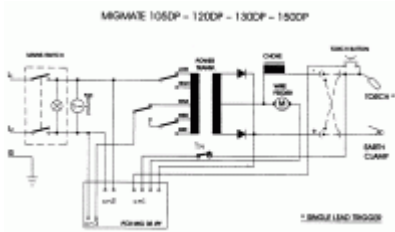


Wire feed speed problem.

[Migmate Page](#)

Note - I do work with electronics as part of my business – don't start digging around inside your MIG if you aren't experience with this sort of thing. My disregard for warranty isn't something you have to emulate.

On the previous page I bitch about the speed control problems. They had to be fixed. Re-capping what I said there. Out of the box the welder would not work with GAS shielding because the wire-feed could not be slowed down enough using the front panel knob. I opened it up and adjusted the trim-pot on the PCB and could then use gas but the speed was inconsistent, in particular moving the unit about changed the speed. It was pretty bad.



The wiring diagram out of the manual is here.



The circuit board – not much too it. The rectifier (black round thing bottom right) is not part of the speed circuit. The trim-pot is the blurry black thing bottom left. The nut which hold the pot is all that holds the PCB in place. There is a piece of cardboard between the pcb tracks and the case – I think that is pretty slack.

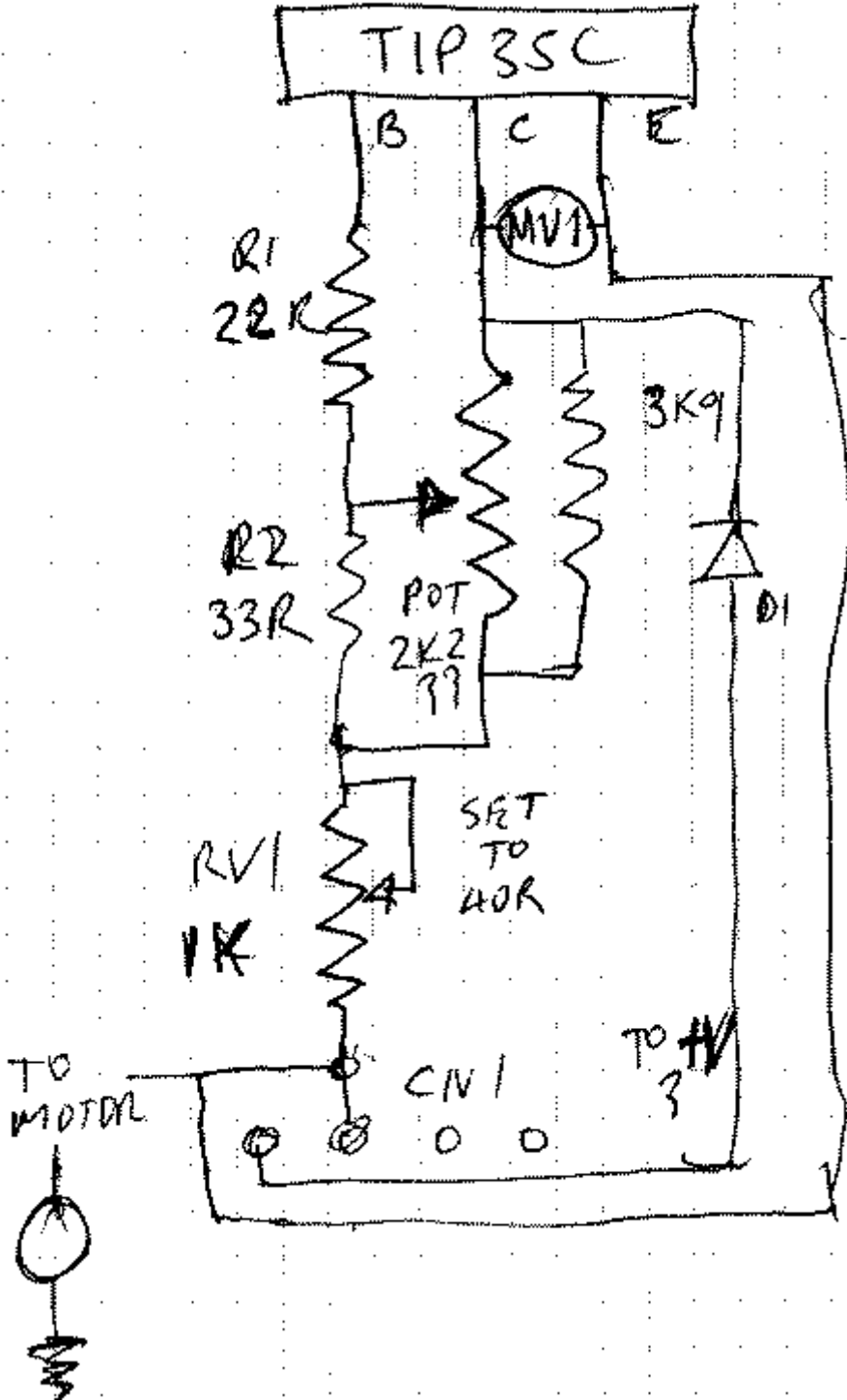
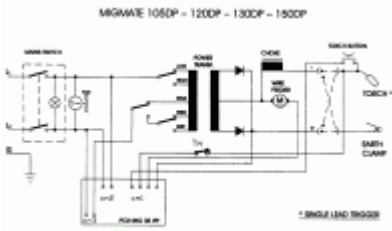
This is what I make the circuit out to be. The 3k9 resistor looks like it was an add on. To make the welder work I had the trim-pot adjusted to 40 Ohm (40R) this means the wiper is at one end of the resistive track so all the heat is being generated in one little spot. It also made adjustment very touchy and prone to being changed by knocks. Because the trimmer was only 40R the overall resistance from the motor to the transistor base is under 100R but there should only be about 0.6V across this so the current should only be 6mA and power dissipation in the trimmer only 3.6 mW.

The circuit is powered by full wave rectified DC and not pure DC so some of the time there will be less current flowing.

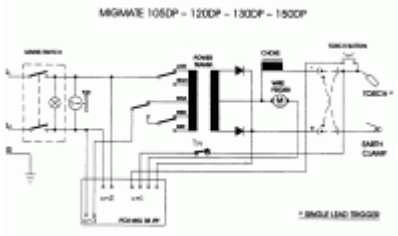
At a glance I got that wrong first up and thought there was more voltage (and current). The big voltage is across the main pot and not the low valued resistors.

So I replaced the trimmer with a 200R of fixed resistance in parallel with a 100R trimmer. This works fine but the trimmer alone would probably have done. The idea behind the extra resistors was to take some of the load off the trimmer. It will also make the adjustment less sensitive and this is still a good thing as long as you don't run out of range. The values you can get trim-pots in are fairly coarse so adding some extra resistors is not uncommon. I had very little choice at my local electronics shop 100R trim pots were about all I could get in the right package.

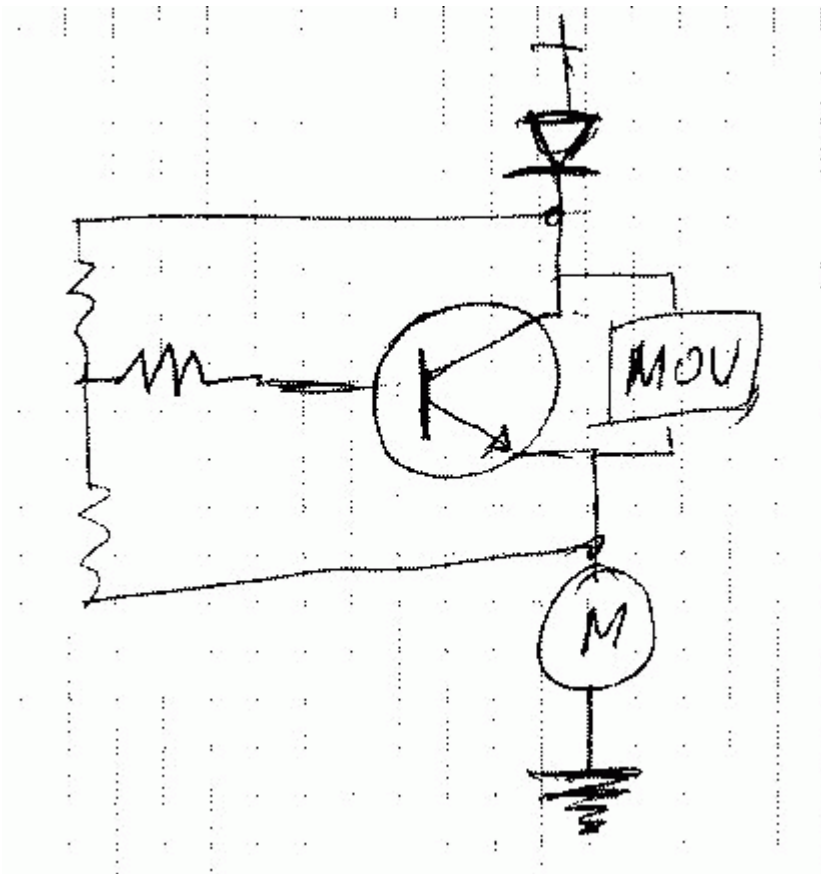
The wiring diagram out of the manual is here.



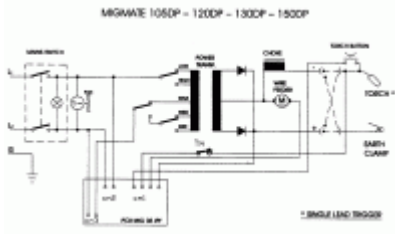
The wiring diagram out of the manual is here.



When you lump all the resistors together the circuit looks like this. It acts like a big (adjustable) zener. The resistor (pot) ratios set the voltage at which the circuit conducts – it drops a fixed voltage and what is left is across the motor. It doesn't regulate the motor (M) voltage as such. If the power supply voltage changes the motor voltage changes. It is surprising that the motor speed matches the tip voltage as well as it does.



The wiring diagram out of the manual is here.



The bottom line is - so far so good. I've done a few hours welding and the speed control is much better. The MAG welds I did were a lot better than last time but I still went back to using MOG and it worked fine.

May 2007.

I have never said that other welders have this problem but several people have emailed me to say they had the same thing and this mod fixed it.

There is clearly more than one way to fix it.

As I say at the top **don't mess with this if you don't know what you are doing.**

Any experienced repairer will understand this page. If it doesn't make sense don't attempt the mod – find someone more able.

This is not a “learn electronics” site, I won't be walking people through the repair.

Several people who emailed me clearly should not be taking the covers off their machines.

I've been expected to remotely diagnose other models (which I've never seen – inside or out) with little more than – it's broke.

I've been expected to drop whatever I've doing to give free advice and even received a nasty response from one guy when I've declined.

I was later informed by this same guy that an engineer had fixed his welder by changing a “three legged fuse” on the heat sink.

I'm quite sure he was not joking, it was not intended to be a humorous email.

This engineer sounds like my kind of guy :)

Many other engineers have now had a good laugh.

I don't usually make fun of people but this time it is well deserved.

If you don't get it - google “three legged fuse” (including the quotes).

I was also told this welder had a 200R trimmer - so if it was a similar PCB, it was fitted with a more appropriate value trim-pot than mine.

EKM