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# Repairing the Anesthetic Gas Module

## Introduction

This section contains detailed removal and replacement procedures for all field-replaceable units in the Philips M1026B Anesthetic Gas Module.

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**CAUTION** Use caution when handling tubing and other components of the patient circuit. Wear gloves, mask and gown while handling components that come into contact with the patient's exhalant gas or fluids.

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Before you can remove any of these field replaceable units, you first need to remove the top cover of the Anesthetic Gas Module. The procedure for this is described in *Removing the Top Cover* below.

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**WARNING** Switch off the instrument and disconnect it from the mains power supply. Take standard electrostatic precautions. For example, a wrist strap connected to electrical ground.

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## Event Log

Whenever a power supply, a pneumatic assembly or an O<sub>2</sub> cell are replaced, record this procedure in the event log of the M1026B Service Software.

The screenshot shows the 'Event Log' software window. It is divided into two main sections: 'Write Event Log' and 'Read Event Log'.

**Write Event Log Section:**

- Request Info:** Includes radio buttons for 'Manual / Auto Time Select' (Manual and Auto), a 'Write' button, and a text field containing 'Ready'.
- Event ID:** A dropdown menu showing 'New Pneumatic Manifold', followed by input fields for 'Month' (11), 'Day' (12), 'Year' (2003), and 'Hour' (15). A 'Service ID' field is empty.
- Response Info:** Includes 'Event Number' and 'System Hours' input fields.
- Logging:** Radio buttons for 'OFF' and 'ON' (selected).
- Buttons:** Close, Cancel, Help, and Print.

**Read Event Log Section:**

- Request Info:** Includes radio buttons for 'Read Event Log' (All Events by ID and All Event Log), an 'Event ID' dropdown menu (None), a 'Read' button, and a 'Done' text field.
- Table:** A table with columns: N, Event ID, Event N, Month, Day, Year, Hour, Serv ID, Sys Hours.
 

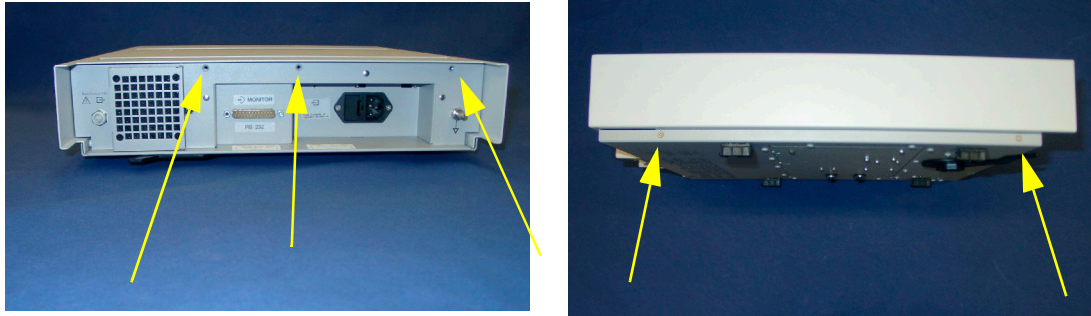
N	Event ID	Event N	Month	Day	Year	Hour	Serv ID	Sys Hours
1	New Power Supply	3	11	7	2003	11	815	747
2	New O2 Sensor	2	9	23	2003	11	7	231
3	New Pump	1	9	23	2003	11	114	231
4	No More Events							

**NOTE** You need to enter a freely selectable Service ID with every log entry.

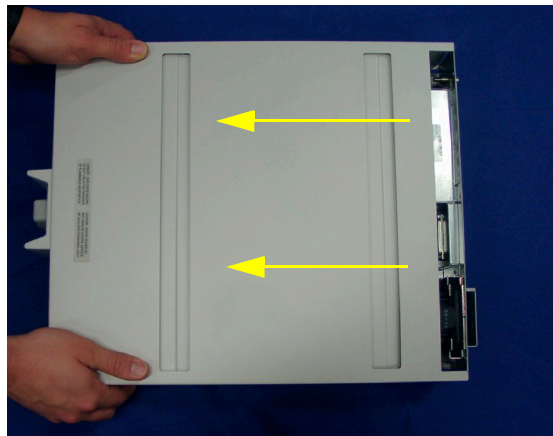
## Removing the Top Cover

- 1 Make sure that the module is switched off and isolated from the mains power supply.
- 2 Remove the watertrap from the front of the cover.

- Using a cross-tipped screwdriver, remove the 7 screws securing the top cover to the body. These screws are located at the rear of the module and on the sides.

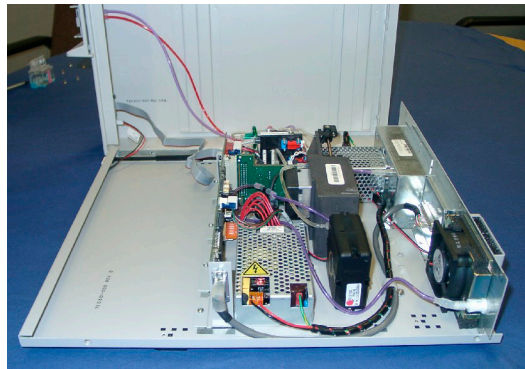


- Slide the top cover forward approximately 4cm.

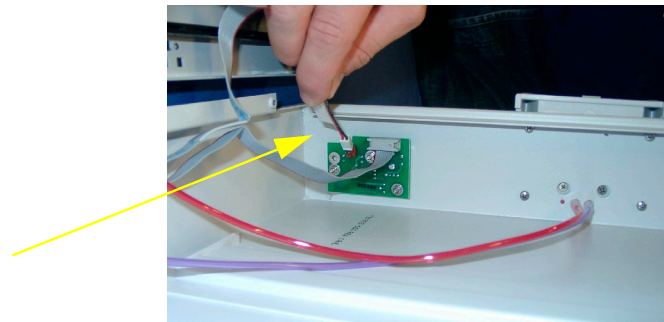


**NOTE** At this stage, the top cover is still connected to the main PC board by a flat cable and to the Power On LED with a cable and the internal gas tubing.

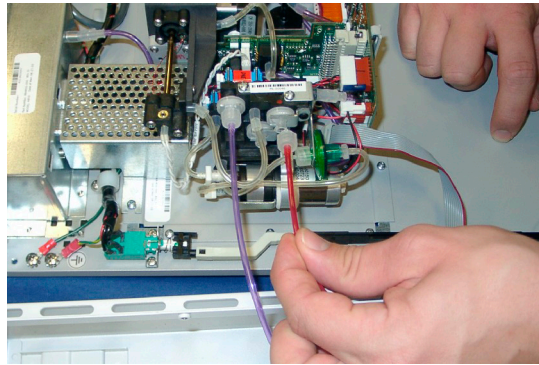
- 5 Carefully lift the top cover until the flat cable connector leading to the main PC board, the LED connector and the internal tubing are accessible.



- 6 Remove the LED connector from the front panel PC board inside the top cover.

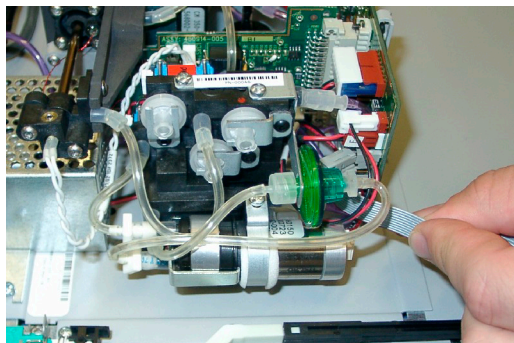


- 7 Remove the internal tubing from the pneumatic manifold.



**NOTE** When reconnecting the red tubing, connect it where the red dot is on the pneumatic assembly

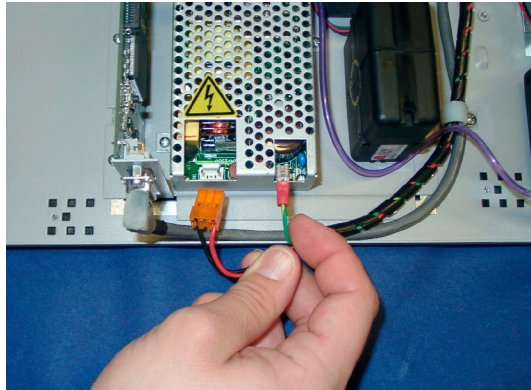
- 8 Remove the flat cable connector from the main PC board.



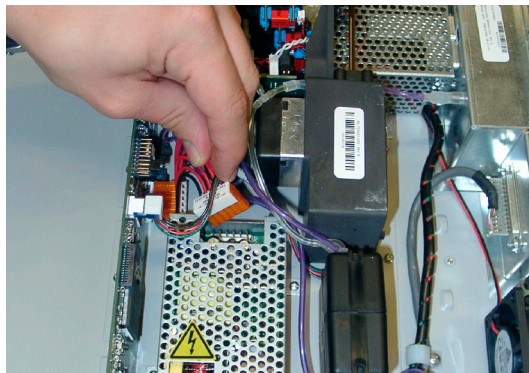
- 9 Remove the top cover from the module.

# Replacing the Power Supply

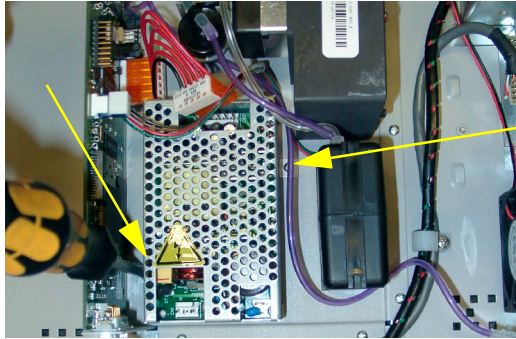
- 1 Remove the mains and the ground connectors from the power supply.



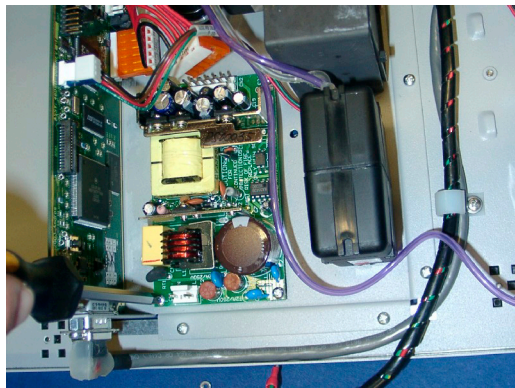
- 2 Remove the connector to the main PC board.



- 3 Remove the two screws securing the power supply cage.



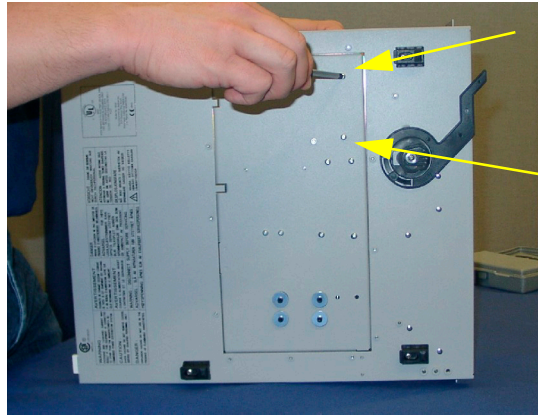
- 4 Remove the power supply cage.
- 5 Remove the four screws to take out the power supply board.



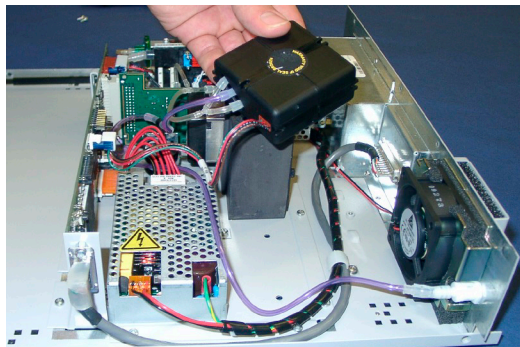
- 6 Follow the above steps in reverse order to replace the power supply.

## Replacing the O<sub>2</sub> Cell

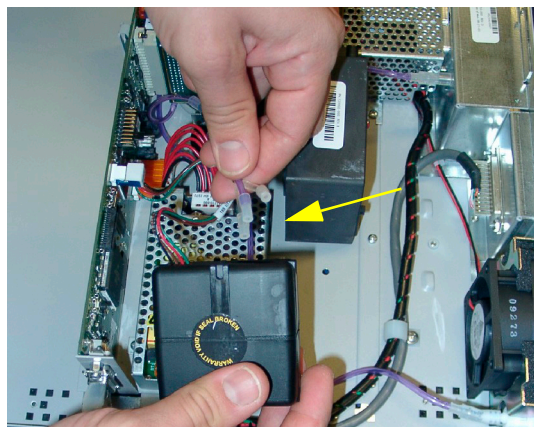
- 1 Remove the two screws securing the O<sub>2</sub> cell at the bottom of the Anesthetic Gas Module.



- 2 Lift out the O<sub>2</sub> cell.

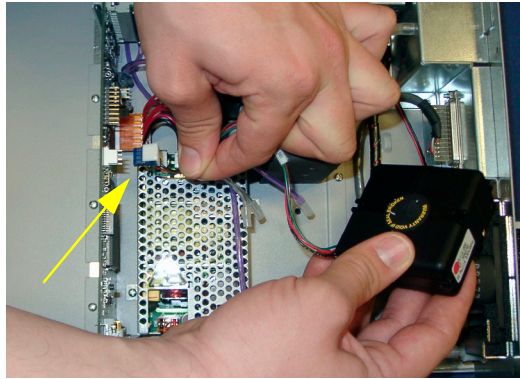


- 3 Remove the tubing from the O<sub>2</sub> cell.





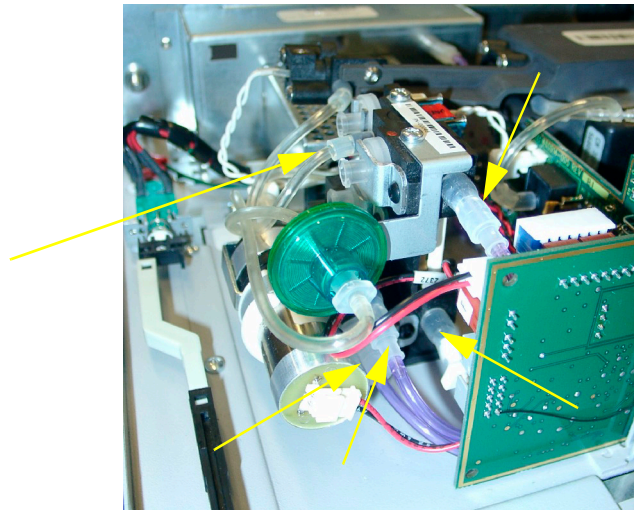
- 4 Remove the connector to the main PC board.



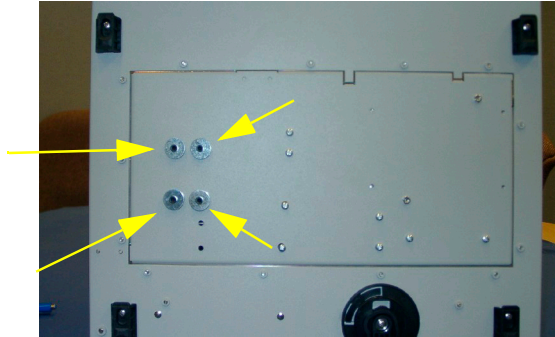
- 5 To replace the O<sub>2</sub> cell, follow the above procedure in reverse order.

## Replacing the Pneumatic Assembly

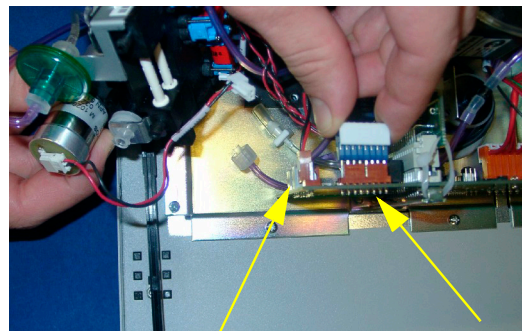
- 1 Remove the tubing from the pneumatic assembly.



- 2 Remove the four screws securing the pneumatic assembly at the bottom of the Anesthetic Gas Module.



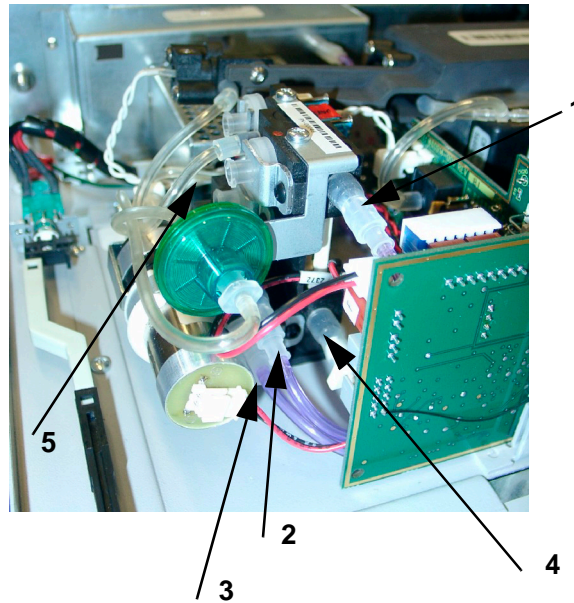
- 3 Lift up the pneumatic assembly and disconnect the solenoid connector and the pump connector to remove it completely.



Pump Connector

Solenoid Connector

- 4 Replace the pneumatic assembly making sure that the tubing is connected correctly.



1	Tubing to T-piece to dampening volume and differential pressure sensor
2	Tubing to zero gas outlet
3	Tubing to sample gas outlet
4	Tubing to differential pressure sensor
5	Tubing to sample cell inlet

**NOTE** Whenever the pneumatic assembly is replaced it is mandatory to perform a flow calibration.