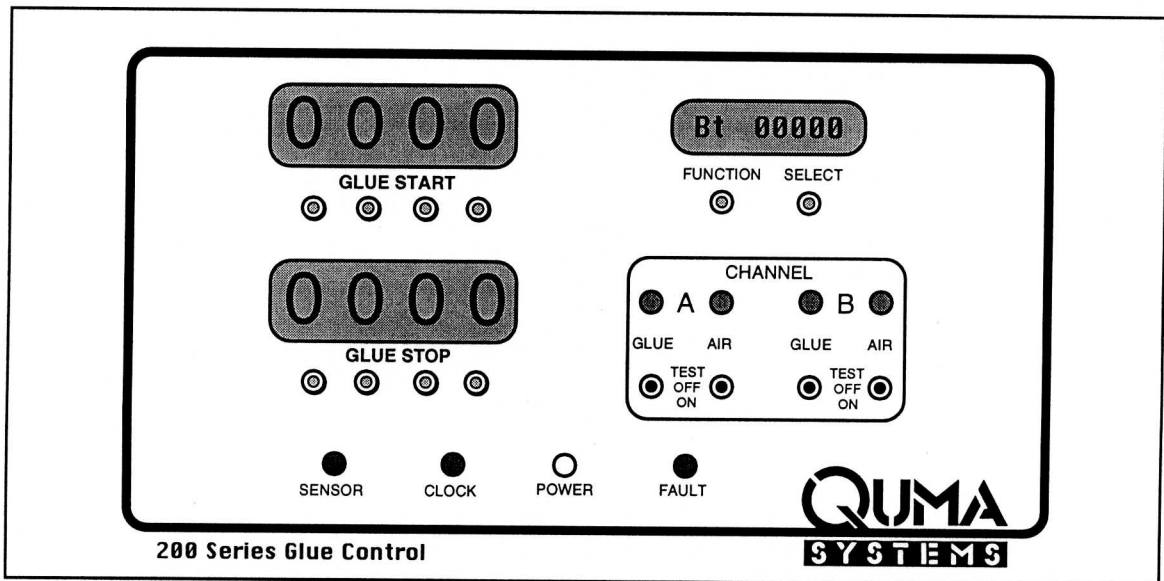


# The MAC 200 Glue Control System



## Features:

Full compensation for speed changes - position and glue volume

Batch counter, rate per hour and speed displays

Two channels with upto eight glue patterns per channel

One or two sensor input

Automatic gluing option

Drives spray or extrusion glue heads at the same time

## Applications:

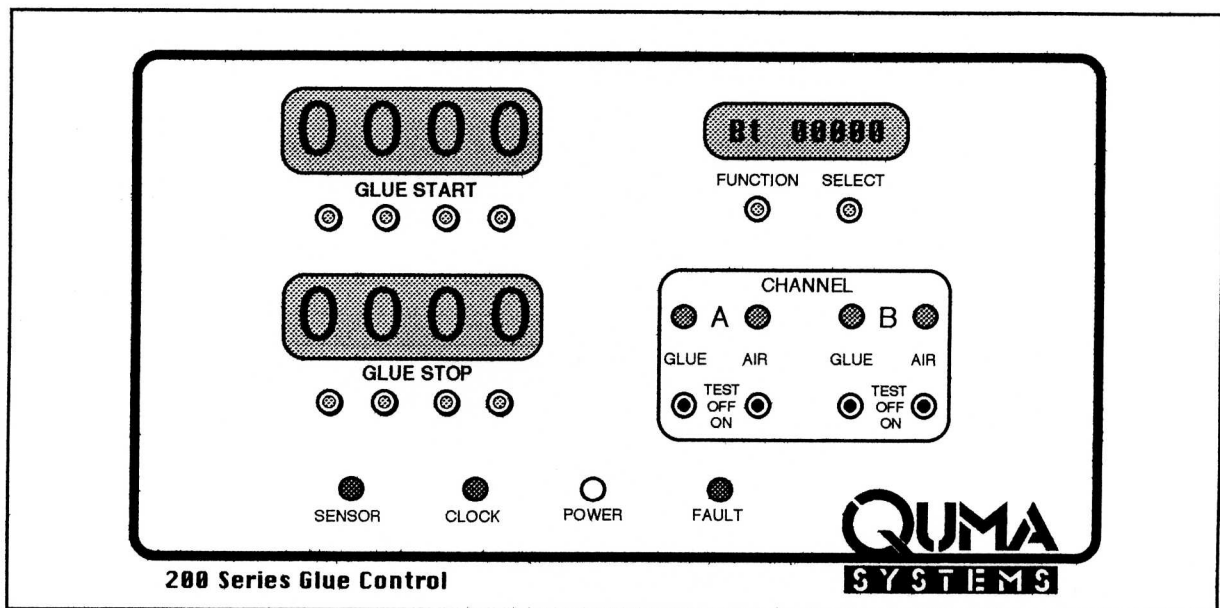
Single head straight line folder-glueers and casemakers with provision for a second head for outside glue lap jobs.

Crashlock glueers with twin overhead and single side applicators

4 and 6 corner glueing applications

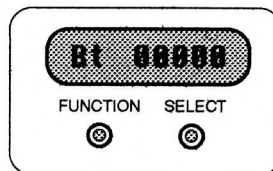
Two station case sealing operations

# MAC 200 Start up display



When the 200 controller is first switched on it will look like the layout above.

The displays have a number of functions which are selected by the FUNCTION switch under the small display at the top right hand side.



The small window will show "Bt 00000". This is a batch count display and will show the total number of boards processed during the production cycle. It is reset to zero by depressing the SELECT switch or by turning off the power supply. Note! the batch total is **not** stored in the system memory.

While in this state the other two windows are displaying production information.



The GLUE START window will show the machine speed in millimetres per second.

The GLUE STOP window will show the rate of boards per hour being processed in thousands eg 05.50 = 5,500 per hour. (the maximum displayed is 20,000 per hour)



# Function Window

The purpose of this display is to let the operator access all of the 200 series controllers range of facilities. These are:

**Bt 00000**

FUNCTION SELECT



Batch count - displayed on start up and shows job status

Line A1 - Glue position selection window for eight glue patterns available on channel A.

**Line A1**

FUNCTION SELECT



**Line B1**

FUNCTION SELECT



Line B1 - Glue position selection window for eight glue patterns available on channel B.

Lockout A - Entry window for case/carton length to stop sensor being falsely triggered by print or cutouts.

**Lockout A**

FUNCTION SELECT



**Lockout B**

FUNCTION SELECT



Lockout B- Entry window for case/carton length to stop sensor being falsely triggered by print or cutouts.

Pressure - Glue pressure adjustment facility to change the amount of glue being automatically applied.

**Pressure**

FUNCTION SELECT



**Prg Code**

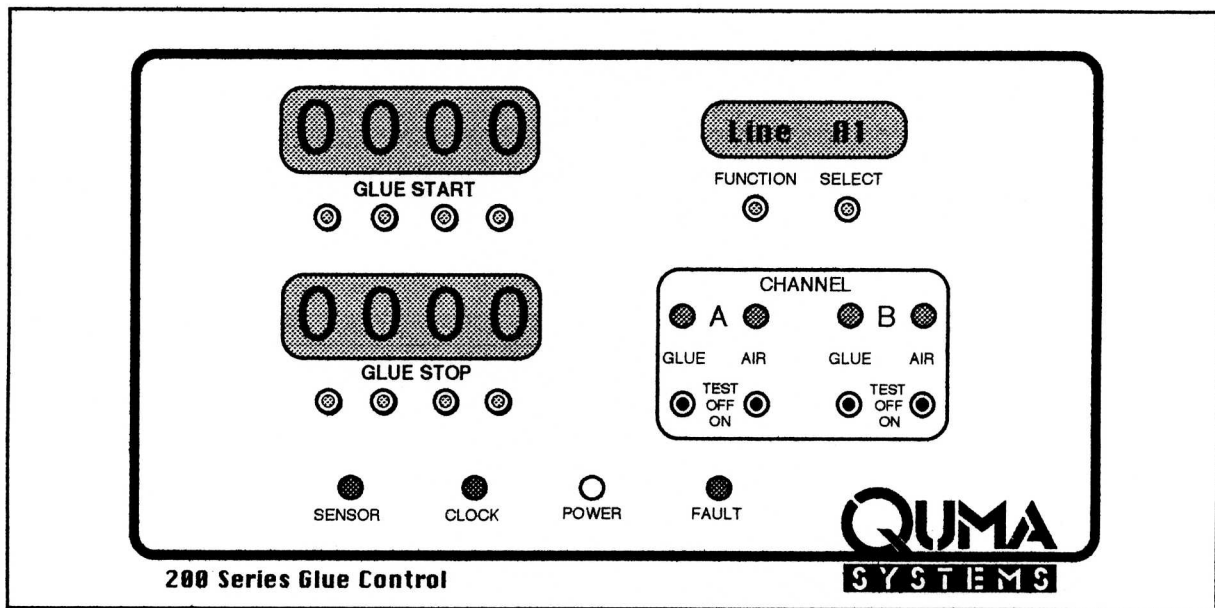
FUNCTION SELECT



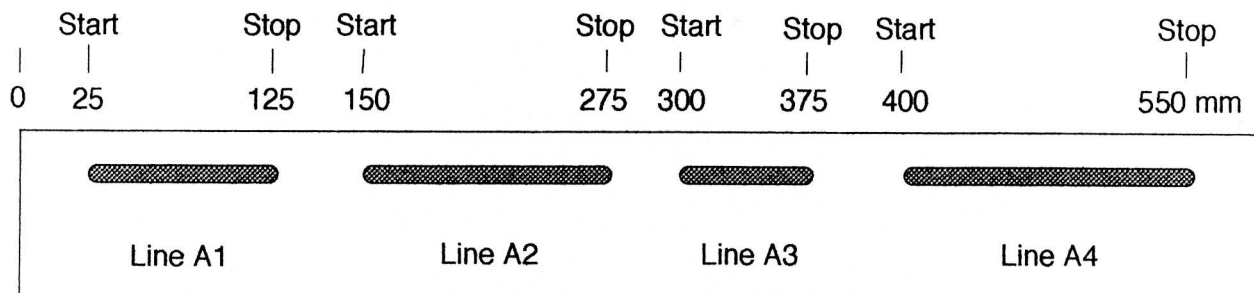
Prg Code - This is the entry window for the plant engineer to make changes to sensor to head offset, head response times and set up glue pressure changes.

These are selected by pressing the FUNCTION switch up or down

# MAC 200 Glue line setting



The control has now changed to glue line setting function and "Line A!" will have appeared in the function window. The way that the position of the glue lines is entered is as follows:



Note! All dimensions are taken from the sensed leading edge of the board



Each number in the window has a switch below it. Press down once to increase by one and up to take one off. In this example you would enter 0025 for

the start of Line A1 and 0125 for the stop position.



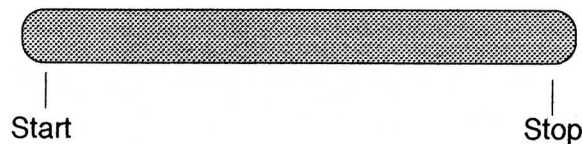
The diagram shows 4 glue patterns - by depressing the SELECT switch after entering the position of Line A! the display shows Line A2 and so on upto Line A8. If you only require one glue line just enter line A1 and leave zero in line A2. The controller will then ignore any data left in following positions!

## Glue line setting 2

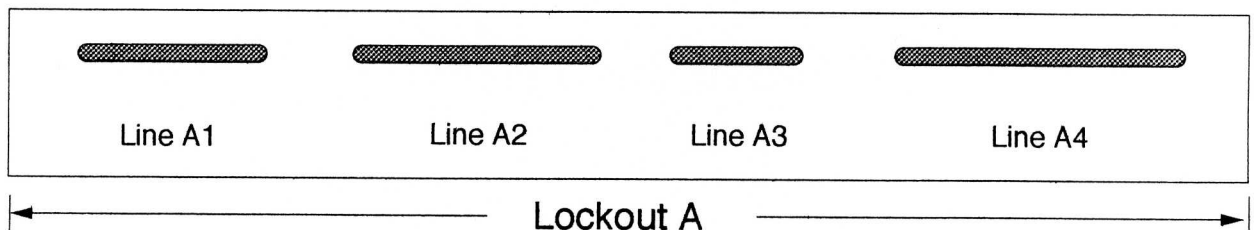
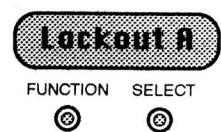
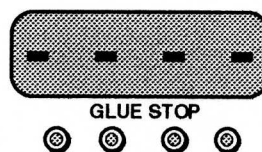
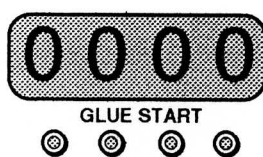
After Line A8 you will notice that Line A1 appears again. If you want to alter any of the positions you may move up or down through the Lines and alter the dimension even while the machine is gluing! Any changes will be immediate and altering any start or stop point will not affect other glue positions.

If you need to use a second head to put down glue in another position then by depressing the FUNCTION switch you will find Line B1 displayed. This set is entered in exactly the same way as Lines A1 to 8.

Please remember that if you are using spray application heads you will need to allow for the rounded end of the glue pattern. This can be done automatically in the calibration section - see Engineer's guide.

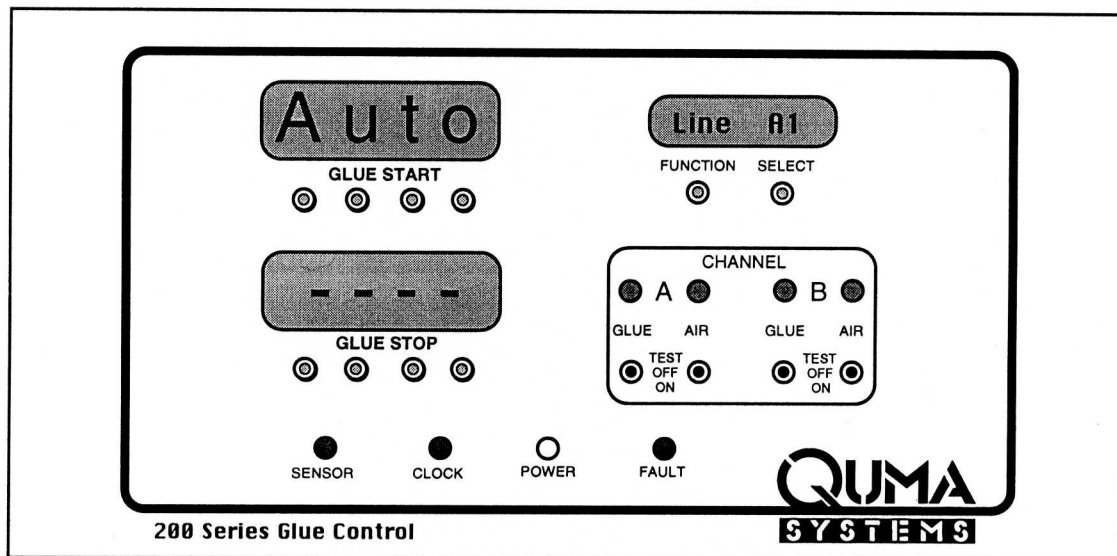


After "Line B1" press the FUNCTION switch once more and the display will show "Lockout A". You do not have to use this feature unless you are working with printed board and there is a risk of the sensor reacting to the print and falsely operating the system. To use Lockout measure from the sensed leading edge of the board to the trailing edge and enter that value in the GLUE START window. The GLUE STOP window will not accept data and will display a line of "- - -".



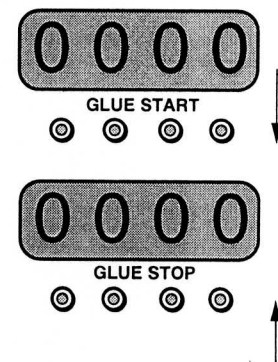
If using channel B then the "Lockout B" is selected by depressing the FUNCTION switch again after "Lockout A" and the dimension set in the same way.

# Automatic Glue Setting



If the sensor is mounted in line with the glue application head it is possible to glue tabs automatically. Press the two end switches together and 'Auto' will appear in the GLUE START window.

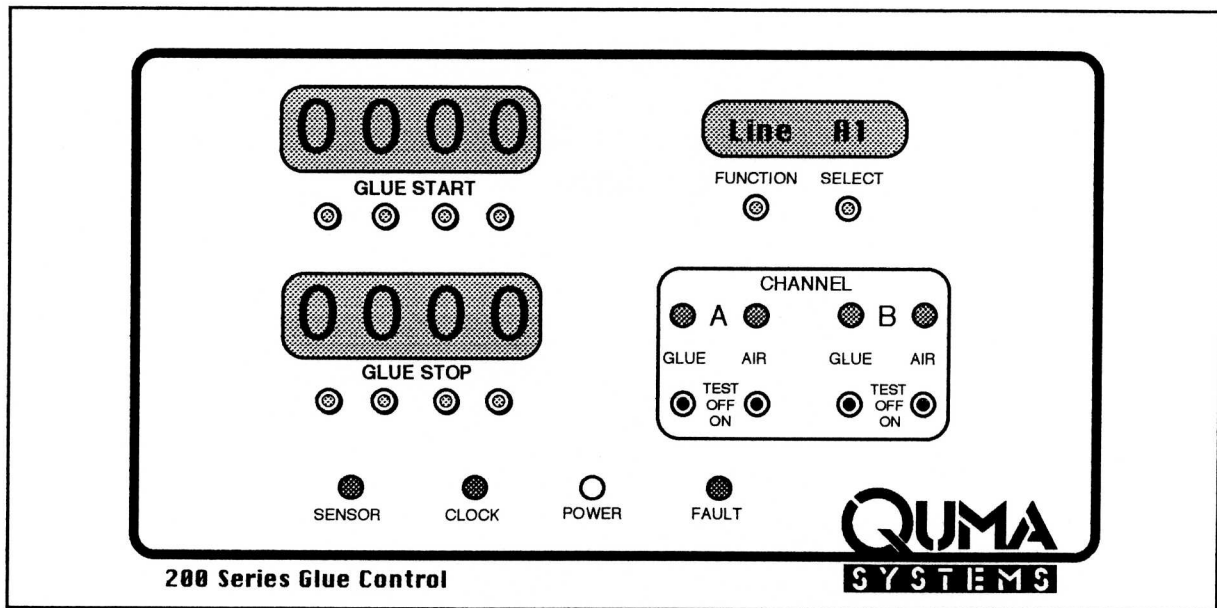
If using this facility you will have to use Prg Code to set 'Lead in' and 'Lead out' in the Offset GLUE STOP position. Having entered 5 or 10 mm you may also need to adjust the Offset to centralise the pattern.



If you need to revert to normal running at any time just press the two left hand switches together (as in zeroing glue line settings) and then enter start and stop positions in the normal way. Remember that you will need to change the settings in Prg Code back to normal as well!

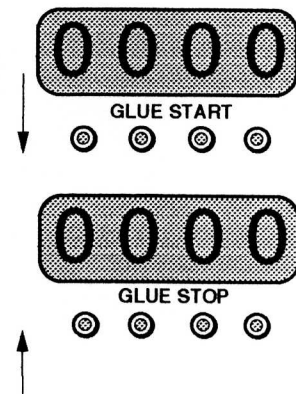
If you are only running one glue head it may be worth setting up Channel A to run in Auto mode and Channel B in Manual mode and just switch on which ever you need. Remember to plug the head into the appropriate channel in the back panel!

# To Zero Glue line settings



To save time when entering glue line positions it is possible to zero the number displayed in the GLUE START and STOP windows.

To do this the first switch on the START window must be pressed DOWN and the first switch on the STOP window must be pressed UP at the same time.

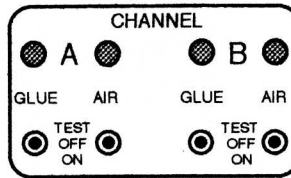


Please remember that you do not have to clear settings in all 8 glue positions. An all ZERO entry in any position will stop the controller from continuing to the next position.



# Glue head setting

Having set the glue positions you will need to select the channel/s and switch on the appropriate head/s. Below the Function window is the Channel select panel.



All the selection switches have three positions - centre is OFF , up is TEST and down is ON.

If a head or solenoid is plugged into the appropriate socket on the rear panel then moving one of these switches to TEST will turn it ON until the switch is reset to OFF! This switch should be used for quick tests to establish glue flow / clear nozzles / bleed air locks.

In the OFF position the solenoid / head is disabled.

In the ON position the solenoid / head will fire at the positions entered in the Line settings.

Extrusion Heads:

For this type of head only turn on the GLUE switch.

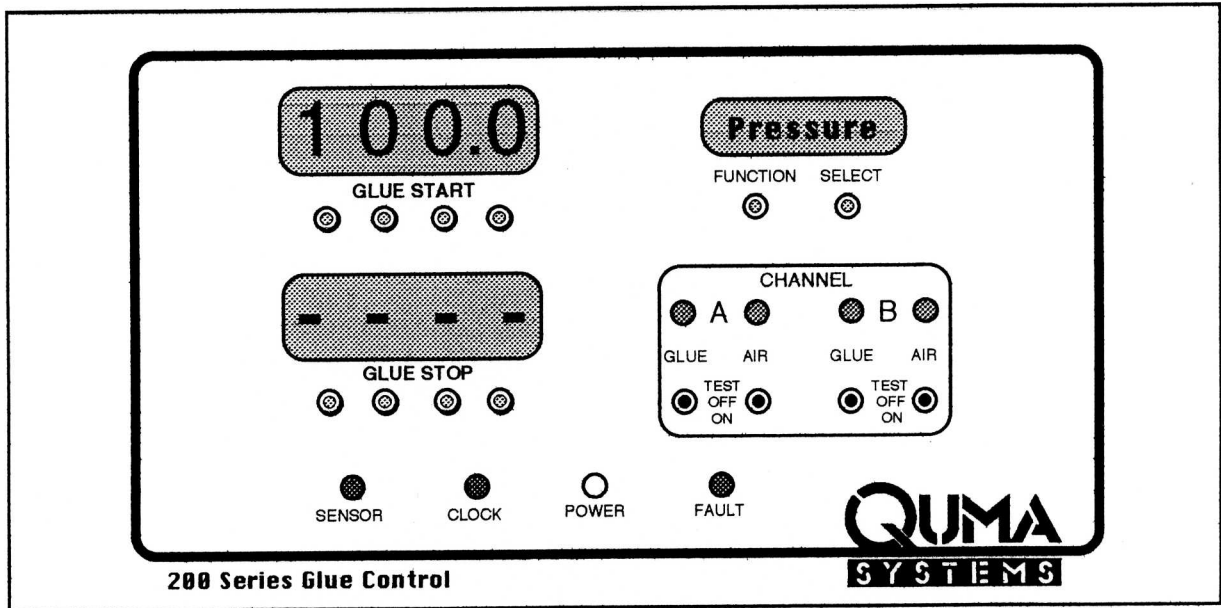
Spray Heads:

For this type of head turn on both GLUE & AIR switches

If only one head is being used, in either Channel A or B, it should be plugged into the appropriate socket/s on the rear panel and the corresponding channel selected on the front panel.



# Glue Pressure setting



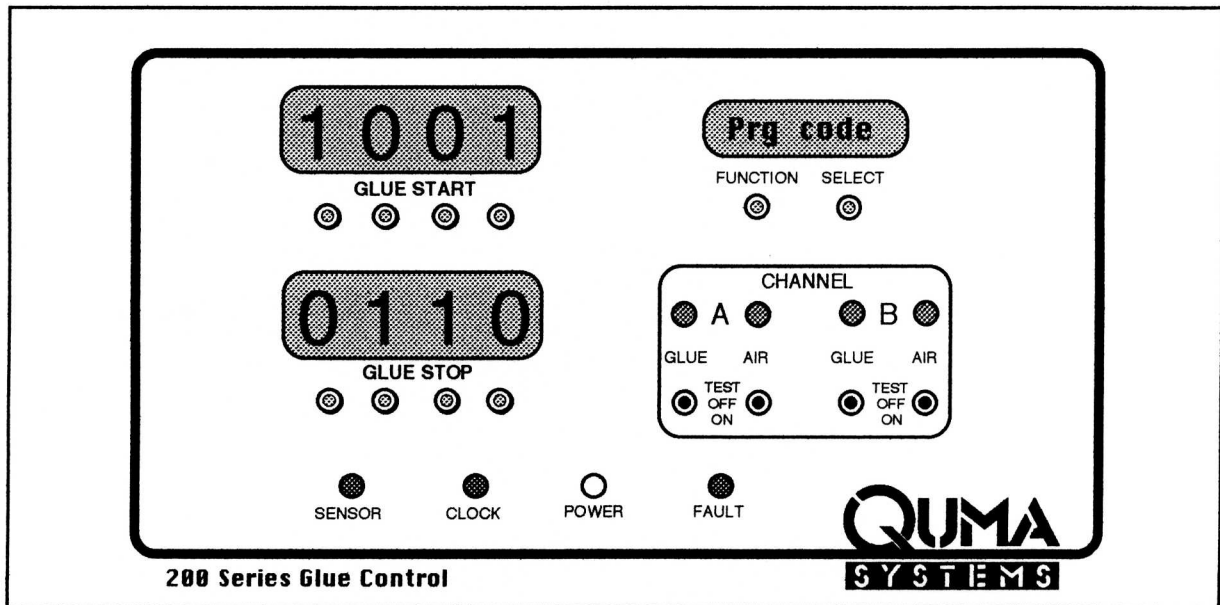
If the system is being run with glue / speed compensation then pressing the FUNCTION switch once more will display "Pressure" in the function window.

At the same time a '100.0' will appear in the glue start window and '- - - -' will appear in the glue stop window.

If it is necessary to reduce the amount of glue being applied to suit a particular job then using the switches under the GLUE START window to increase or decrease the number will have that effect on the glue applied. The 'hundred' switch does not operate - the 'ten' switch will automatically decrease to 90 or increase to 110.

The '100' is a percentage factor so halving it to 50 will greatly reduce the amount of glue. Correspondingly doubling it to 200 will greatly increase the amount of glue. We recommend that changes are carried out in small numbers eg. 10's or less to avoid problems.

# Calibrating the MAC 200



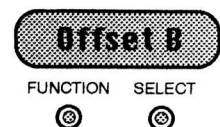
Using the FUNCTION switch to scroll down to Prg Code allows the plant engineer to access the calibration section of the controller.

First set the start and stop switches in the positions shown - 1001 and 0110. Press the FUNCTION switch down again and the following text will appear in the function window: (pressing the switch UP returns you to the main menu)



**Offset A** allows the distance from sensor A to glue head A to be entered.

**Offset B** allows the distance from sensor B to glue head B to be entered.



**Comp A** allows the ON & OFF response times of glue head A to be entered.

**Comp B** allows the ON & OFF response times of glue head B to be entered.



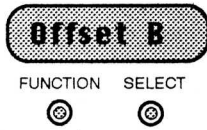
**Pres cal** sets up the automatic glue pressure compensation characteristics.

Note: After "Pres cal" pressing the switch again will return you to the main menu

# Calibration settings

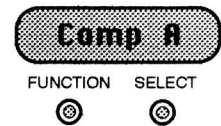


Measure the distance from the application point of the glue head to the sensing point of the photo-cell and enter it in millimetres in the GLUE START window. An accurate way is to slide a piece of board towards the sensor until the led is lit and measure from the board edge to the nozzle.



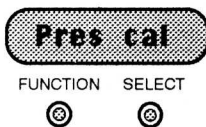
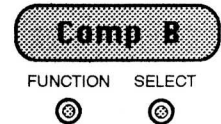
The GLUE STOP window will display the glue line radius for spray applications. If you are spraying a 20mm wide pattern then enter 0010 in this window to automatically allow for this. Note: It is not necessary to allow for extrusion patterns in this way.

The compensation times are the time it takes for the glue head to apply glue to the board and are entered in milliseconds.



Comp ON is entered in the GLUE START window and Comp OFF is entered in the GLUE STOP window.

Typical times are 0010 m/sec for extrusion heads and 0035 m/sec for spray heads.



**Pres cal** is the means of setting up the output for control of glue pressure in relation to machine speed.

The GLUE START window displays the glue output offset, ie. the low speed pressure setting.

The GLUE STOP window displays the machine speed to glue output ratio. To set this up first make sure that GLUE PRESSURE in the main menu is set at 100.0 % then return to the "Pres cal" function and enter 1000 in the GLUE STOP window.

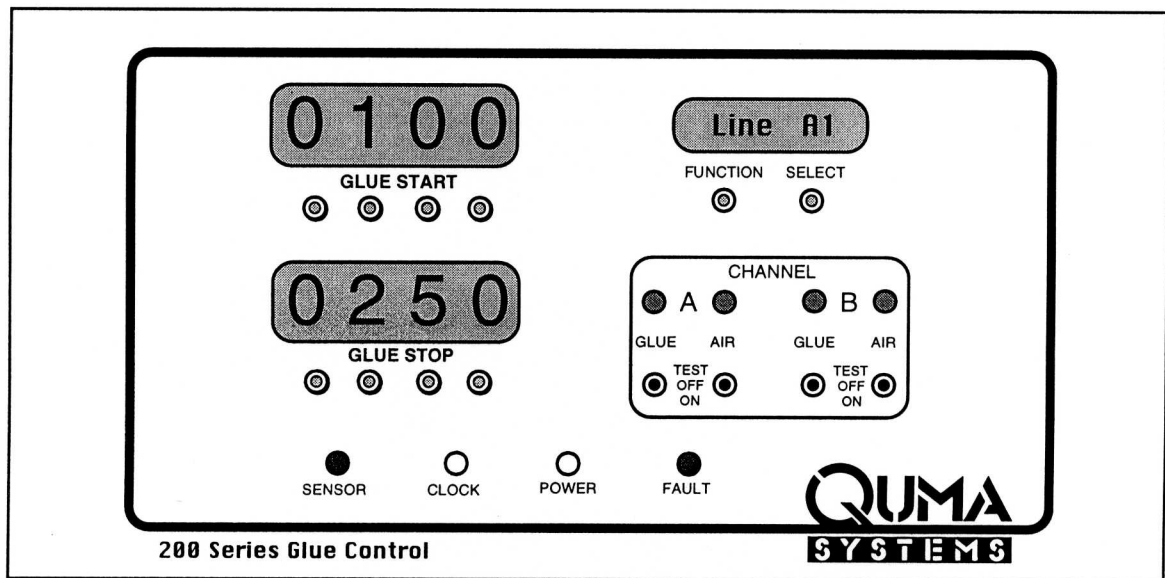
Now run the machine at a low speed and check the glue output. To adjust the amount of glue at low speed, increase or decrease the number in the GLUE START window. A good starting point would be around 2500 and should give about 25 psi air pressure to the tank or pump.

Now speed up the machine and, if necessary, increase (or decrease) the GLUE STOP window to maintain the desired level of glue output.

Now slow down the machine and check that the correct amount is still being applied and adjust the GLUE START setting if required.

Repeat the process until you are happy that the glue level is constant for the range of speed used.

# Running the MAC 200



You are now almost ready to run - but first a short check list:

1. Electrical power on - is the POWER light on the panel lit?
2. Compressed air on - check the pressure gauge on the regulator is showing the correct pressure ( 80 psi for spray, 60 psi for extrusion heads)
3. Glue tank filled or Glue pump primed and ready?

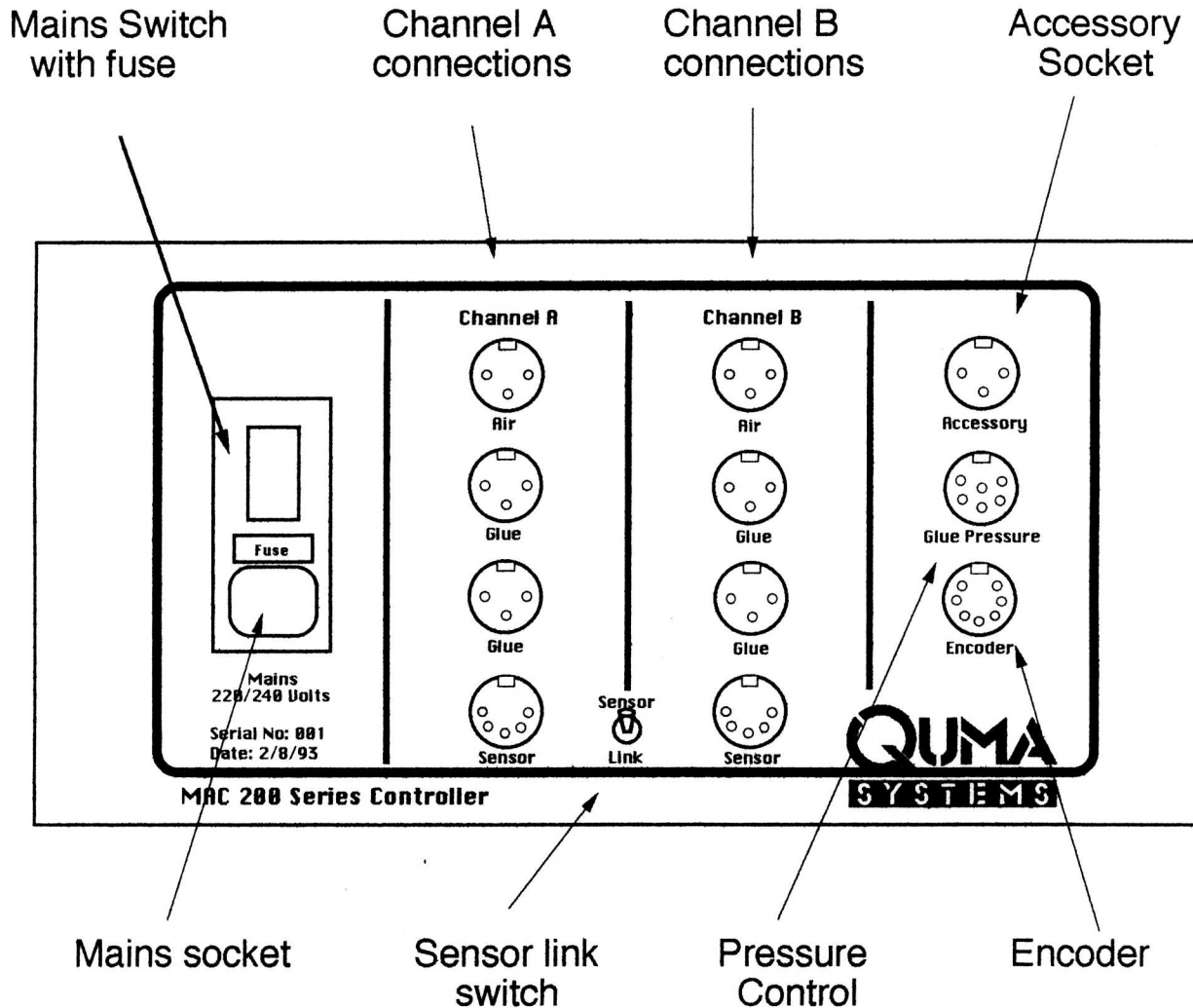
Now turn on the machine but do not feed any boards yet!

The CLOCK light on the front panel should now be on indicating that the encoder is sending machine speed information to the controller.

Now before switching on the appropriate glue head try running a board to make sure that the glue head is in the correct position and that it is sensed by the photo-electric cell - the SENSOR light should come on when the board passes it.

If everything is in order switch on the glue head and run a few test boards to make sure that the glue is starting and stopping in the desired position and that there is enough glue being applied. You are able to change the position of the glue line while the machine is running.

# Back Panel Connections



Mains Input - 240 Volts AC

Channel outputs - 24 Volts DC

Air - for spray use only, switch on on front panel

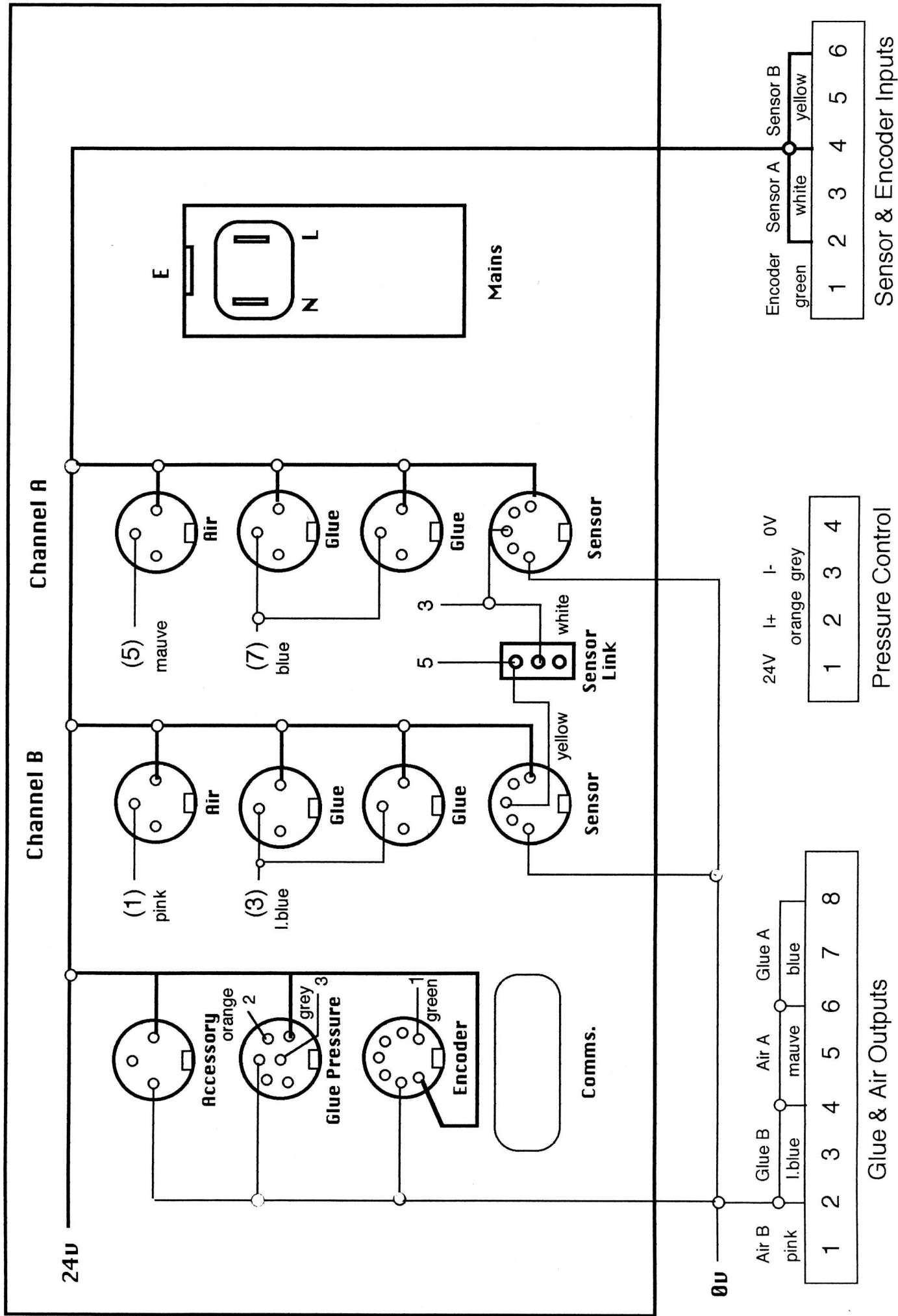
Glue - for either spray or extrusion use

Sensor link - drives A & B from single sensor when ON

Accessory - 24 Volts DC output for glue level / flow detection

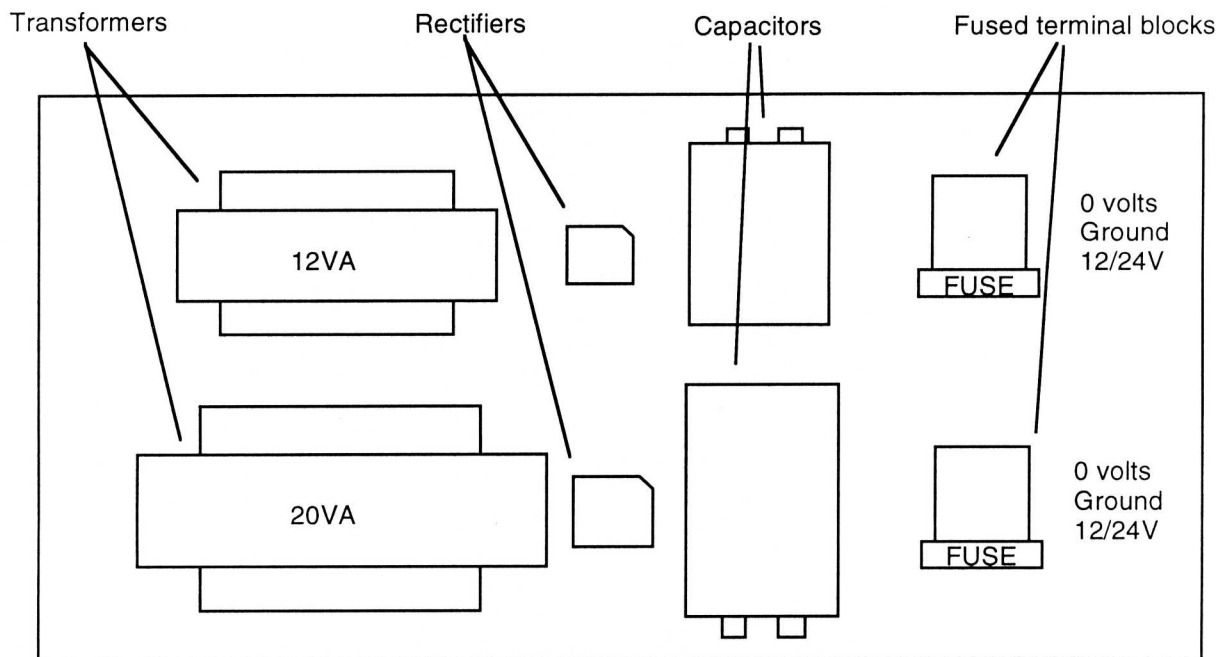
Pressure control - 0-10 Volts DC output for E / P Regulator

# MAC 200 Back Panel & PCB Connections



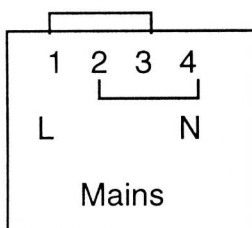
# MAC 200 Power Supplies

Twin Output 24/24 or 24/12 volt psu

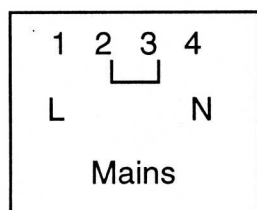


In this twin power supply the 12VA transformer supplies power to the MAC 200 pcb only. The 20VA transformer supplies the input / output devices.

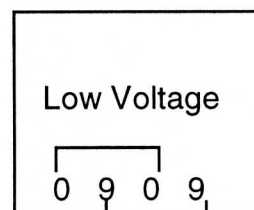
## Transformer Connections



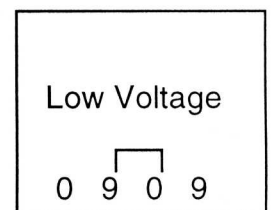
115 Volts AC



230 Volts AC



12 Volts DC



24 Volts DC



# MAC 200 System Schematic Layout

