

M I C R O W E L D E R

Servicing Instructions

Sheet 1

Removal of Top Cover of Machine

Disconnect machine from mains electrical power.

1. Remove all screws holding the top panel in position.
DO NOT REMOVE COVER.
2. Inside the left hand side cover, near the bottom front, is a connector block which carries the mains power to the cooling fan. Remove leads to FAN leaving block attached to leads in machine.
Remove cover.

Replacing Top Cover of Machine

1. Make sure that the grey insulating ring is fitted into the hole on top of the top cover before placing the cover on the machine.
2. Fit the four corner screws on the top of the machine first.
3. Re-connect the FAN leads into the connector block.
4. Make sure that the main wiring does not make contact with FAN blades (Model 'A' only).
5. Spring side covers into position and fit bottom screws of side panel. Refit other screws.

Servicing Instructions

SERVICING THE GAS PRODUCTION CELL

Before carrying out this operation, it is essential to realise that there are factors which can produce symptoms similar to those indicating that the cell requires servicing, these factors are :

1. Check sheet
2. Check all items on Chart 'C'
3. Is the pressure switch as fitted, set to the correct pressure ? If possible, fit new one and check machine operation.

The symptoms, assuming that 1, 2 and 3 check out, are as follows :-

With the machine hot (cell hot to the touch like a domestic central heating radiator) fit a torch tip one size smaller than the maximum size; if, under these conditions the top and bottom lights remain bright, then the cell requires servicing.

NOW PROCEED AS FOLLOWS :-

Disconnect machine from the mains electrical power.

OPERATION

1. Remove top cover of machine (see sheet 1).
2. a) Disconnect electrical connection to top plate of cell.
b) Disconnect plastic pipe from cell to gas outlet on front of machine.
c) Disconnect rubber pipe from cell to pressure switch.
d) Undo screws on front panel holding sight tube in position. (Not necessary on early Model 'A' machines).
e) Balance machine on edge of work bench so that the four nuts underneath the machine attached to the tie rods on the cell can be felt. Undo the nuts, keeping the machine supported with the forearm. When removed, slide machine back onto work bench.

NOTE : With Models 'B', Super 'B' and 'C', some of the cells have an insulating bush fitted between the base of the cell and the chassis.

NOTE : There is an insulating ring between the nut and the base of the machine on the underside.

At no time allow these cells to be connected direct to the chassis. The relevant holes into which the insulating bushes fit are larger; only one cell will be connected to the chassis.

Make a note of how the electrical leads between the cells are connected before removal. See Suffix on Super 'B' and 'C' models.

2. f) Lift cell out of case and keeping upright place on work bench.

NOTE : The electrolyte in the cell is HIGHLY CAUSTIC so take care when carrying out the following :

- g) Undo the four retaining nuts on the corners of the top plate, remove, complete with steel washers.
Note the position of the bolt which the transformer lead connects to.
- h) Remove insulating bushes from top plate. These may be difficult to move if the machine has been in use for a long time.
- i) Using a screwdriver, or similar, prise top plate upwards so that it is free of the outer cell. DO NOT REMOVE INNER, just prise free so that it can be lifted out easily.
- j) Place layer of absorbent paper or cloth on work bench to put cell inner on when removing from cell outer.
LIQUID IN CELL IS HIGHLY CAUSTIC.
- k) Remove cell inner and place on absorbent material.
- l) Empty outer cell down toilet and flush toilet at least three times. This operation will not affect the toilet (or sink), since being caustic, it will help clean passageways like any other caustic cleaner. Then rinse out cell with plenty of cold water to neutralise the caustic solution.

2. m) Take cell inner and wipe dry on paper or cloth. Then rinse with plenty of cold water. After rinsing, remove rubber cell top seal and discard.
- n) Fill cell outer with very hot water and place inner cell into outer, leave for 2-3 minutes to heat up, then empty out water.
- o) Put one cupful of household detergent ('Tide' has been found the most suitable) into cell outer and fill with boiling water. (Boiling water preferably, otherwise as hot as possible). Place inner cell into liquid and leave to cool to a comfortable hand temperature.
- p) Take piece of plastic scouring pad (Scotbrite', or similar, available from any hardware store) and thoroughly clean both inside and outside of both inner and outer cells. Empty outer cell and thoroughly rinse both parts with plenty of cold water. When all soap has disappeared, give a final rinse with very hot water. No bubbles due to the soap should appear. (This is very important). Undo top connection of sight tube and allow hot water to flow from both pipes projecting from cell. This is to ensure that no soap is retained in the tubes. When clean, empty cell and allow to dry.
- ON NO ACCOUNT TOUCH THE PLATED INNER CELL WITH YOUR HANDS AFTER CLEANING, AS OIL ON THE SKIN WILL POLLUTE THE SURFACE.
- q) Fit new cell rubber seal by sliding over cell inner without touching cell plated surface. Handle the inner only by the top plate. Now place inner into outer, making sure that the tie rods come up through the holes in the top plate.

NOTE:

The position of the bolt welded on the top plate should be in the same position relative to the sight tube. (See note g.)

- r) Renew sight tube and wire on top and bottom.
- s) Place the cell back into the machine and refit the fixing nuts to the tie rod ends projecting through to the underside of the case. To do this, the case can be put on end.

NOTE :

With the nuts fully tightened, the end of the tie rods should be flush with the head of nut.

..... / Over :

2. t) Now refit the insulating washers over the tie rods projecting through the top plate and press them down into the holes in the top plate. Fit the steel washers followed by the fixing nuts. They should, at this point, only be tightened finger tight. (The top plate needs to be tight enough to enable the top plate to be moved against the friction of the rubber seal. It should, however, be tight enough to remain in position after being moved. This is necessary since the filler tube has to be aligned with the hole in the top cover).
- u) Make sure that the transformer lead will not foul the top cover of the machine. (Push it down into the machine.) Fit the top cover to the machine first by the four top corner screws then one in each end panel at the bottom. Now align the filler tube projecting through the top cover so that it is central with the grey insulating ring. Remove top cover making sure that the filler tube is not moved. Now gently tighten the four cell top plate fixing screws until they are just tight, (approx. 2ft/lbs. torque).
- v) Re-connect transformer lead to cell top plate making sure that it does not make contact with the corner top plate fixing nut.
- This connection must be pulled up as tight as possible.
- w) Renew plastic tube from top of cell to gas outlet on front of machine. Wring the tube onto gas outlet with copper wire approx. 18-gauge (1.5mm). Renew length of rubber pipe from top plate of cell to pressure switch.
- x) Mix correct quantity of electrolyte pellets with distilled water - see mixing instructions in Instruction Book - and when mixture is lukewarm, pour into cell. When liquid appears in sight tube level with top up mark on label on front of machine, tilt machine backwards through approx. 30° - DO NOT LAY ON BACK - so as to clear any bubbles trapped in sight tube. When clear of air bubbles, continue filling up to correct level. Refit filler top cap.

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2. y) Check that the gas atomiser is full with clean M.E.K. (Methyl-Ethyl-Ketone). Connect short length of tube to gas outlet on front of machine and connect to gas inlet on atomiser. Connect torch hose to 'Torch' position. Fit torch with largest tip. Plug machine into mains and switch on machine. DO NOT ATTEMPT TO LIGHT TORCH YET AS A BLOW BACK CAN OCCUR WHICH WILL DAMAGE THE PRESSURE SWITCH.
- Check that there are no gas leaks by pinching tube (see Instruction Book). If none, then the machine should pulsate the lower indicator lamp 'bright' / 'dim'.
- z) All that remains now is to fit the top cover. See Sheet 1.

Appendix I

CHECKING FAULTY RECTIFIERS (DIODES)

- 1) To test rectifiers, remove top cover of machine (Sheet 1).
- 2) Remove nuts holding diodes, nuts are located on rear panel, lefthand side. The heat sink fins are held in position by these nuts also.
- 3) Use an electrical test meter (NOT megger) on low resistance range.
 - a) Connect meter lead (red) to end of diode where transformer lead is connected.
 - b) Connect meter lead (black) to threaded end of diode.
 - c) A good diode will indicate a small resistance.
 - d) A bad diode will indicate a 'short' or 'open' circuit.
 - e) REVERSE METER LEADS.
 - f) A good diode will indicate a high resistance.
 - g) A bad diode will indicate a 'short' or 'open' circuit.

Main Causes of diode failure are :-

- i) Overfilling machine causing too high a current to flow through the cell.
- ii) Running the machine with a gas leak or too large a torch tip.