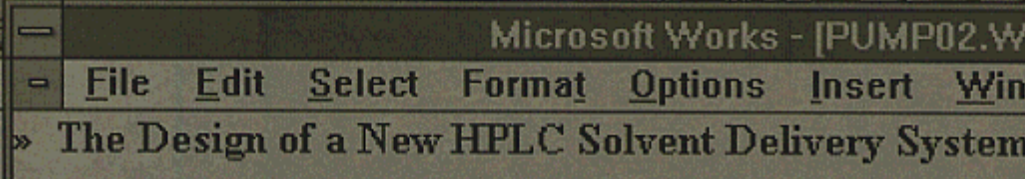
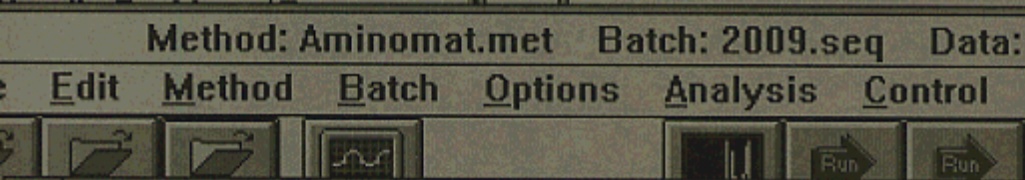


# AMINOMATE

*Your State-of-the-Art  
HPLC System For  
Amino Acid Determinations*



Level	Area Ratio	Amount Ratio	RF
1	0.1290	100	0.0
2	0.3068	250	0.00
3	0.6353	500	0.00
4	1.2714	1000	0.00
5			
6			



imeters

## AMINOMATE with FMOC-Cl

AMINOMATE is GBC's advanced HPLC system for the rapid and reliable determination of common protein and peptide hydrolysates, free amino acids in IV fluids, wine and juice samples as well as physiological amino acids in serum and plasma. AMINOMATE chemistry is based on a patented, newly developed simple and effective pre-column derivatization methodology using FMOC-Cl (9-Fluorenylmethyl chloroformate).

### Turn Key Operation

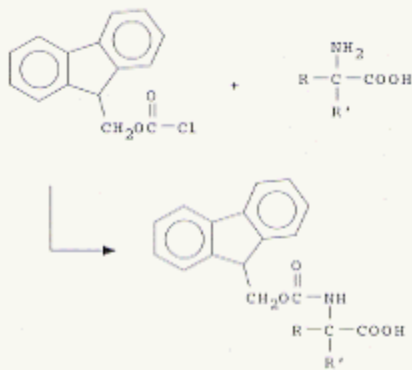
This chemistry has been tested and integrated with GBC's range of advanced HPLC hardware. AMINOMATE provides a fully automated, computer-controlled amino acid analysis system with high sample throughput, assay accuracy and precision.

### Reliable Pre-column Chemistry

The newly developed AMINOMATE chemistry is effective for the determination of both primary and secondary amino acids. The rapid derivatization requires only one tagging reagent (FMOC-Cl) and is conducted at ambient temperature. The simplicity of this procedure means that only single detection settings with one internal standard are required. With AMINOMATE chemistry, single and stable amino acid derivatives are generated (including Histidine and Tyrosine). These derivatives are highly fluorescent and provide reliable quantitation with assay sensitivity in the fmol range. The chemistry is applicable to common sample types where no matrix interference is seen.

### Fully Automated Sample Processing

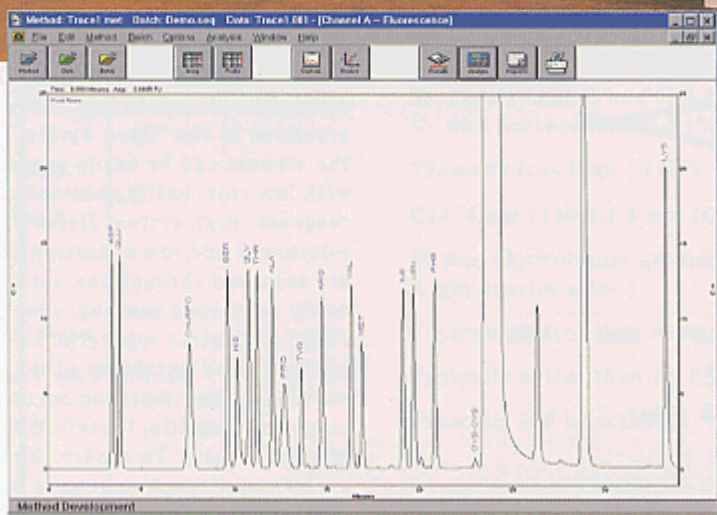
Automation of the AMINOMATE chemistry is accomplished with GBC's ACSIS (Automated Chromatography Sample Introduction System) advanced autosampler. ACSIS features the latest hardware and electronics design in HPLC sample processing for maximum performance, reliability, sample capacity (160), safety and ease of operation.



### Stable FMOC Derivatives

The AMINOMATE new-FMOC chemistry has been developed for rapid pre-column derivatization at ambient temperature, and provides single, stable FMOC derivatives of 1° and 2° amino acids for high assay sensitivity.





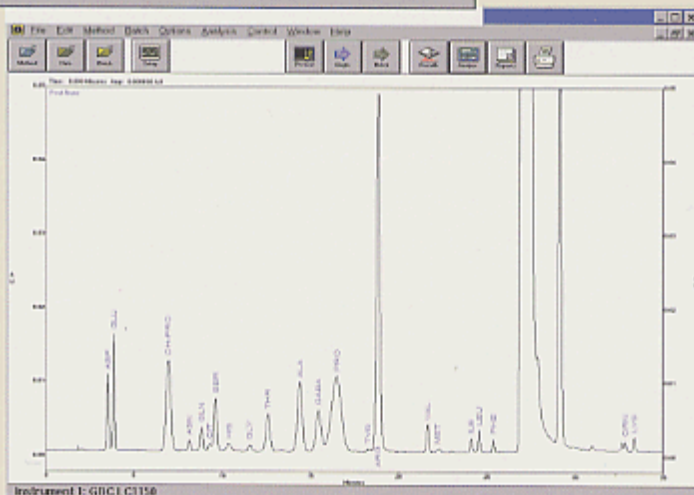
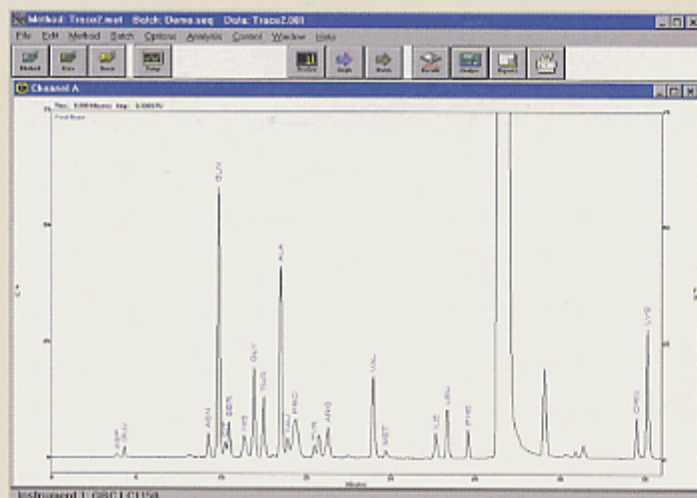
Chromatogram of a Hydrolysate Standard (50 pmol)

## Linear Elution Gradient and Robust Methodology

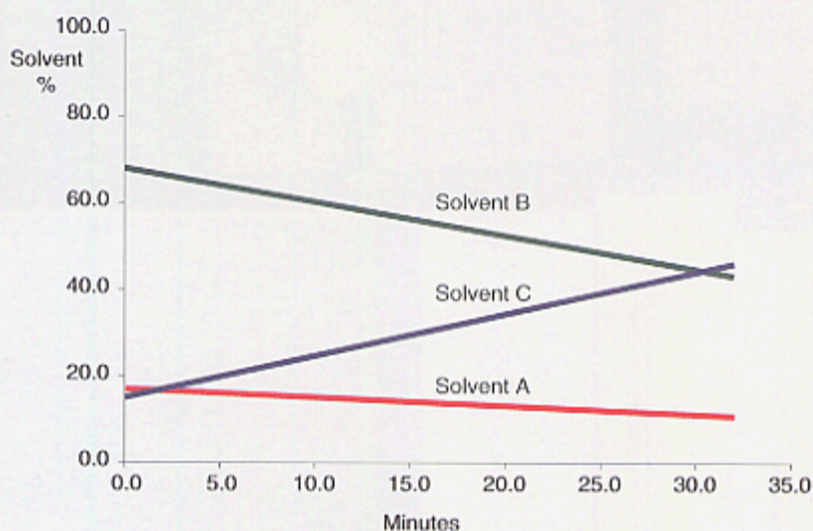
### Rugged Chromatographic Separation and Advanced Solvent Delivery System

The AMINOMATE chromatography has been developed for maximum peak resolution with new robust methodology. While the reliability of other systems has been compromised by their reliance on complex elution gradient and/or smaller column packing particle size and diameter to increase resolution, the ruggedness and simplicity of the AMINOMATE chemistry is assured with its 'no frills' HPLC conditions.

The elegance of the AMINOMATE chromatography is its utilization of a robust linear gradient with simple elution composition and conventional column dimensions. Sample throughput and productivity is maximized with this elegant 'common sense' approach to separation.



Chromatograms of a plasma sample (top) and a juice sample



Solvent A: 30mM phosphate (pH 6.5) in 15% methanol/85% water  
 Solvent B: 15% methanol/85% water  
 Solvent C: 90% acetonitrile/10% water

### Robust Linear Gradient

The AMINOMATE linear gradient has been optimized with sophisticated computing techniques and confirmed in laboratory studies for improved chromatographic precision and peak identification. Simple eluent composition assures high assay precision in the "Open System" where the eluents can be easily prepared with low cost, easily obtainable reagents. High system dispersion tolerances and low operating pressures are achieved through the use of a newly developed packing, ideal for Fmoc derivative separations. The precision and durability of this new packing means improved accuracy and longer column life, therefore reducing operating costs. To ensure this level of performance, each column is tested for separation before it is shipped as an AMINOMATE column.

*Powerful Features for  
state-of-the-art Analysis*

**Derivatisation:**

Precolumn Chemistry	Fully automated new FMOc chemistry
Amino Acids Applicable	Both 1° and 2° amino acids
Sample Types Applicable	Protein and peptide hydrolysates, feed hydrolysates, IV fluids, wines, juices, beers, serum and plasma
Autosampler Vial Capacity	160 vials (150 for samples & standards, 10 for reagents in non-stop automation)
Minimum Sample Requirements	10 µl
Stability of Adduct	Stable, single FMOc adducts (including histidine and tyrosine), RSD = 0.8% to 5% after 24 hours at ambient temp
Stability of Reagents	24 hours at ambient temp. (capped)
Linearity of Chemistry	Up to 200 µM per amino acids (18 common protein amino acids) or 4.6 mM amino/phenoxy sites
Derivatisation Cycle Time	5 min (manual) and 10 min (automated)
Automated Derivatisation Precision	<2.5% RSD (100 pmol on column) <4.5% RSD (5 pmol on column)
Limit of Detection	Theoretical: 50 fmol (OH-Pro, S/N = 3) Practical: lower µM for fluorescence detection (depending on background contaminations).

**Chromatography:**

Elution Gradient	Linear binary gradient (3 eluents with constant ratio dial-a-mix between eluents A and B)
Eluent Composition	A: 30 mM Phosphate (pH 6.5) in 15% methanol and 85 % water B: 15% methanol and 85% water C: 90% acetonitrile and 10% water
System Pressure	Typically less than 10 MPa
HPLC Column	C18, 5 µm (150 x 4.6 mm ID)
Run Time	35 min (hydrolysate gradient with 2 min equilibration)
Peak Resolution	Typically better than 95%
Retention Time Precision	Typically better than 1% RSD
Column Life	Typically 500 injections

**The  
AMINOMATE  
Column**

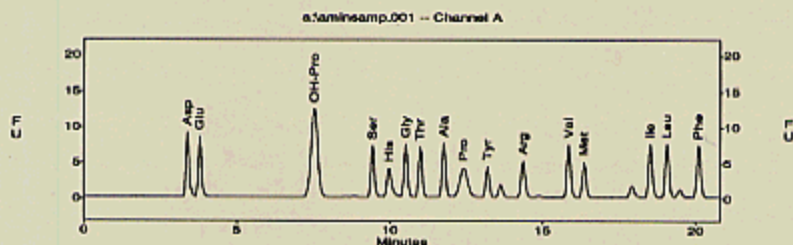
- 5 micron particle size
- 4.6 mm diameter
- 15 cm length
- Guaranteed performance
- Individually tested
- Laboratory proven



*Exceptional Column Stability and Retention Time Precision plus Tailored Report Formats*

**Amino Acid Analysis by New-FMOC Method**

File: a:\aminsamp.001  
 Method: a:\aminomat.met  
 Sample ID: 250 pmol/ $\mu$ L dispen  
 Vial: 36  
 Volume: 5  
 Acquired: Mar 24, 17:05:02  
 Printed: Mar 25, 12:20:05  
 User: System



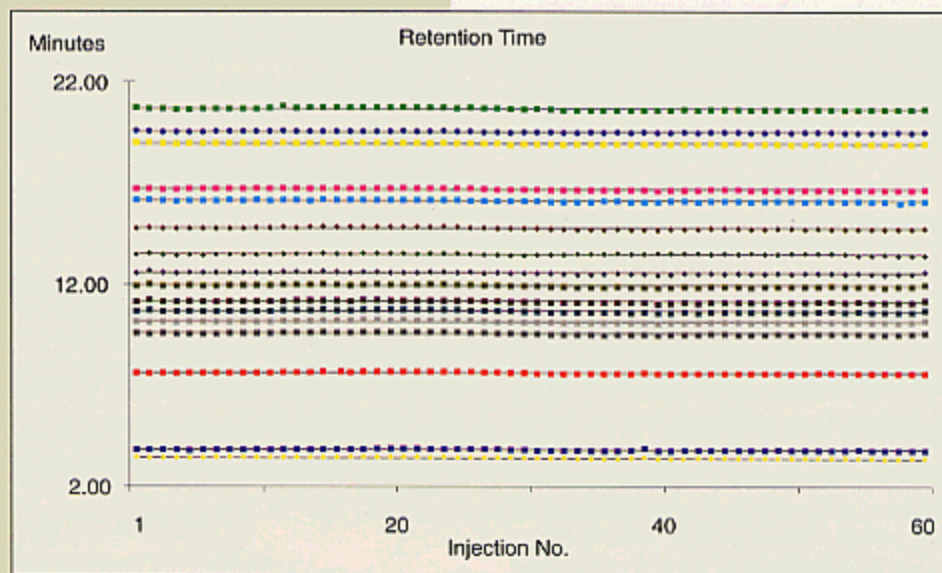
Name	Time	Area	Conc.	Resolution	Symmetry
Asp	3.38	128684	252	0	1.42
Glu	3.78	119976	242	1	1.50
OH-Pro	7.53	373036	1	11	1.07
Ser	9.45	114735	241	5	1.14
His	9.98	86833	230	1	1.56
Gly	10.53	121149			
Thr	11.00	113237			
Ala	11.78	124961			
Pro	12.42	145951			
Tyr	13.20	69581			
Arg	14.37	95253			
Val	15.87	128159			
Met	16.37	83320			
Ile	18.53	129157			
Leu	19.07	130283			
Phy	20.10	26864			
Cys-Cys	22.13	11194			
Lys	32.10	160191			
<b>Totals</b>		2091087			

**Extensive Reporting Capabilities**

WinChrom Chromatography Data management System provides extensive data reporting capabilities and full Windows functionality. Editable WYSIWYG (what you see is what you get) Report Templates allow you to tailor the report format to your customer's requirements. Dynamic Data Exchange (DDE) facilities allow interaction with third party software.

**High Retention Time Precision**

Method ruggedness and peak resolution in amino acid analysis has been substantially enhanced with the application of a robust linear gradient using simple eluent composition and a conventional HPLC column format with optimised bonded phase operating at a typical system back pressure of less than 10 MPa.



	<b>New FMOC</b>	<b>Old FMOC</b>	<b>OPA</b>	<b>FMOC/OPA</b>	<b>AQC</b>	<b>PITC</b>	<b>DABS-Cl</b>
<b>Detection</b>							
Sensitivity	fmol	fmol	fmol	fmol	fmol	pmol	pmol
Detection Mode	Fluorescence	Fluorescence	Fluorescence	Fluorescence*	Fluorescence	UV	UV
<b>Derivatization</b>							
Manual	Yes	Yes	No	No	Yes	Yes	Yes
Sequential Automation	Yes	Yes	Yes	Yes	No	No	No
Bench Automation	Yes	Yes	No	No	Yes	No	No
Special Requirements	No	Solvent Extraction	Timing	1. Timing 2. DualChannel	Incubation	Reagent Removal	Incubation
Reaction Kinetics	Fast	Fast	Fast	Fast	Fast	Moderate	Slow
Derivative Stability	Excellent	Good	Poor	Poor	Excellent	Good	Excellent
2° Amino Acids	Yes	Yes	No	Yes	Yes	Yes	Yes
Single Peak Detection	Yes	No	Yes	Yes	Yes	Yes	Yes
Reagent Peak Interference	No	Yes	No	No	No	Yes	Yes

\* Dual channel or programmable detection required for FMOC/OPA chemistry

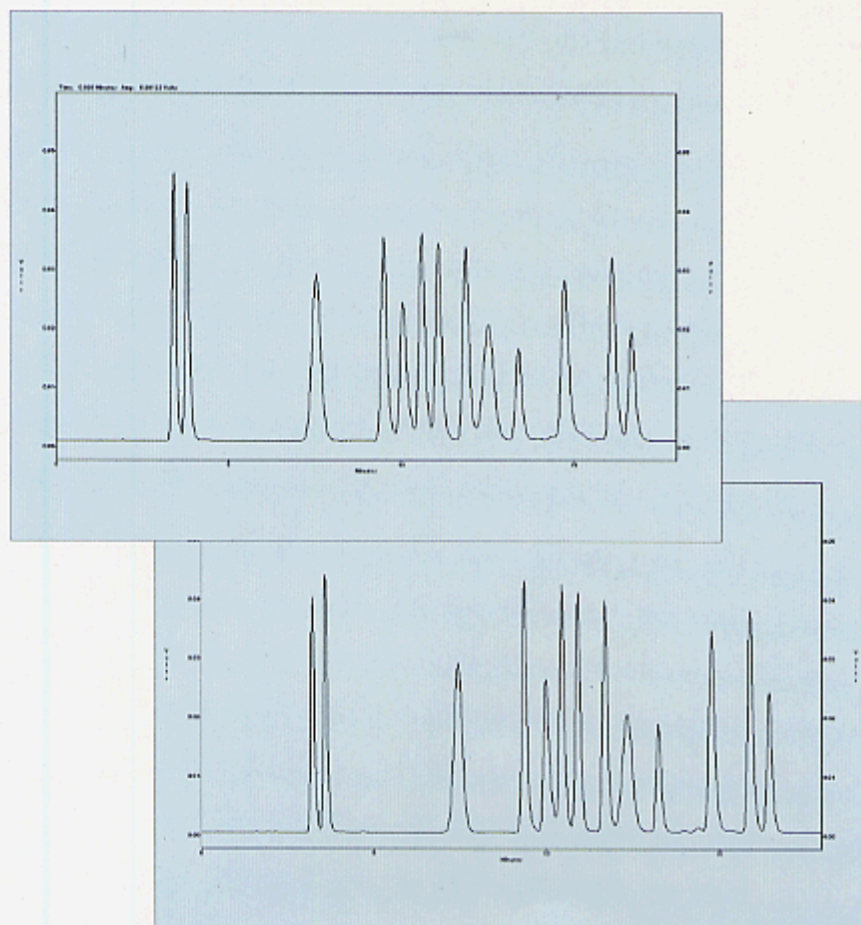
FMOC 9-Fluorenylmethyl Chloroformate

OPA o-phthalaldehyde

AQC 6-Aminoquininoly-N-hydroxysuccinimidyl carbamate

PITC Phenylisothiocyanate

DABS-Cl 4-Dimethylaminoazobenzene-sulfonyl chloride



Sample runs 1 (top) and 500 (above) illustrate excellent column stability

### Rapid Pre-Column Derivatisation

The AMINOMATE new-FMOC chemistry has been developed for rapid pre-column derivatisation at ambient temperature and provides single, stable derivatives in achieving high assay sensitivity with fluorescence detection. Both 1° and 2° amino acids are detected with the application of only one tagging reagent.

While some derivatisation methods are limited to manual procedure, with others restricted to either sequential or batch automation, the new-FMOC chemistry is easy to conduct manually and applicable to both sequential and batch pre-column automation.

### Extended Column Performance

With AMINOMATE, the column bonded phase has been carefully selected for its stability at the operating pH to provide extended column performance. A conventional column format (150 x 4.6 mm ID) with specially selected bonded phase is utilised. It attains peak resolution of not less than 95% for all amino acids, while providing low operating pressure and high system dispersion tolerance for assay precision enhancement and increased instrument up time.



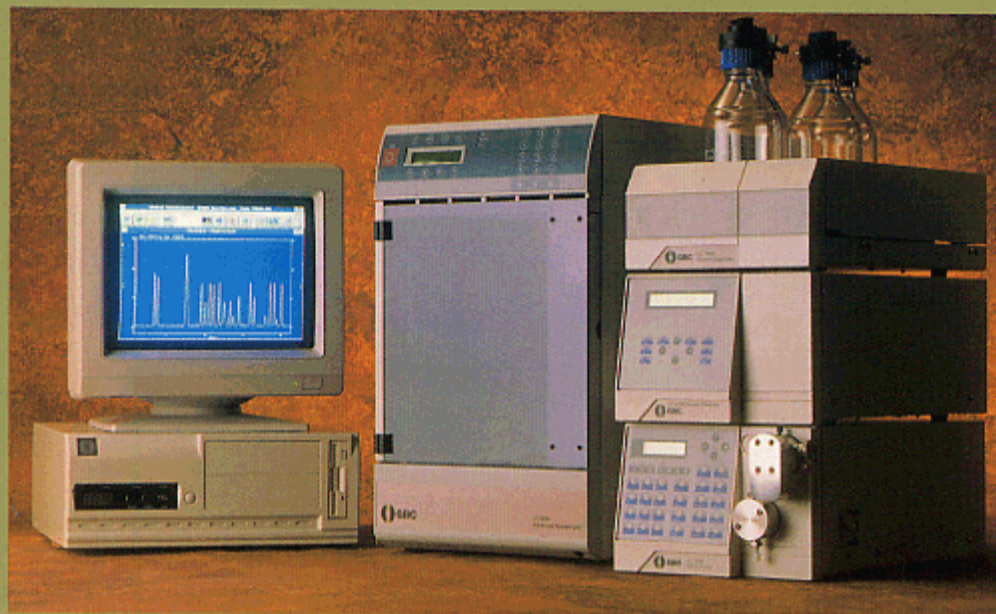
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GBC publication number 01-0146-00  
September 1995 Australia

#### **GBC Scientific Equipment**

Manufacturer of world class  
instrumentation—  
HPLC, AA, UV-VIS, and ICP

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Facsimile (03) 9213 3677  
Telex AA37123

3930 Ventura Drive  
Arlington Heights, IL 60004  
USA  
Telephone (708) 506 1900  
Toll Free (800) 445 1902  
Facsimile (708) 506 1901



#### **System Configuration**

LC1150 Quaternary Gradient HPLC  
Pump  
ACSIS (LC1650) Advanced  
Autosampler with 2 ml vial tray and  
external needle wash station  
LC1250 Fluorescence Detector  
LC1150 HPLC Column Oven Option  
LC1445 System Organiser  
4-channel on-line degasser  
WinChrom Chromatography Data  
Management System  
AMINOMATE Column  
AMINOMATE Chemical Kit

#### **Ordering Information**

For specific AMINOMATE  
configuration, or more information on  
other HPLC products, please contact  
your local GBC representative.

#### **Other HPLC Equipment**

GBC supplies a wide range of HPLC  
equipment and applications  
information for almost every aspect of  
High Performance Liquid  
Chromatography, including:

HPLC solvent delivery modules  
(isocratic, binary and quaternary)  
UV-Vis detectors (variable wavelength,  
dual wavelength, scanning and rapid  
scanning)  
Fluorescence detector  
Conductivity detector  
Refractive Index detector  
Electrochemical detector  
Auto-injectors (pre-injection  
derivatisation, small volume, variable  
volume capability)  
Data acquisition and management  
(Windows and MS-DOS)  
Columns and accessories