

# PORTABLE GAS CHROMATOGRAPH

## GC-FE



## TECHNICAL DESCRIPTION

## Application and operation principle:

Portable gas chromatograph GC-FE is designed for qualitative and quantitative analysis of electron-acceptor substances in gaseous and condensed samples in a stationary conditions or mobile laboratories.

The field of application is the detection and identification of explosives with the purpose of ensuring the safety of air, automobile, water and railway transport, industrial enterprises, office and residential premises, during the examination of mail, packages and goods, as well as individuals.

Gas-carrier (argon) is supplied from the gas unit to the analytical unit through the gas line, which is a polymer tube with 4 mm outer diameter and 0.75 mm wall thickness.

Analytical unit is designed for input of samples, separation of substances and their detection and has the elements of thermostating.

Gas feeding of the chromatograph is performed from the built-in high pressure cylinder with a capacity of 2 liters.

Analyzed samples: liquid, gaseous

Samples input: syringe and concentrating injectors (with the help of exchangeable assemblages)

Liquid sample preparation: dissolving of the analyzed substance in an appropriate solvent (ethanol, acetonitrile or methanol)

Enrichment of gaseous samples: adsorption pre-concentration

Separation of substances is made on the multicapillary column.

Registration is made by the electron-capture detector (ECD), containing sealed radionuclide sources of beta radiation on the base of Nickel-63 in the amount of 2 pieces with the activity of 0.45 GBq each.

Software: specialized Chrom software for control of the chromatograph's operation, data acquisition and processing, forming the chromatograms archive and updating of the detectable substances databases

## General technical characteristics:

<b>Detector type</b>	Electron-capture (ECD)
<b>Gas-carrier</b>	Argon (or nitrogen)
<b>Typical substances</b>	Electron-acceptor substances (nitro-, halogen-, phosphorous-containing compounds), in particular, explosives, pesticides
<b>Detection limit to particular compounds</b>	Standard – not more than 2 pg lindane RDX: 16,0 pg TNT: 3,0 pg PETN: 5,0 pg
<b>Pressure of the gas-carrier in the chromatograph's cylinder</b>	From 2 to 15 MPA (20-150 kgf/cm <sup>2</sup> )
<b>Consumption of the gas-carrier through the column (at non-operating device)</b>	60±4 cm <sup>3</sup> /min
<b>Consumption of the gas-carrier through the drain line</b>	7,0±1 cm <sup>3</sup> /min
<b>Warm-up time (time of readiness to operate) of the chromatograph</b>	Not more than 1 hour under condition of everyday device operation
<b>Admissible level of zero signal fluctuation noise</b>	Not more than 3,0 mV under condition that the device is in ready-to-operation mode
<b>Detection threshold</b>	Not more than 2x10 <sup>-12</sup> g in a sample (for lindane)
<b>Analysis cycle duration</b>	Not more than 60 sec
<b>Time of continuous operation</b>	Not less than 8 hours (from mains 110÷240 V 50÷60 Hz)
<b>Overall dimensions of the chromatograph</b>	Not more than 470x305x285 mm
<b>Weight of the chromatograph</b>	Not more than 16 kg

## Complete set of the Gas Chromatograph GC-FE includes:

### I. Component parts:

1. Gas Chromatograph.....	1 pc.
2. Syringe input assemblage.....	1 pc.
3. Concentrator input assemblage (integrated into the GC) .....	1 pc.
4. Sampling device .....	1 pc.
5. Power adapter .....	1 pc.
6. Concentrator cassette.....	1 pc.
7. Vapor generator .....	1 pc.
8. Hamilton syringe 7001 N 1.0l .....	1 pc.
9. USB A-B cable, 0.5 m.....	1 pc.
10. Housing.....	1 pc.
11. PC power adapter.....	1 pc.
12. GC power supply cable .....	1 pc.
13. Supply-line filter.....	1 pc.

### II. Documentation:

1. Operating manual .....	1 pc.
2. Logbook.....	1 pc.
3. Chrom operating manual .....	1 pc.
4. Cylinder assembling and operating manual .....	1 pc.
5. Cylinder passport.....	1 pc.
6. PC technical documentation.....	1 pc.

### III. Spare parts:

1. Sealing ring CEHK.754175.001-05.....	3 pcs.
2. Sealing ring CEHK.754175.001-08.....	3 pcs.
3. Membrane .....	3 pcs.
4. Gas connector .....	1 pc.
5. Key .....	1 pc.
6. Concentrators cooling bar.....	1 pc.

## **TECHNICAL MEANS OF COUNTERACTION AGAINST TERRORISM DEVELOPMENT AND PRODUCTION**

- Detecton of explosives
  - detection of explosive vapors and traces  
MO-2M, MO-2D, MO-2DT, GCS-02F
  - non-linear location of semi-conductor components  
RFD 23
  - visualization of hidden components  
SXR-150
  - metal detection  
OVERTONE, RUBIKON, MOLE
- Express detecton of drugs
  - GCS-02FN

**THE DEVICES ARE ADOPTED BY  
SECURITY SERVICES OF RUSSIA**

**THE DEVICES ARE USED IN 50 COUNTRIES FROM 4 CONTINENTS**

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