SIGNAL SERIES 420

NOx CONVERTER

INSTRUCTION MANUAL

1. UNPACKING INSTRUCTIONS

This instrument is packaged for general freight purposes. It should withstand the occasional 'bumps & knocks' which occur during transit.

Please check the instrument for damage, however, and report any damage within 24 hours to the factory or its Sales Office or Distributor.

INTRODUCTION

Conversion of Nitrogen dioxide to Nitric oxide is carried out by passing the gas through a heated tube containing a carbon material. Part of the conversion is accomplished thermally:-

$2NO_2 + Heat \longrightarrow 2NO + O_2$

The remainder of the conversion is carried out by Carbon chemically reducing Nitrogen dioxide:-

$NO_2 + C \longrightarrow NO + CO \quad 2NO_2 + C \longrightarrow 2NO + CO_2$

When gas is passing through the converter the analyser is said to be in NOx mode, when gas is by-passing the converter, the instrument is said to be in NO mode.

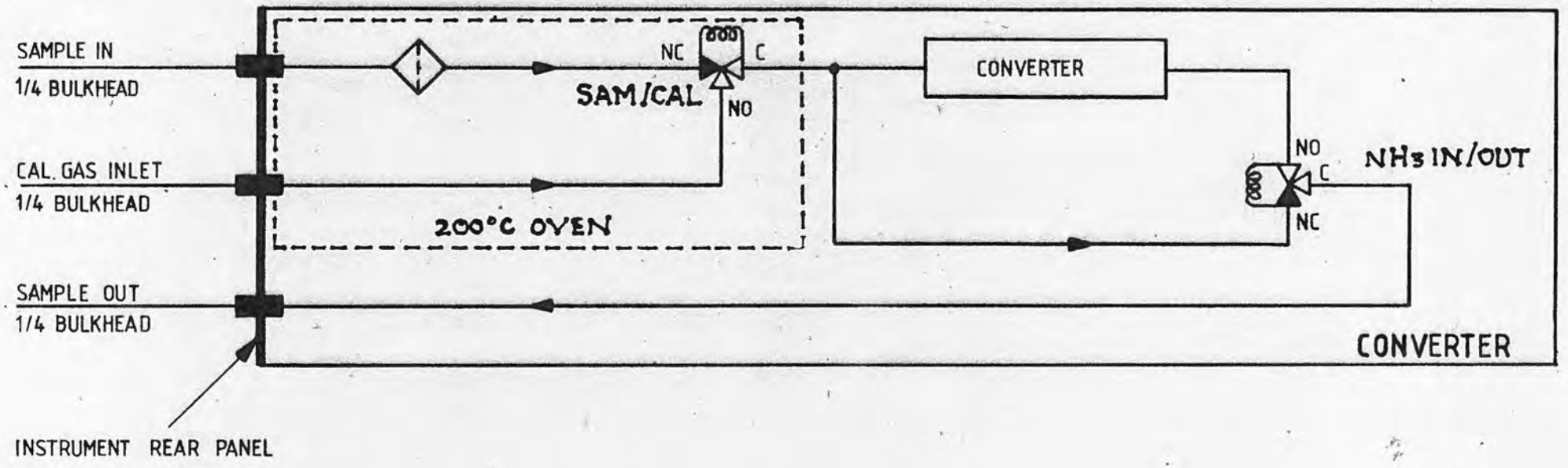
It is important, when designing a converter, that operating conditions and materials are chosen to prevent undesirable side reactions occuring which may destroy the Nitric oxide in the sample gas.

Carbon monoxide is known to cause problems in certain types of converters due to the reaction between Nitric oxide and Carbon monoxide:-

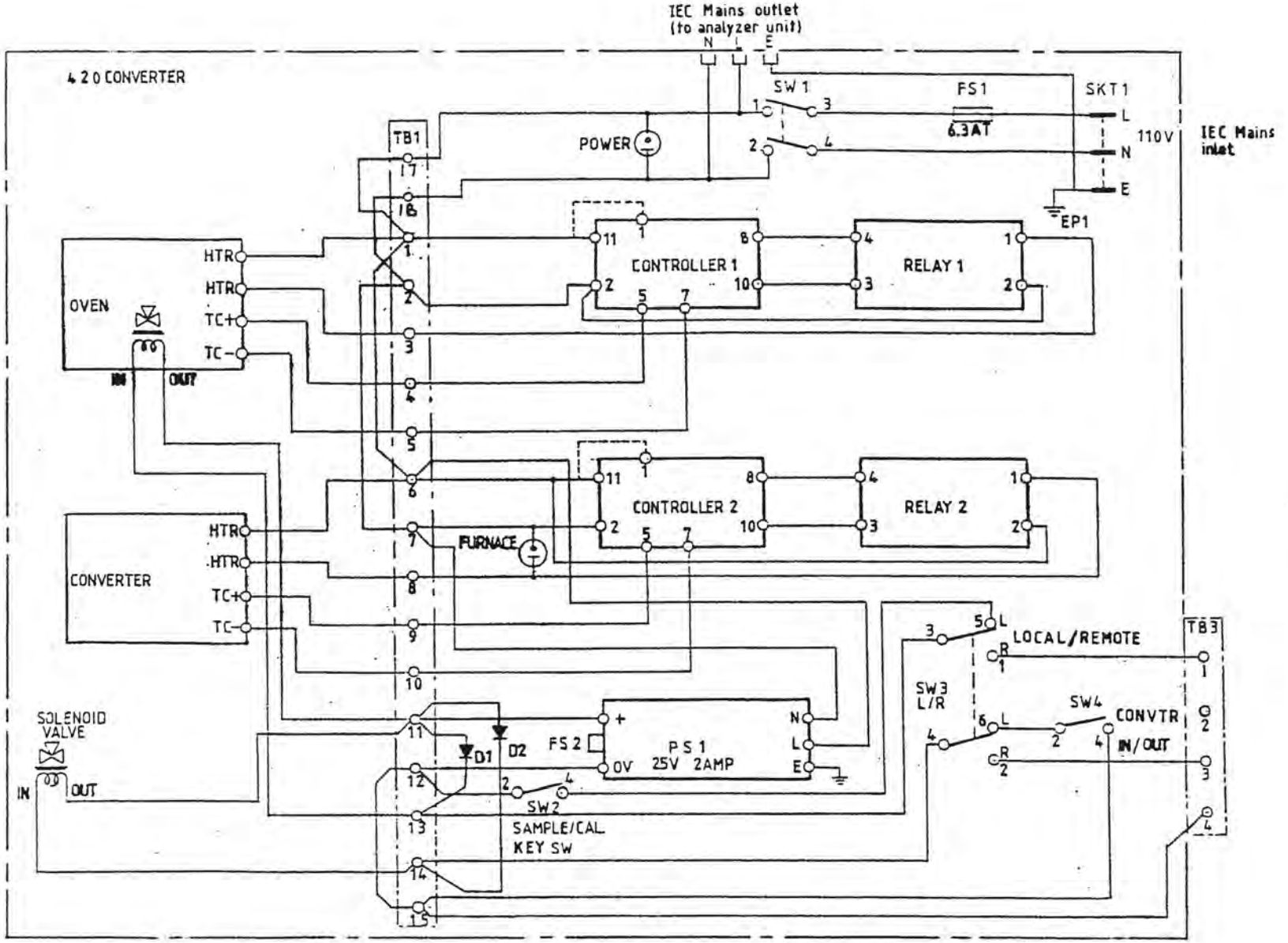
$2NO + CO \longrightarrow CO_2 + N_2$

The reaction takes place in the absence of Oxygen and is catalysed by stainless steel. Also, some higher temperature converters convert Ammonia to NO thus producing erroneous NOx reading.

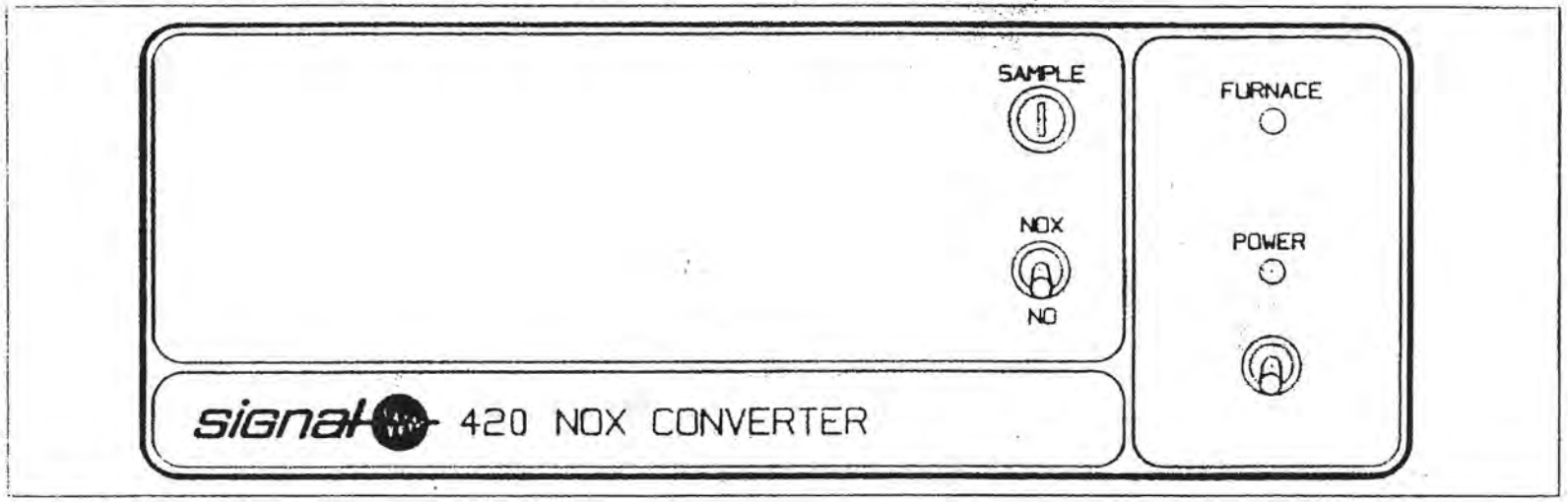
The Model 420 converter has been designed to overcome this undesirable side reaction by the use of a titanium furnace tube and a special Carbon material in place of stainless steel.



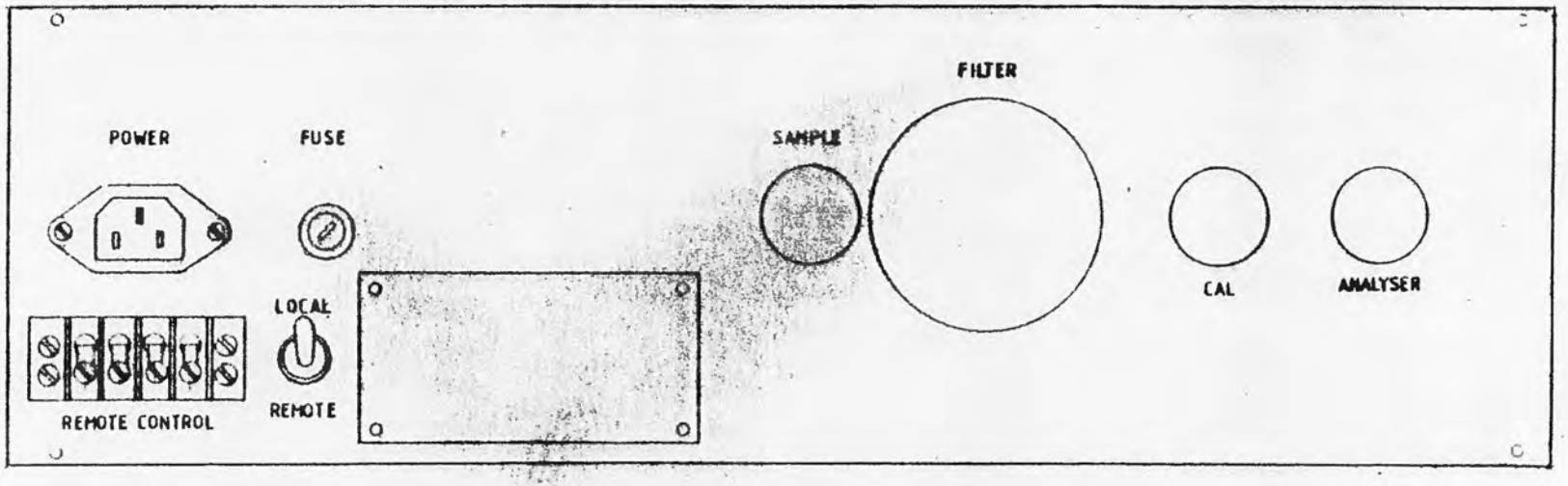
PLUMBING ARRANGEMENT



ELECTRICAL CIRCUIT



FRONT PANEL ARRANGEMENT



REAR PANEL ARRANGEMENT

SETTING UP INSTRUCTIONS

1) With power connected to correct voltage, switch on power at front panel mains switch. Allow 1 hour for instrument to fully stabalise. (indicated by furnace neon on front panel flashing to show heater control).

2) Connect sample input to rear panel sample connection.

3) Connect rear panel "ANALYSER" connection to analyser.

4) Select Remote/Local switch on rear panel to relevant position.

5) At front of instrument switch NO/NOX switch to NOX position - Keywitch to sample.

6) Instrument is now ready for use.

7) Note Flow rate through this instrument must be ½-2 L/min it must never rise above 2 L/min.

8) There are two sample inlets marked Cal and Sample. These can be usefull for checking converter operation within a system.

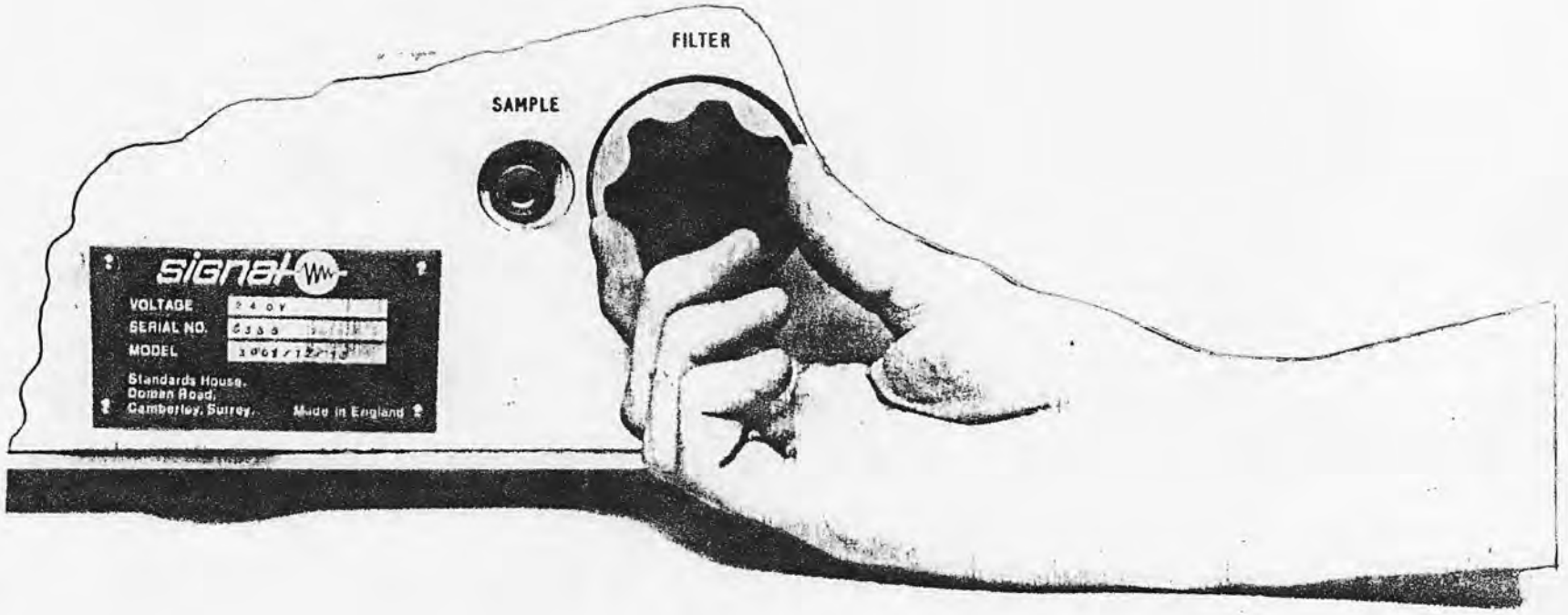
9) Converter efficiency must be periodically checked using a Signal Model NOXGEN 3..

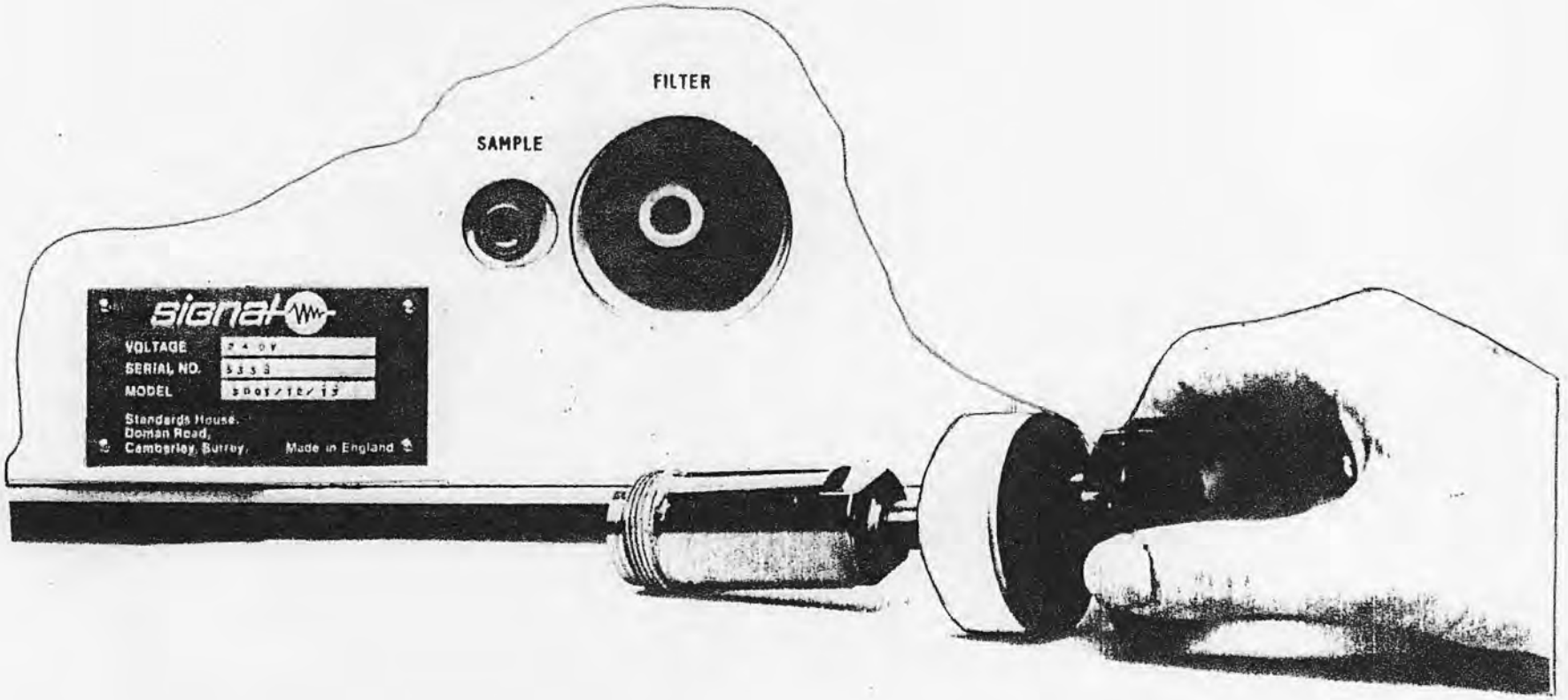
SAMPLE FILTER

The sample filter should be periodically changed.

The sample filter should not reqùire constant changing during normal use, but is obviously dependant on cleanliness of the sample provided.

Changing the sample filter could not be simpler. Unscrew the filter holder, remove and replace, if necessary, the filter element, then screw the holder back in place as shown on Pages 8A and 8B.


FILTER
SAMPLE
signal
VOLTAGE
SERIAL NO.
MODEL
Standards House,
Dorman Road,
Camberley, Surrey.
Made in England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