

# The right spot for protein identification

Ettan Spot Handling Systems



GE imagination at work

# Ettan Spot Handling: the right spot for your protein identification needs

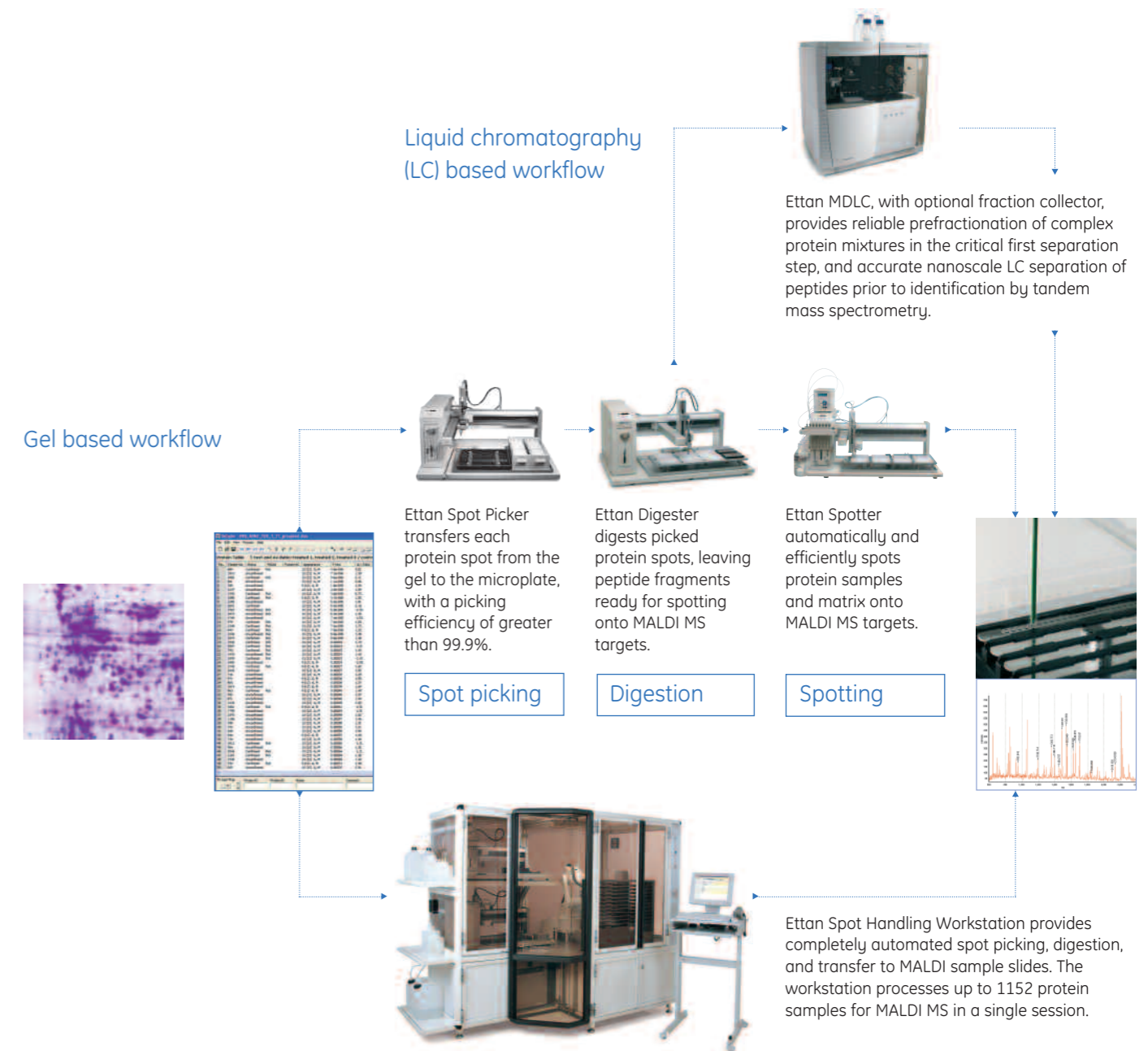
Spot handling is an essential part of the proteomics workflow – from spot picking and digestion through to spotting onto MALDI mass spectrometer (MS) targets.

Samples can be processed automatically starting from a 2-D gel or directly processed from proteins in solution. Following enzymatic digestion, peptides can be transferred directly to Ettan™ MDLC for separation using multidimensional liquid chromatography (MDLC) or spotted onto MALDI MS targets ready for protein identification.

Reliable, automated spot handling avoids manual errors and keratin contamination that can have a negative impact on result reproducibility.

We offer you the right solution for the way you work. You can choose from Ettan Spot Handling component systems or a complete, fully automated workstation. And every product is compatible with Ettan DIGE technology to provide you with an internal standard for your 2-D electrophoresis results.

You'll find it all here – the right spot for your protein identification needs.



# Easier and more efficient spot picking



## Ettan Spot Picker

An easy-to-use, automated solution, Ettan Spot Picker offers maximum picking accuracy and efficiency. Its self-contained design further adds to result accuracy by eliminating contamination risk.

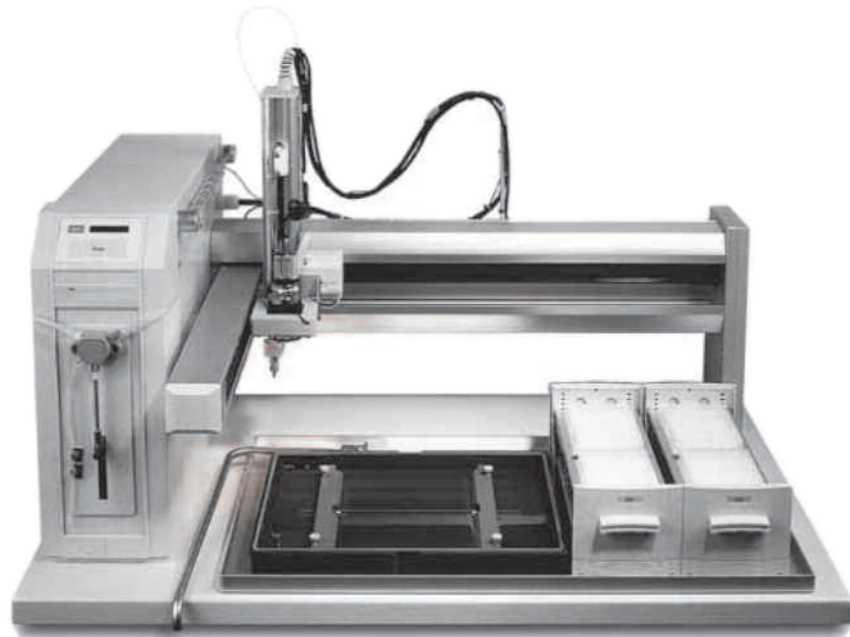
- Automatically picks selected protein spots from stained or destained gels with greater than 99.9% accuracy
- Handles both nonbacked and backed 2-D gels on glass or plastic
- Seamless integration with DeCyder™ 2-D Differential Analysis Software, enabling use of Ettan DIGE technology and efficient pick list generation
- Compatible with common staining methods such as Coomassie™ Brilliant Blue, silver, and fluorescence, as well as labeling with Ettan DIGE CyDye™ Fluor minimal and saturation dyes

By tracking reference markers from staining to picking, and linking the electronic image to the actual gel, Ettan Spot Picker picks quickly and precisely without the need for re-imaging. A pick list is imported from image analysis software such as DeCyder 2-D Differential Analysis Software or ImageMaster™ 2D Platinum.

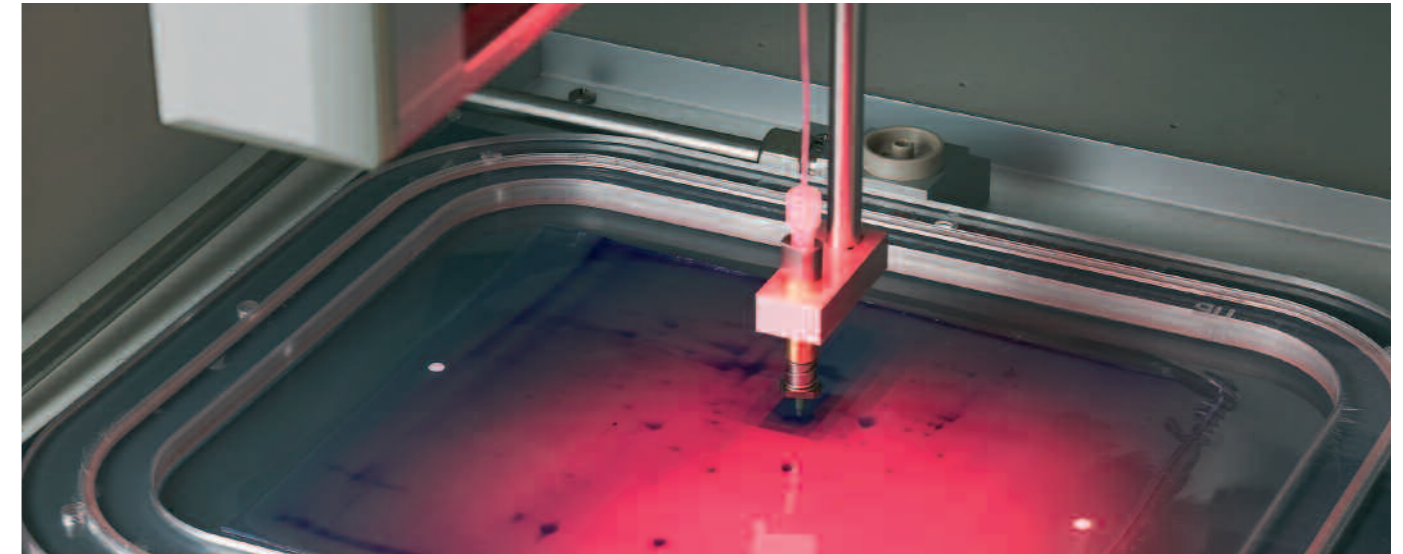
This automated system is compatible with Ettan DALT precast and self-cast gels with glass or plastic backing of any size up to 250 x 280 mm. You can also use nonbacked gels.

To ensure the highest flexibility in detection methods, both the image acquisition and the image analysis processes are separated. The unique picker head design ensures reliable and efficient picking, guaranteeing that the correct spot is automatically picked and placed in the correct microplate.

The picking mechanism includes a washing step to eliminate carry-over contamination. An optional environmental hood eliminates the possibility of keratin contamination. File converting software is also available for Excel and XML formats. And like all independent units, it will run with Windows™ XP.



# Increase picking flexibility with nonbacked 2-D gels



## Ettan Spot Picker Nonbacked Gel Kit

To increase the versatility of Ettan Spot Picker, Ettan Spot Picker Nonbacked Gel Kit enables quick and efficient picking of protein spots from nonbacked 2-D gels.

Working on the same principle as picking from backed gels, it uses reference markers to ensure high picking accuracy. The kit is compatible with staining methods such as silver, Coomassie Blue, fluorescence, and labeling with Ettan DIGE CyDye Fluor dyes.

- Allows accurate picking of protein spots from nonbacked 2-D gels
- Increases the versatility of Ettan Spot Picker
- Compatible with common staining methods
- Same picking efficiency as for backed gels

Ettan Spot Picker Nonbacked Gel Kit consists of a frame to which a nonbacked slab gel can be temporarily attached to a cellophane backing. This backing supports the reference markers necessary for high-precision picking and helps handling during scanning.

The kit includes a picking platform which is inserted in Ettan Spot Picker to support picking, and a glass lid to protect the moist gel. Ettan Spot Picker Nonbacked Gel Kit is included with new orders of Ettan Spot Picker, and can be ordered separately for existing instruments.

# Automated spot digestion

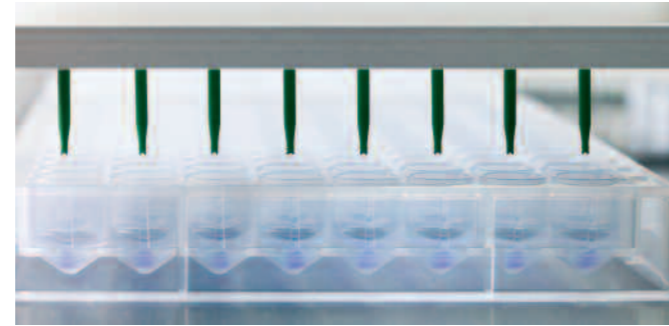


## Ettan Digester

Acting directly on Ettan Spot Picker output files, Ettan Digester automatically tracks samples from spot picking to completed digestion. The sensitive in-gel and in-solution digestion yields peptide fragments ready for MALDI MS spotting or transfer to Ettan MDLC. The enhanced design of the digester, with its stable microplate holder and new calibration procedure, means greater efficiency, accuracy, and reproducibility, leading to better results.

- Digestion sensitive to the 100 fmol range\*
- No need for C18 clean-up, salt level controlled by pre-installed methods which give high level of sensitivity for MS analysis
- Improved design allows robust and reproducible digestion
- Eight samples handled in parallel and 384 (4 x 96) samples can be processed in less than eight hours
- Preprogrammed optimized protocols

Default digestion protocols are optimized and compatible with common staining systems such as Coomassie Blue and silver, fluorescent dyes, as well as labeling with Ettan DIGE



\*100 fmol of phosphorylase B or BSA in an SDS gel plug could be identified by loading 10% of the resulting digested peptide mix onto the MALDI MS target.

CyDye Fluors. A method editor also allows customized methods. Standard microplates further increase ease of use, as do low salt digestion buffers, which eliminate the need for desalting.

The flexible Ettan Digester can also be used for in-solution digestion, generating peptide extracts ready for separation by Ettan MDLC or subsequent analysis by LC-MS.

Specially designed needles minimize plug loss and eliminate cross-contamination. An optional environmental hood is available to further protect the samples from keratin contamination. File converting software is also available for Excel and XML formats, and like all independent units, it will run with Windows XP.



# Efficient protein sample spotting



## Ettan Spotter

Automatically and accurately spot digested protein samples and matrix onto MALDI MS targets with Ettan Spotter. Samples are mixed with matrix in preparation for MALDI MS analysis.

- Easy to set up and run, acts directly on Ettan Digester output files
- Supports most commercially available MALDI MS targets
- Special needle design with hydrophobic coating to eliminate cross-contamination and liquid carry-over
- Automatically spots 384 samples per batch in less than three hours

The easy-to-use software allows you to choose between a selection of default or customizable spotting methods. File converting software enables the output file to be converted to XML or Excel format, which can be handled by the MS instrument.

There is no need for a desalting step prior to spotting since salt levels are controlled during the digestion methods used in Ettan Digester. The software enables the sample to be spotted twice on the MALDI MS target in order to allow sample concentration.

MALDI targets from Thermo Electron, ABI, BRUKER, Waters, and Shimadzu, plus customized target layouts, are supported.



# Take the automated route

## Ettan Spot Handling Workstation

If you're looking for reliable, quality results with time savings, Ettan Spot Handling Workstation automatically handles every step in the process from 2-D gel spot picking, to digestion, to spotting for MS analysis.

The need for hands-on operation is eliminated, increasing the reliability of your results and significantly raising throughput levels. The closed environment of Ettan Spot Handling Workstation reduces the risk of contamination, further enhancing the reliability of your results.

Efficient and reliable spot picking is assured as pick lists are imported from image analysis software such as DeCyder 2-D Differential Analysis Software and ImageMaster 2D Platinum.

The automated workstation solution provides you with highly accurate protein handling as well as more efficient working methods that will significantly boost your 2D-MS operations.

The net result is that you can focus more attention on the output of your work, freeing up resources for other essential tasks.

## Gel handling

Links the electronic image and the actual gel by attaching self-adhesive markers to the gel backing prior to scanning. Gels remain hydrated as all spot picking takes place under liquid.

## Handling hundreds of samples automatically

Dedicated user-friendly software barcode technology delivers a high degree of sample traceability. All samples, reagents, and processes are efficiently scheduled and consistently handled.

## Efficient spot picking

A protein pick list is generated using predefined selection. Protein spots are automatically excised from stained or destained gels with greater than 99.9% efficiency. The picker head ensures a precise cut and transfers the plug to the microplate. Hydrophobic coatings on the picker head and automatic washing prevent carry-over and minimize cross-contamination risk.

## High degree of sample tracking

The software allows efficient and reproducible management of samples, reagents, and processes. There is optional integration with Sierra™ 2D-MS Laboratory Workflow software for automated sample tracking and event logging throughout the workflow.

## Sensitive digestion with precise control

The system gives sensitivity in digestion down to the 100 fmol range. Default digestion protocols are optimized and compatible with common staining systems. Low salt digestion buffers eliminate the need for desalting. The digester needles are specially designed to minimize plug loss and cross-contamination. An integrated incubator ensures precise temperature control throughout digestion. A dryer module rapidly dries gel plugs and peptide extract solutions.

## Flexible preparation for MALDI MS analysis

Automatically mixes and spots digested proteins and matrix onto commercially available MALDI MS targets with high precision. A method editor lets you use customized methods. MALDI MS targets from Thermo Electron, ABI, BRUKER, Waters, and Shimadzu, plus customized target layouts, are supported.

- **Automatically handles the complete workflow**

Process from one to 12 large-format gels per batch, a maximum of 1152 protein samples. Spot picking, digestion, and spotting are completely automated.

- **DeCyder 2-D Differential Analysis Software compatibility**

Optimized for DeCyder 2-D software, allowing utilization of Ettan DIGE technology.

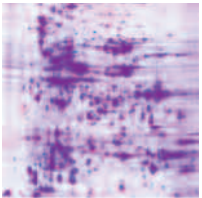
- **Simple working methods from preprogrammed, editable templates**

Combine created sub-methods, such as Picking-Digestion-Spotting; Picking-Digestion; and Spotting. Each sub-method can be edited and saved.



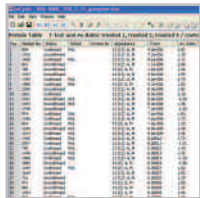
# Ettan Spot Handling Workstation: the first dedicated solution for integrated proteome analysis

1.



Automated processing of proteins from 2-D electrophoresis gels through to microplates and targets using Ettan Spot Handling Workstation.

2.



Importing X, Y co-ordinates from image analysis software ensures accurate spot picking.

3.



Barcodes track samples from gel to microplate to target.

4.



Spot picking under liquid stabilizes the dimensions of backed gels. Picks up to 1152 protein spots per batch, with an accuracy greater than 99.9%. Gel plugs dispensed with high reliability into microplates.

5.



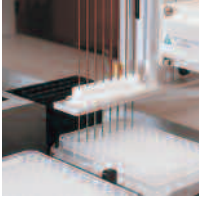
Protein destaining, digestion and extraction process can be run using pre-programmed or customized method templates. Integrated cooling.

6.



Gel plugs dried. Integrated heating.

7.



Enzymatic digestion — Enzymes stored under cooled conditions; controlled addition of enzyme.

8.



Samples incubated using pre-programmed temperatures and timings. Digested samples extracted from gel.

9.



Accurate spotting — Digested samples transferred to any MALDI MS target. Samples mixed with matrix for MALDI MS analysis.

# Ettan Spot Handling ordering information

## Ettan Spot Picker

Product	Quantity	Code No
Ettan Spot Picker	1	18-1145-28
<b>Package content:</b>		
Instrument and control software	1	
Computer	1	
Screen	1	
Ettan Spot Picker Nonbacked Gel Kit	1	
Picker head 1.4 mm for 1 mm thick gels	1	
Picker head 1.4 mm for 1.5 mm thick gels	1	
Picker head 2.0 mm for 1 mm thick gels	1	
Picker head 2.0 mm for 1.5 mm thick gels	1	
Gel holder	2	
Gel tray	1	
Glass lid for gel tray	1	
Microplate rack	2	
Inlet tubing package	1	
Reference markers, 560/sheet	2	
Camera calibration foot	5	
White sheet for camera calibration and click-and-pick function	2	
Waste bottle and tubing	1	
RS 322 Cable	1	

## Ettan Spot Picker Nonbacked Gel Kit

Product	Quantity	Code No
Ettan Spot Picker Nonbacked Gel Kit	1	11-0002-93
Includes Picking Platform, Gel Frame Large, Gel Loading Platform Large, Porous Cellophane Backing, Glass Lid for Gel Carrier		

## Accessories

Product	Quantity	Code No
Picker head 1.4 mm for 1 mm thick gels	1	18-1147-03
Picker head 1.4 mm for 1.5 mm thick gels	1	18-1147-05
Picker head 2.0 mm for 1 mm thick gels	1	18-1143-64
Picker head 2.0 mm for 1.5 mm thick gels	1	18-1143-37
Reference markers (560/sheet)	2 sheets	18-1143-34
Gel holder	2	18-1143-50
Gel tray	1	18-1143-38
Glass lid for gel tray	1	18-1143-32
Syringe, 1 ml	1	18-1143-41
Waste bottle and tubing	1	18-1143-44
Tubing and fitting	1	18-1143-63
Inlet tubing package	1	18-1143-65
Rinse station	1	18-1143-31
Camera calibration foot	5	18-1143-33
White sheet for camera calibration and click-and-pick function	2	18-1143-51
Microplate rack	2	18-1143-43
RS 232 cable	1	18-1143-45
Protective Hood	1	18-1149-17

## Ettan File Converter Software

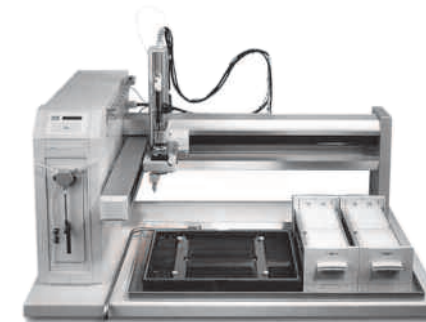
Product	Quantity	Code No
Ettan File Converter Software	1	11-0008-23

## Ettan Digester

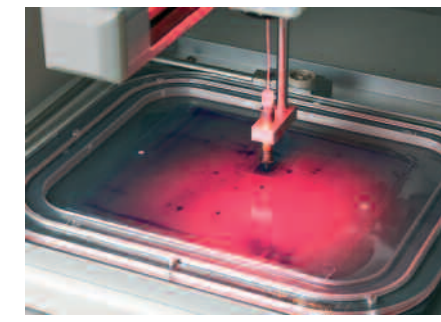
Product	Quantity	Code No
Ettan Digester	1	18-1142-68
<b>Package content:</b>		
Instrument and control software	1	
Computer	1	
Screen	1	
8-needle liquid handler	1	
8-channel valve	1	
Syringe 500 µl	8	
Needle	8	
Enzyme tube holder	1	
Enzyme tube	1000	
Rinse station	1	
Tubing kit	1	
Tubing and fitting	1	
8-liter waste bottle and tubing	1	
Calibration plate	1	
Calibration tool	1	

## Accessories

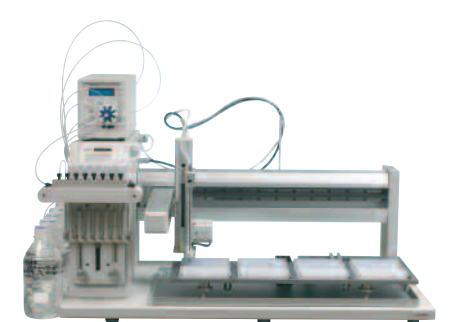
Product	Quantity	Code No
Enzyme tube holder	1	18-1175-82
Enzyme tube 1000	1000	18-1175-81
Enzyme container	48	18-1157-75
Ettan Microplate, 96 well, barcoded	1000	18-1150-42
Calibration plate	1	18-1156-66
Calibration tool	1	18-1175-79
Syringe 500 µl	1	18-1143-56
Needle, Digester	2	18-1143-57
Tubing and fitting, Digester	1	18-1143-62
Tubing kit	1	18-1152-64
Waste bottle and tubing	1	18-1143-44
Screw cap with hole	1	18-1155-36
Sealing foil	100	18-1143-54
Protective Hood	1	18-1149-17



Ettan Spot Picker



Ettan Spot Picker Nonbacked Gel Kit

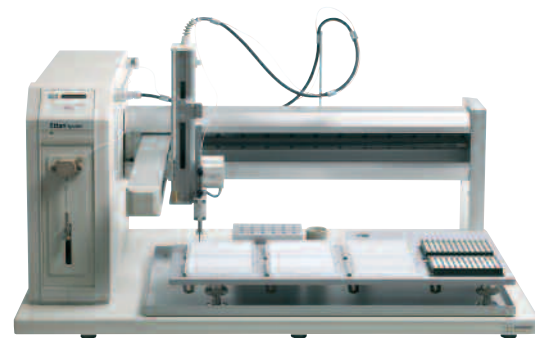


Ettan Digester

# Ordering information

Ettan Spotter		
Product	Quantity	Code No
Ettan Spotter	1	18-1142-67
Package content:		
Instrument and control software	1	
Computer	1	
Screen	1	
Needle/Spotter	1	
Vial with cap, 1 ml	100	
Tubing and fittings	1	
Syringe, 100 µl	1	
Calibration plate	1	
Calibration tool	1	
Vial calibration tool	1	
Rinse calibration tool	1	
Distance tool	1	
Vial holder	1	
Target Layout Upgrade Software	1	

Accessories		
Product	Quantity	Code No
Vial with cap, 1 ml	100	18-1152-75
MS sample tray, Bruker (without target)	1	18-1155-99
MS sample tray, Micromass (without target)	1	18-1156-00
MS sample tray, Voyager (without target)	1	18-1156-02
MS sample tray, Shimadzu (without target)	1	11-0006-79
Needle, Spotter	1	18-1149-56
Tubing and fittings	1	18-1156-30
Syringe, 100 µl	1	18-1143-55
Waste bottle (8 l) and tubing	1	18-1143-44
Ettan Sample Slide Kit	2	18-1147-18
Protective Hood	1	18-1155-36
Screw cap with hole	1	18-1155-36



Ettan Spotter



Ettan Spot Handling Workstation

Ettan Spot Handling Workstation		
Product	Quantity	Code No
Ettan Spot Handling Workstation	1	18-1164-05
Package content:		
Instrument and control software	1	
Computer	1	
Screen	1	
Picker head 1.4 mm for 1.0 mm thick gels	2	
Picker head 2.0 mm for 1.0 mm thick gels	2	
Reference markers, 560/sheet	2	
Gel tray	12	
Gel holder	24	
Glass lid for gel tray	12	
Tubing, Spot Picker & Spotter	1	
Tubing, Digester	1	
Tubing, waste	1	
Camera calibration foot	5	
Calibration plate	1	
Waste bottle, 15 l	2	
Reagent bottle, 5 l	3	
Reagent bottle, 2 l	3	
Reagent bottle, 1 l	4	

Accessories		
Product	Quantity	Code No
MS sample tray, Bruker (without target)	1	18-1155-99
MS sample tray, Micromass (without target)	1	18-1156-00
MS sample tray, Voyager (without target)	1	18-1156-02
MS sample tray, Shimadzu (without target)	1	11-0006-79
MS sample tray, Thermo (without target)	1	11-0006-81
Barcode label, Bruker	1	11-0003-24
Barcode label, Micromass	1	11-0003-23
Barcode label, Voyager	1	11-0003-26
Barcode label, Shimadzu	1	11-0006-80
Barcode label, Thermo	1	11-0006-87
Target Layout Upgrade Software	1	11-0002-94
Ettan Microplate 96 well, 100 pcs	1	18-1150-42
Reagent bottle	1	18-1158-79
Waste bottle	1	18-1158-81
Ettan Sample Slide Kit	1	18-1147-18

Related products	
Product	Code No
Ettan IPGphor™ II Isoelectric Focusing Unit	80-6505-03
Ettan DALTwoelve Large Vertical System, 115 V	80-6466-46
Ettan DALTwoelve Large Vertical System, 230 V	80-6466-27
Ettan DALSix Large Vertical System, 115 V	80-6485-08
Ettan DALSix Large Vertical System, 220 V	80-6485-27
Ettan DALT Gel 12.5 (26 x 20 cm)	17-6002-36
Ettan DALT Buffer Kit for 12 precast gels	17-6002-50
Immobiline™ DryStrip gels and buffers	*
Ettan MDLC	18-1176-44
ImageScanner™ II, 100–240 V	18-1170-84
ImageScanner Geometry Calibration Kit	18-1145-55
Typhoon™	*
ImageMaster 2D Platinum	11-0010-91
DeCyder 2-D Differential Analysis Software	18-1163-05
Sierra 2D-MS Laboratory Workflow System	18-1154-65

For code numbers marked with an asterisk (\*), see [www.amershambiosciences.com](http://www.amershambiosciences.com), or contact your local GE Healthcare representative.

Ettan Chemicals	
Product	Code No
Trypsin, sequencing grade, 10 x 250 µg for 10 full batch runs (10 x 1152 samples)	17-6002-75
Trifluoroacetic Acid 50 ml for 10 full batch runs (10 x 1152 samples)	17-6002-76
ACH-Cinnamic Acid, 10 x 20 mg for 10 full batch runs (10 x 1152 samples)	17-6002-77



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