



# 500 Series GC



## The 500 Series GC

Developed and manufactured at our UK HQ, the 500 Series Gas Chromatograph is a unique new concept in gas chromatography. The machine can perform conventional, fast and ultra-fast GC, removing the requirement for multiple instruments. This is the only GC machine that can offer this flexibility for the customer.

### Simple to Use

The 500 series user interface offers a walk through guide to the common tasks that the machine is likely to be used for and also some of the general requirements such as replacing columns. This allows even users with little GC experience to perform general maintenance tasks to help maximise instrument uptime.

### Simple to Maintain

Our developers have built the machine to be more modular so that servicing times are reduced to a minimum. This will help to futureproof the equipment for years to come and will keep downtime of the 500 series very low compared to more conventional pieces of equipment.

### More Flexible

Thanks to the lower cost and smaller footprint, multiple 500 Series GCs can be installed on the same bench space as a single traditional GC. This allows different methods to be run on each instrument rather than being confined to a single method on a traditional 2 channel instrument.

## Specifications

### Ellutia 500 Series v Standard Traditional GC Comparison

	500 Series GC	Conventional GC
Size:	(h)45 x (w)22 x (d)57cm	(h)50 x (w)58 x (d)54cm
Weight:	18kg	45kg
Power Consumption:	1200W	2950VA
Analysis Time:	5 min (in Ultra Fast Mode)	30min

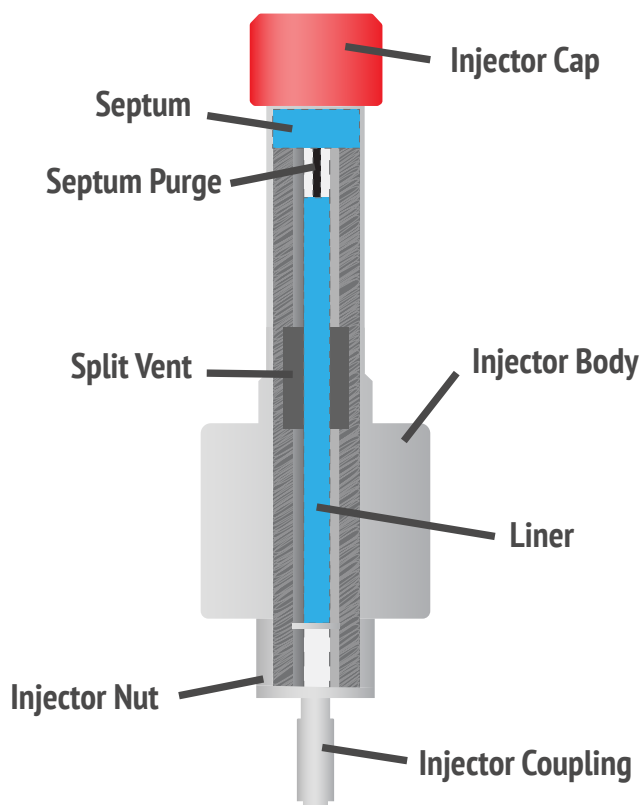
## INJECTOR

### Temperature Programmable Injector

The 500 Series GC comes equipped with a temperature programmable detector as standard. The injector can be used as a conventional split / split-less injector isothermally. The injector also has the capability to be rapidly heated to temperatures of up to 600°C at rates of up to 720°C/min.

### Injector Specification

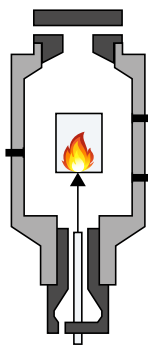
- Temperature programmable with split/split-less capabilities
- 10 programmable ramps
- Temperature range ambient + 20°C to 600°C
- Maximum isothermal temperature 420°C
- Maximum ramp rate 720°C / min



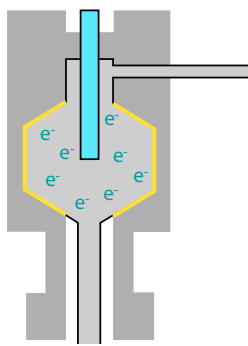
## Detector Options

The 500 Series GC is available with any of the following detectors:

FID



ECD



TEA



## SOFTWARE AND ACCESSORIES

### Ellution

Developed in conjunction with DataApex, Ellution Chromatography Data Station is an advanced chromatography software package for data acquisition, processing and instrument control. Its wide range of data acquisition interfaces allows connections to any gas or liquid chromatograph.

#### The key benefit of Ellution:

- Makes collecting and processing data from Ellutia's instruments quick and simple
- Easy to generate accurate reports due to the clear structure and intuitive graphical user interface
- Full control of Ellutia gas chromatographs is included as standard. Optional extensions enable implementation of specific methodologies

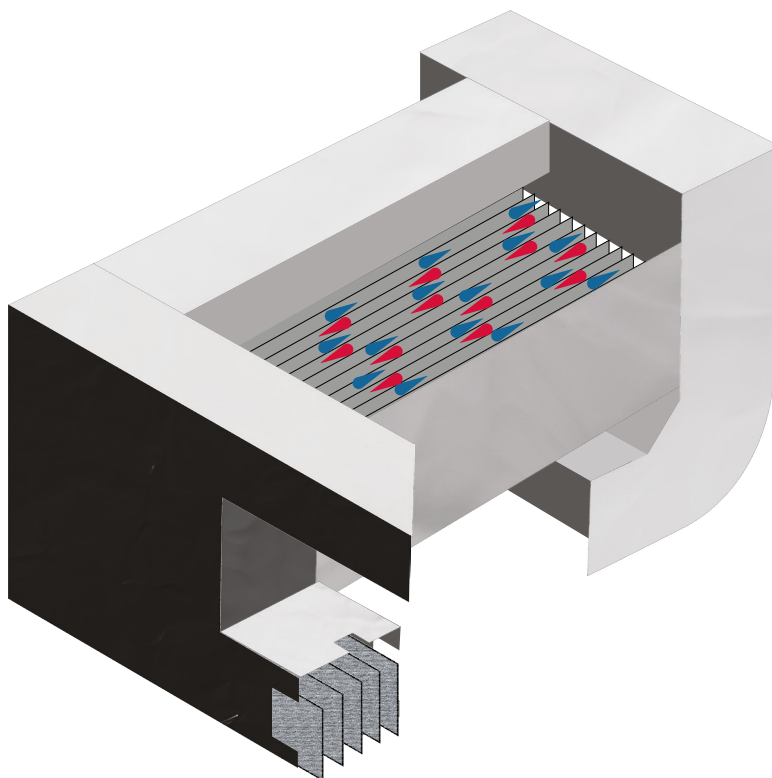
Ellutia also offers Ellution hardware for a variety of requirements, including A/D converters for data acquisition, control boards for LC control, and precise analogue signal generator devices. This hardware can be synchronised with Ellutia's autosampler or chromatograph, or can be supplied as standalone hardware.

## CONVENTIONAL AND FAST MODES

### The Heating Technology

Air is drawn in and passes through a heat exchanger and heater that warms the air. This then circulates in the oven and passes back out via the heat exchanger. As the hot air passes out via the heat exchanger, it passes the heat to the incoming air. This retains much of the heat and energy within the instrument, greatly reducing energy consumption and increasing efficiency.

When the GC run is complete the incoming air can be diverted to bypass the heater and heat exchanger to rapidly cool the oven. The flow through oven also makes the use of hydrogen carrier gas safer as it prevents any potential build ups caused by leaks in the column oven.



## Column Oven Temperature Distribution

Consistent and even temperatures are essential to good gas chromatography. The 500 Series GC oven has been designed and tested to ensure a consistent and even temperature profile throughout the entire oven.

## Column Choice

- The 500 Series GC can accept almost all conventional capillary columns from most manufacturers.
- The 500 Series GC can also use packed columns where the application requires.

## Temperature Heating Rates

- 35-150°C up to 50°C/min
- 120-240°C up to 30°C/min
- 240-300°C up to 20°C/min
- 300-350°C up to 5°C/min

## Temperature Cooldown Rates

- 350-50°C in 7 min

## Conventional vs Fast

	Conventional	Fast
Column Heating Type	Air Blown Oven	Air Blown Oven
Typical Column Heating Range	1-40°C/min	20-50°C/min
Typical Column Length	15-60m	5-20m
Typical Column ID	18-530µm	100-180µm
Typical Analysis Time	20-90min	5-10min
Peak Width	5-10sec	0.1-3sec

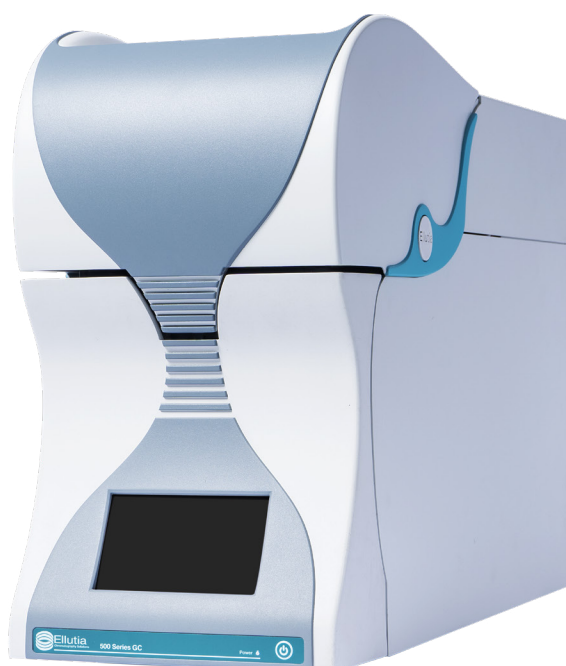
## ULTRA FAST CHROMATOGRAPHY MODE

The 500 Series GC can also perform ultra-fast chromatography when used with metal ultra-fast GC columns. When in ultra-fast mode rather than using the hot air oven to heat the column, an electrical current is passed directly through the column resistively heating it. This allows for significantly faster temperature ramping, and then because only the column has been heated rather than an entire oven, the cool down time is greatly reduced.

### Why choose an Ultra-Fast GC from Ellutia?

You can use the ultra-fast GC without needing to invest in a machine that only gives you this capability, as you can use existing columns and methods in conventional mode with the 500 Series GC. The 500 Series also enables you to perform fast GC in the same machine, therefore offering all three GC technologies in one small and affordable piece of equipment. This removes the limitations of space in a lab or field environment where space is the determining factor.

Sample throughput is increased 5-10 times in Ultra-Fast mode, meaning that the 500 Series GC can perform the work of several conventional GC's and give faster return on investment for lab managers. The reduced energy consumption that the 500 Series offers results in lower energy bills and a reduced CO<sub>2</sub> footprint.





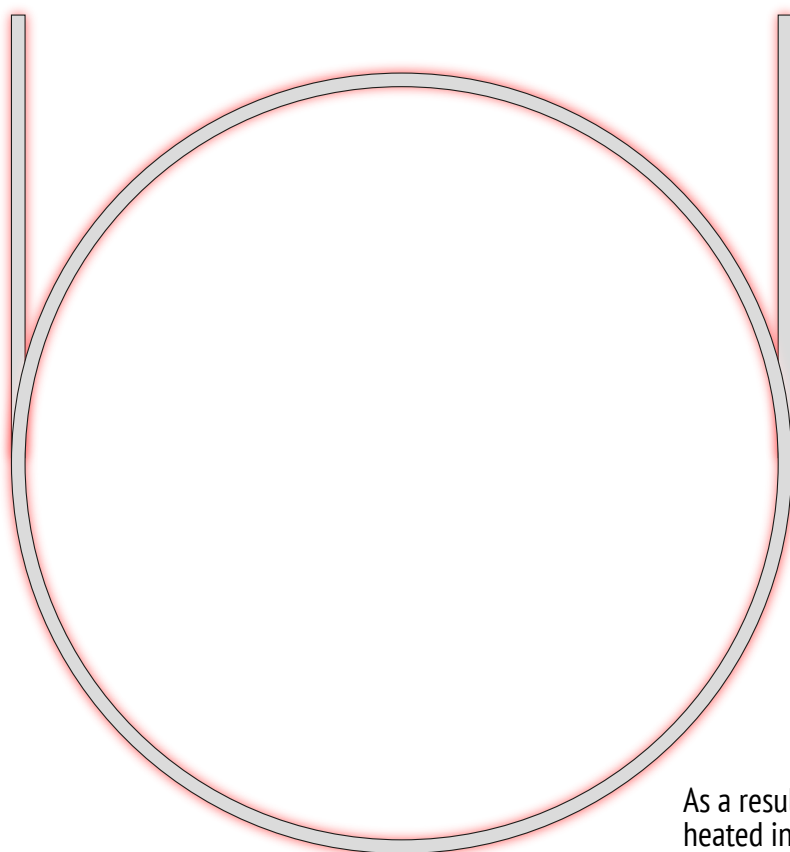
## Heating Technology

Recent advances in column technology means that it is now possible to get most commonly available columns made of deactivated stainless steel rather than fused silica.

By applying an electrical current directly to the column, we are able to resistively heat the column directly. There is no additional heater; the column is the heater. This allows for incredibly rapid temperature ramping with an upper temperature limit governed by that of the column. When it comes to cool down, because only the column is hot, not an entire oven, there are extremely fast cool down times. By only heating the column, energy consumption is greatly reduced compared to conventional chromatography.

Consistent and even temperatures are essential to good gas chromatography. Columns are sheathed in insulation to ensure consistent temperature profiles across the entire column. The air-blown oven can be used to aid with temperature stability at low end and for accurate calibration of Ultra-Fast heating.

Electrical current is applied  
directly to the column



As a result, the column is  
heated instead of the oven



To learn more about the 500 Series GC, please scan the QR code below  
or visit [www.ellutia.com/500-series-gc](http://www.ellutia.com/500-series-gc)



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