

Date 30/06/09

BULLETIN # 226

## CP107

### TROUBLESHOOTING GUIDE FOR LOSS OF WELDING CURRENT

There are a number of different reasons why a CP107, Weldmatic 255S welder may not produce welding current and it can be difficult to pinpoint the exact reason. This bulletin is a guide to troubleshooting the problem.

Firstly the various reasons for loss of welding current are listed, and then a guide on how to check for each possibility is given. It is recommended that the easiest and most obvious possibilities are checked first, and that the more complicated tests are left until the easy solutions are eliminated.

It is assumed that there is wire feed and gas flow, but no weld current when the trigger is pressed.

The circuit diagrams for a common variant of the 240 volt CP107 and W42 wirefeeder are given at the end of this bulletin. Be aware that there may be differences in wire colours for different versions. The basic guide can be used for the 480 volt version of the CP107 as well, but there will be some differences to the CP107 circuit diagram given here. Refer to the Owners Manual for the correct model if specific information is required.

Area	Test	Expected Result	Remedy
<b>MIG gun</b>	Try a different gun if possible. Remove the MIG gun handle covers and the strain relief at the wirefeeder end.	Check for poor connection/discoloration of the braided power cable.	Replace MIG gun
<b>Work lead and clamp</b>	Check for poor connection to the twistlock plug or the clamp.	Check for poor connection/discoloration	Remove any heat affected cable and reconnect.
<b>Weld cable</b>	Check for poor connection to the twistlock plug or the cable lug.	Check for poor connection/discoloration	Remove any heat affected cable and reconnect plug or replace lug.
	Ensure that there is a good connection to the euro connector.	Check for poor connection/discoloration	Clean up/tighten connection
<b>Over temperature protection thermostats</b> Keep the power on with the fan running and allow the welding power source to cool.	If still a problem, check the rectifier thermostat and inductance thermostat.	They should have zero resistance when cool. As a testing strategy only, a temporary short circuit can be placed across these.	Replace any thermostat which tests faulty. Part number CP104-16/2 for inductor thermostat (150° C). CP3-9/8 for rectifier thermostat (95° C).

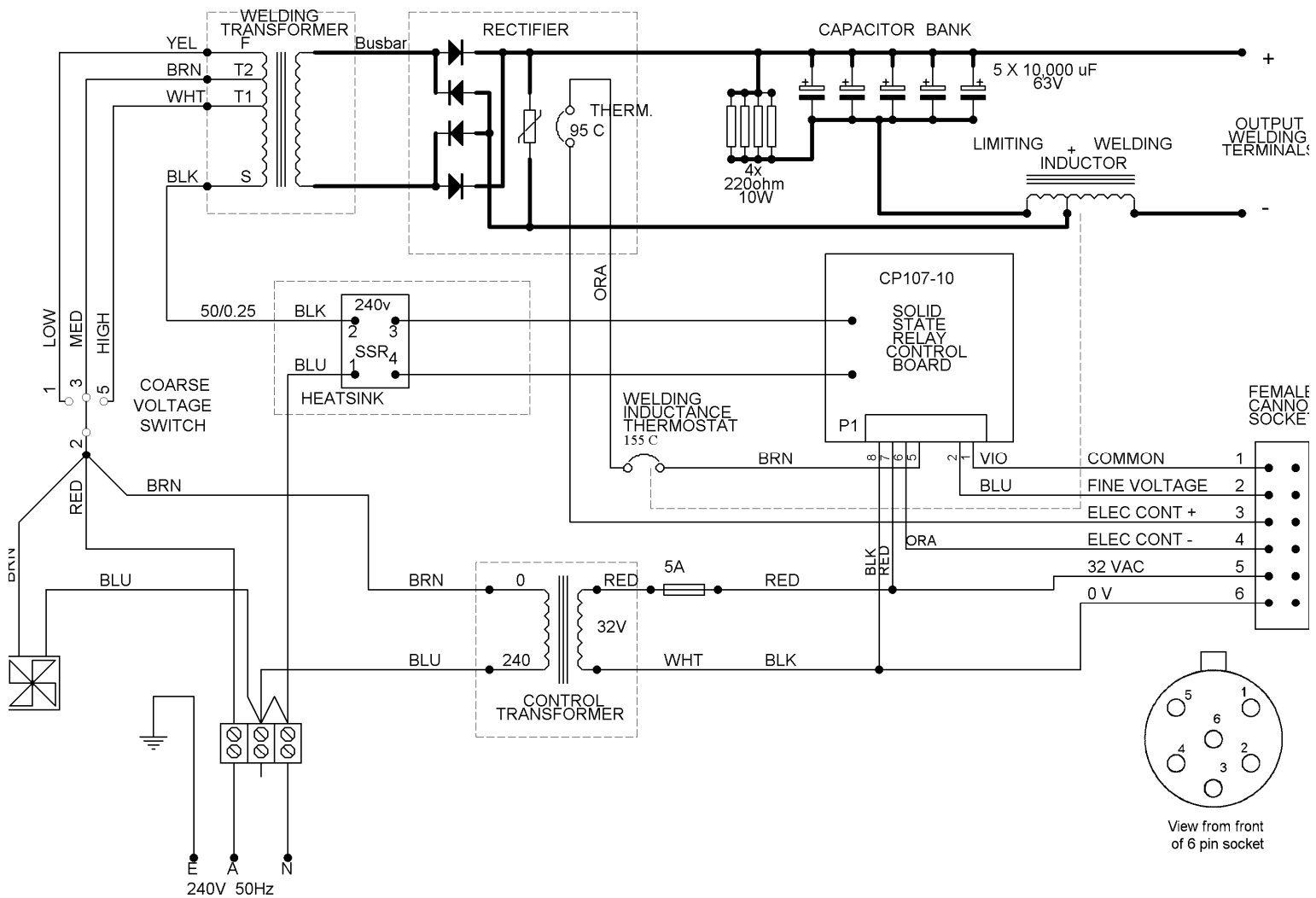
### *QUALITY WELDING PRODUCTS, SYSTEMS AND SERVICES*

The information provided in this sheet is accurate and reliable, however no warranty of accuracy or reliability is given and no responsibility arising in any other ways by errors or omissions is accepted. Any information involving mains or high voltage is intended for use by qualified electrical personnel only.

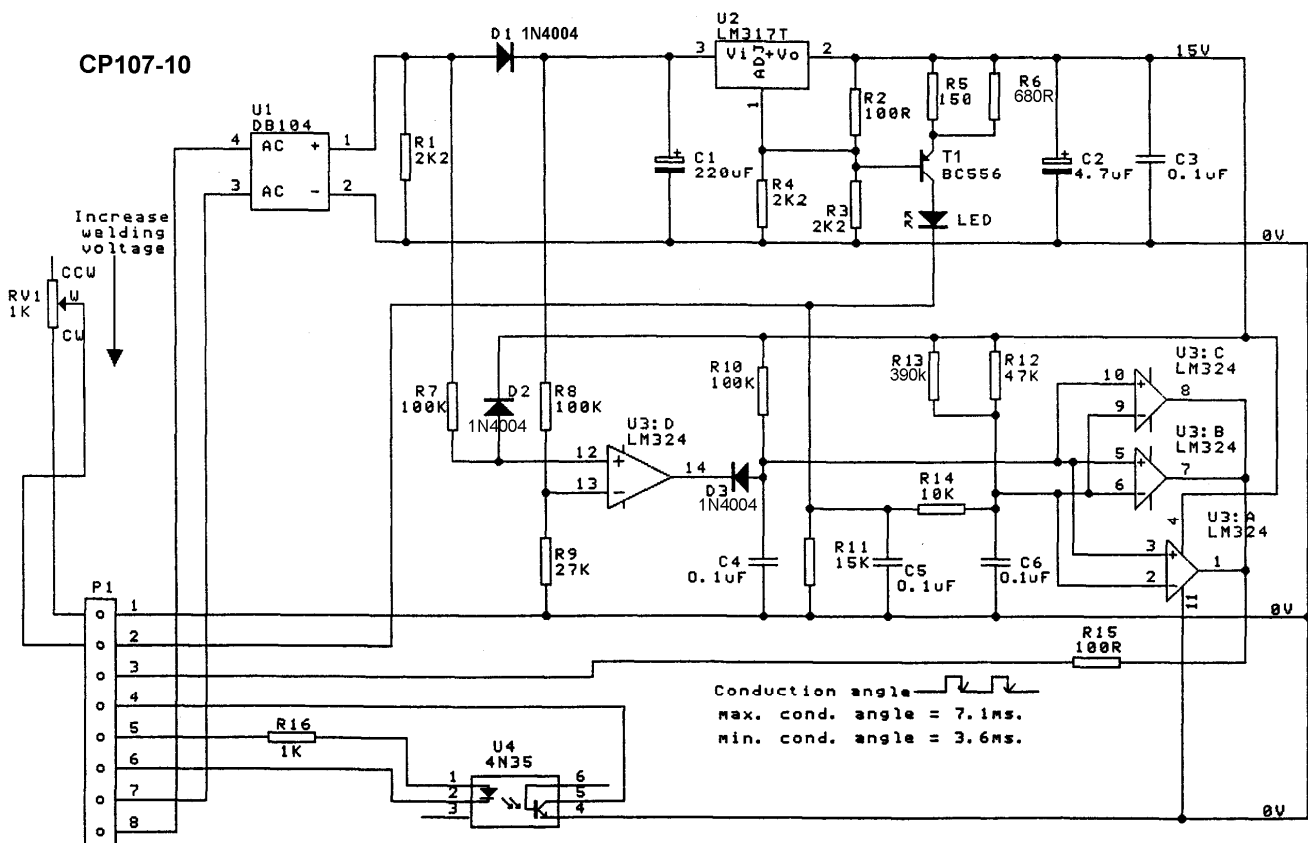
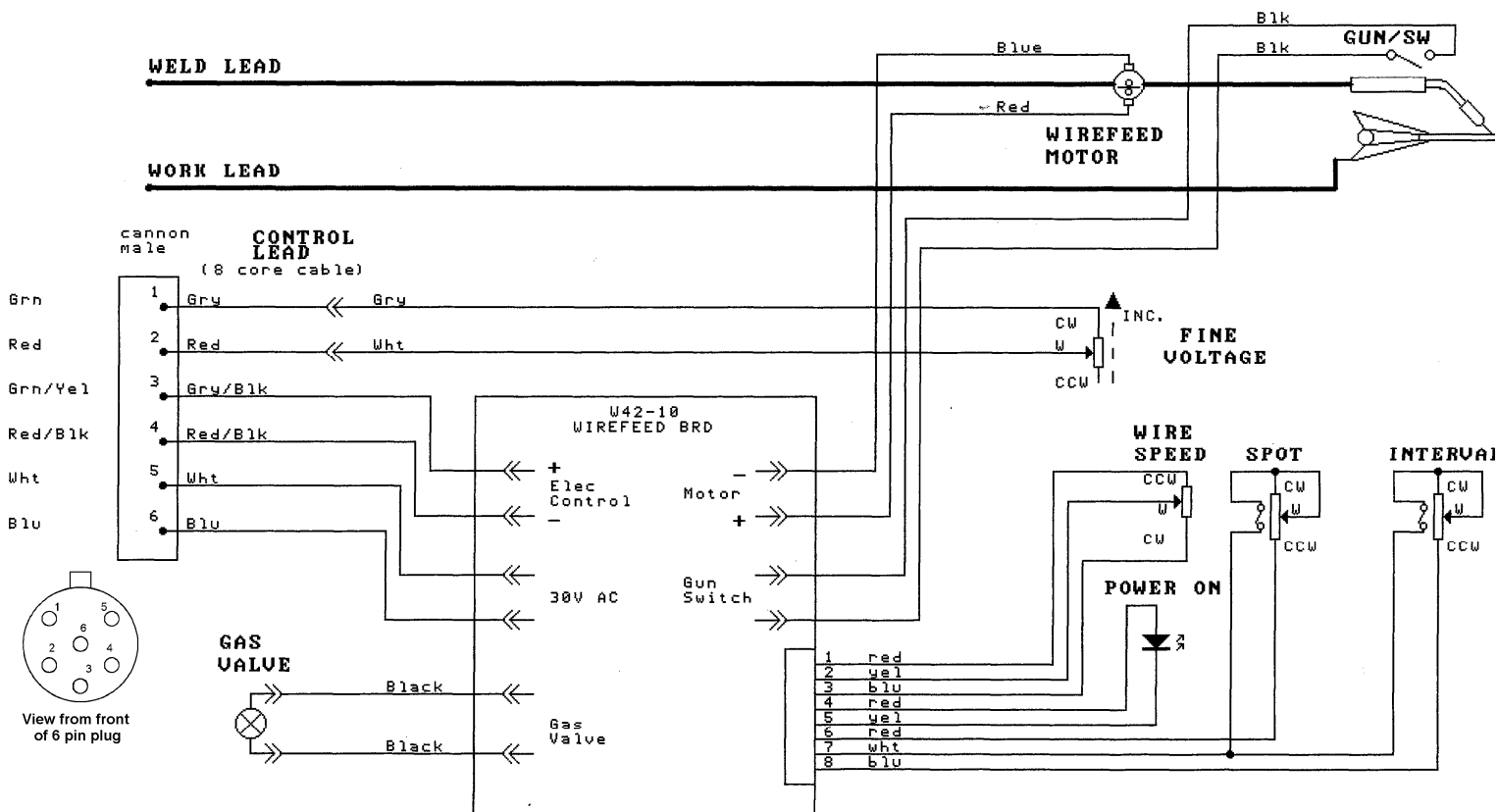
<b>Wirefeed PCB W42-10</b>	a. measure volts dc between P9, Elec Cont +ve and P10, Elec Cont -ve (turns on the SSR Driver pcb output)	Should be approx +12 v dc when trigger is activated and approx. 0 v when no trigger.	If 12 v, W42-10 ok. If not, go to (b)
	b. If not present, check for 12 vdc between P9, Elec Cont +ve and P14, Wirefeed Motor -ve.	Should be +12 v dc whenever power turned on.	If not present, W42-10 is faulty.
	c. If 12 v present at step (b), insert a jumper wire from P14, Wirefeed Motor -ve to P10, Elec Cont -ve.	Welding transformer should power up with this jumper present.	If the transformer powers up with this jumper present, but doesn't when trigger pressed, W42-10 is faulty.
<b>Fine voltage control pot or connections</b>	Check for continuity of common and fine voltage wires right through to the SSR Control pcb.	The fine voltage pot should vary from zero to 1 k ohm.	Replace pot part number CP34-36/2.
<b>Control cable and 6 pin plug/socket</b>	Check for good electrical connection at spade connectors in wirefeeder.	Crimp should be tight.	Replace any suspect spade connectors.
	Be suspicious of any evidence of previous repairs.	Use circuit diagram to ensure that the polarity of Elec Cont +ve and Elec Cont -ve signals are correct.	
	Check control cable along its length.	Look for wire or insulation damage.	Repair/replace damaged cable or insulation.
	Check soldered connection to 6 pin plug and socket.	Look for cracked solder joints	Resolder any suspect joints
<b>Solid State Relay</b> Used as a phase controlling device to vary the amount of 240 v power supplied to the welding transformer, (adj. by fine voltage pot). Any replacement SSR must be of the "random turn-on switching" type.	If the SSR is suspected of being faulty, a temporary connector can be used between terminals 1 and 2 (240 volt) on the SSR.	If the rest of the welding circuit is good, this will turn on the 240 volt input to the welding transformer and produce welding current.	The correct SSR is available from WIA as part number D0030. A very similar looking device termed zero voltage switching is available from other suppliers. <b>This device will not turn on when used in a CP107.</b>
	Disconnect SSR Driver pcb from SSR. Apply a dc voltage (from 3 v to 30 v) to pin 3&4 of SSR (ensure correct polarity).	SSR should turn on and power up welding transformer. Be aware that this dc voltage may manage to turn on a faulty SSR, but the pulsed waveform from SSR Driver pcb may not.	
<b>Rectifier Circuit</b>	Check busbar connections	All connections should be clean and tight.	Clean and tighten connections
	Test the rectifier diodes	Expect to read approx. 0.46 v diode drop from each transformer secondary to both +ve and -ve output terminals	Rectifier may need to be disconnected and disassembled to locate specific problem areas.

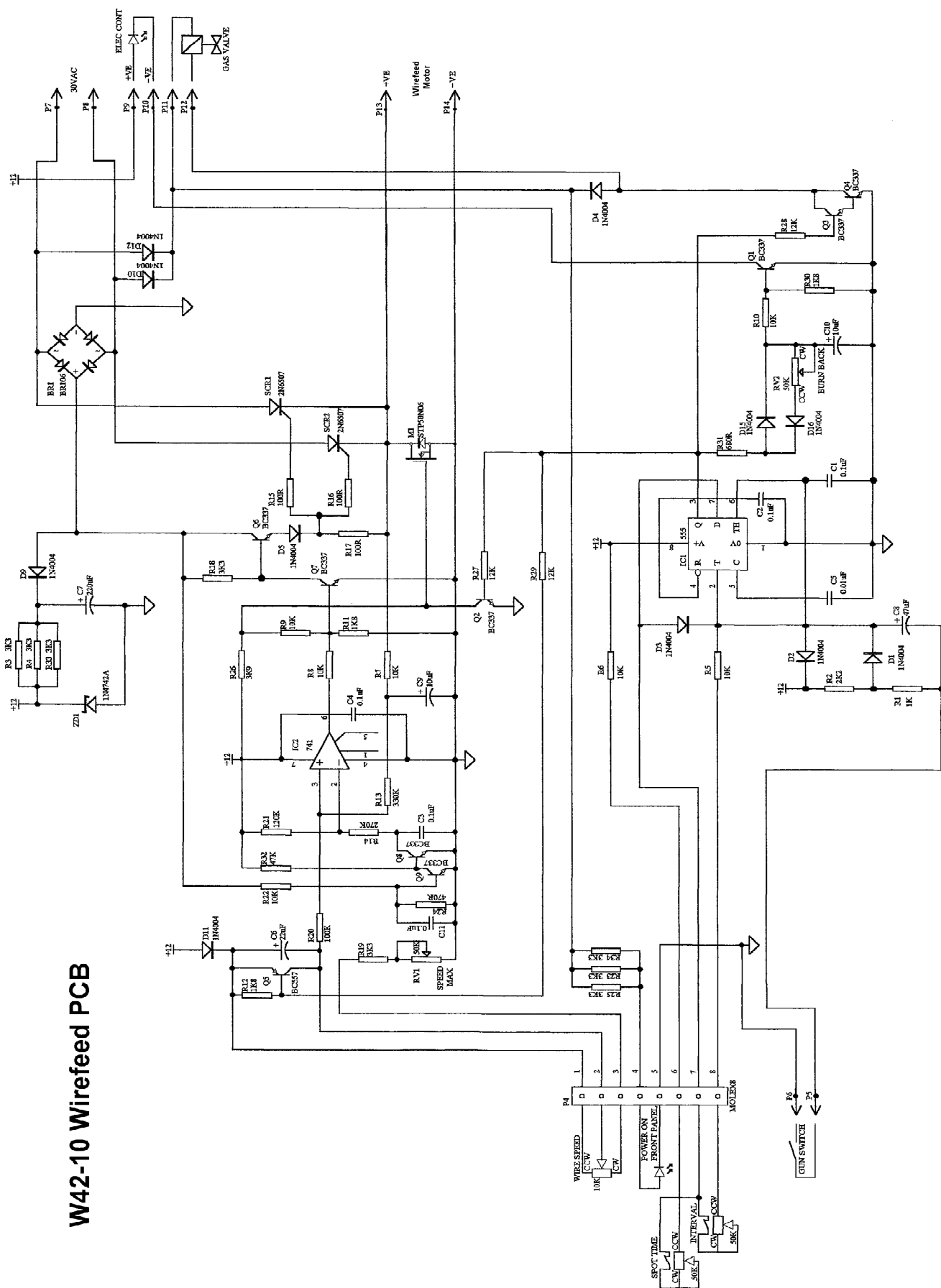
<b>Solid State Relay Driver PCB, CP107-10</b>	Measure volts ac between pins 7 & 8 on P1	Approx. 30 volts ac	Check wiring from control transformer
	Measure volts dc between Pin 1 & 2 on P1	4.5 v dc fine volt pot max, 0 volt fine volt pot min.	Check wiring from fine voltage pot as above
	Measure volts dc on the output to the SSR, Pin 3 & 4 on P1. (this signal is a square wave pulse, and the value will vary depending on type of meter used.)	Approx. 3.5 v dc with fine volt pot at min, 7.5 v dc with fine volt pot at max.	If not, possibly CP107-10 pcb faulty or SSR faulty.

**CP107 Circuit Diagram** (wire colours may change on different versions)



W42 Circuit Diagram (wire colours may change on various versions)





**W42-10 Wirefeed PCB**

Hugh Stewart,  
Technical Service Coordinator