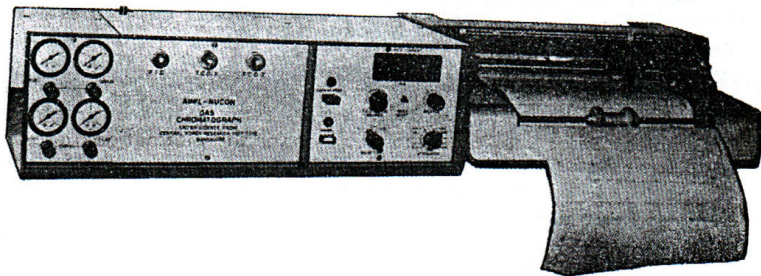


# **NUCON** SERIES 5900 (CPRI) Gas Chromatograph

For Analysis of Dissolved Gases in  
Transformer Oil to Detect Internal  
Faults in Power Transformers  
in Operation



## DETAILS AND APPLICATIONS

DISSOLVED GAS ANALYSIS OF TRANSFORMER OIL BY GAS CHROMATOGRAPHY IS USED AS A DIAGNOSTIC TOOL TO DETECT INTERNAL FAULTS IN POWER TRANSFORMERS IN OPERATION. THIS TEST HAS GAINED CONSIDERABLE IMPORTANCE AND POPULARITY AND DEMAND FOR THIS TESTING FACILITY IS ON THE INCREASE. KEEPING THIS IN VIEW, AIMIL-NUCON UNDER GUIDELINES FROM CENTRAL POWER RESEARCH INSTITUTE, BANGALORE HAVE INTRODUCED THIS MODEL EXCLUSIVELY FOR TRANSFORMER OIL GAS ANALYSIS AT A LOW COST.

## 1. GENERAL SPECIFICATIONS

- \* Three Column Gas Chromatograph with Single Flame Ionisation Director (FID) and two Thermal Conductivity Detectors (TCD).
- \* Compact arrangement of the electronic controls and the column arrangement.
- \* Capacity to analyse at ambient temperature, gases like Hydrogen, Oxygen, Nitrogen, Carbon Dioxide, Methane, Ethane, Ethylene, Acetylene, Propane and Propylene.
- \* Gas circuit with three input connections—two input connections for carrier gases Nitrogen, Hydrogen and one input connection for air.
- \* Provision of using only one recorder for FID or TCD by interchanging the connection leads with a selector switch.
- \* Special safety feature in the form of a Carrier Pressure Switch, which will switch off the power supply to TCD filaments (to prevent their oxidation and burnout) in the events of carrier gas absence.
- \* Stainless Steel Gas Tubing connections for the internal gas circuit to ensure sturdy and leakproof operation.

## 2. FLAME IONISATION DETECTOR (FID)

- \* Single Column connection to 40/60 mesh Silica Gel Column of 6' long and 1/8" Diameter.
- \* Stainless Steel construction with optimised detector to have maximum collection efficiency and ease of maintenance.
- \* Two pressure gauges and two flow control needle valves—one each for Hydrogen and carrier.
- \* Ultra low input current solid state ionisation current amplifier with:
  - i) Highest current sensitivity of  $5 \times 10^{-12}$ A full scale
  - ii) Sensitivity in terms of minimum detectable limit is better than  $10^{-8}$  gm of Fatty Acid Microlitre solvent. This also ensures high sensitivity, measurements of Hydrocarbons at PPM levels.
  - iii) Extremely low noise and drift
  - iv) Linearity: Greater than  $10^6$ .

- v) Input impedance : Greater than  $10^{12}$  ohms
- vi) Attenuator : In binary steps from 1 to 1024 and infinity (short).
- vii) Balance : In the form of 10 Turn Potentiometer on the front panel
- viii) Integrator output for Data Station.

### 3. THERMAL CONDUCTIVITY DETECTORS (TWO NUMBERS)

In each of these detectors, there are two Tungston Rhenium filaments with one filament connected to the column and the other to the carrier gas connection through a Flow Control Needle Valve.

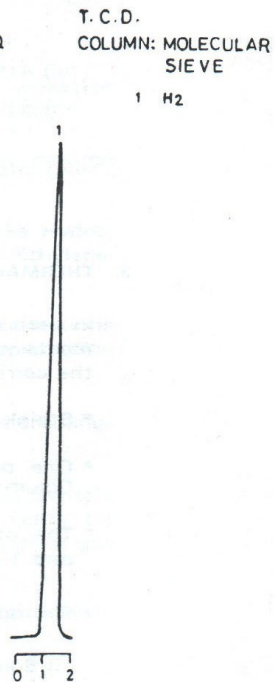
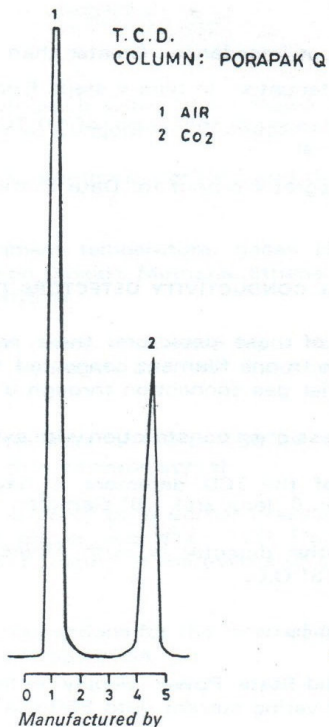
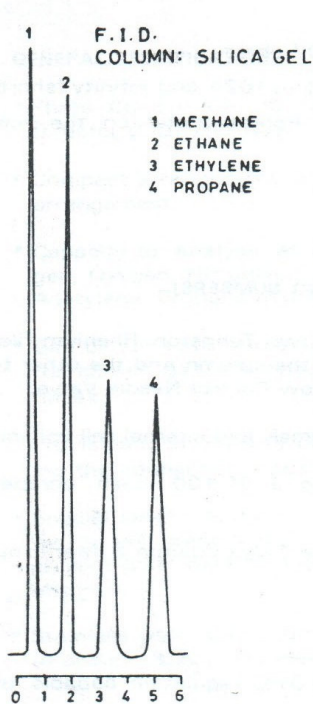
- \* Stainless steel construction with extremely low internal cell volume
- \* One of the TCD detectors is having a 80/100 mesh porapak Column 6' long and 1/8" diameter.
- \* The other detector is with Molecular Sieve Column 6 feet long and 1/8" O.D.

#### \* Electronics

- i) Solid State Power Supply with 0.01% regulation capable of delivering current up to 350 mA.
- ii) Filament energisation constant current mode with protection circuit which disconnects the filament power in the events of malfunctioning of the current control electronics.
- iii) Zero Balance : Coarse and Fine Controls
- iv) Attenuator : In binary steps from 1 to 1024 and infinity (short).
- v) Separate output for Integrator.

### 4. INJECTION PORTS

- \* Low volume injectors designed for horizotal injection. They will take 9.6 mm dia and 3.2 mm thickness Rubber Septa.



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