to be handled much better, without dramatic RPM changes.

This design was originally posted on Packet radio by John G8MNY - Jan 2001.