

**The KingFisher®  
Family**



**Accelerate your genomics and  
proteomics throughput with  
KingFisher purification systems**

Analyze • Detect • Measure • Control™

**Thermo**  
ELECTRON CORPORATION

## The KingFisher family – high speed purification of proteins, nucleic acids and cells

Thermo Electron Corporation's KingFisher range of exciting, high speed DNA, RNA and protein purification systems are designed to resolve all your purification problems – now and in the future. Based on revolutionary patented magnetic separation technology, KingFisher systems enable you to process any samples - proteins, nucleic acids and cells – from virtually any source – blood, cell cultures, tissue lysates, soil, faeces. All with sample integrity guaranteed and truly amazing speeds – up to 96 samples in under 15 minutes.

### The KingFisher purification system offers you:

- High speed fully automated purification
- High throughput 96 sample processing
- Purification of any sample from any source
- Ready made and custom protocols
- Easy operation via instrument or external PC

The KingFisher family comprises three systems - KingFisher, KingFisher mL and KingFisher 96, covering sample volumes from 20-1000  $\mu$ L. Each system consists of an instrument, specially designed plastics and software. With optimised protocols you can be up and running in a matter of minutes.

- KingFisher – 20-200  $\mu$ L in microstrips, up to 24 samples per run
- KingFisher mL – 50-1000  $\mu$ L in tube strips, up to 15 samples per run
- KingFisher 96 – 20-1000  $\mu$ L in deep well, KF, and PCR plates, up to 96 samples per run

### Solve those purification problems

Speed and sample purity continue to be the major concerns for genomics and proteomics researchers.

The sheer volume of work involved in genome and protein mapping mean processing speed is essential. Likewise, unsatisfactory results on even the most sophisticated analysers are being increasingly linked to poor initial sample quality. However the variety of samples being used – from rare cell types and mRNA transcripts to increasingly large and delicate protein complexes - presents real challenges. On all counts, KingFisher automated purification systems ensure impurities are removed.

### The Kingfisher range of applications includes:

- Genomics & proteomics
- Target identification
- Forensics
- Biomarker discovery
- Quality control
- Veterinary assays



### Work at unparalleled speeds

The processing speed of KingFisher systems is unparalleled in the market and stems from their advanced magnetic particle processing technology. This uses magnetic rods to move sample particles through the various purification phases – binding, mixing, washing and incubation. Eliminating liquid handling and increasing automation results in a reliable and robust technique. The overall efficiency, in turn, brings speed - the top of the range KingFisher 96 can purify 96 samples in 15-30 minutes. True, market-leading throughput.

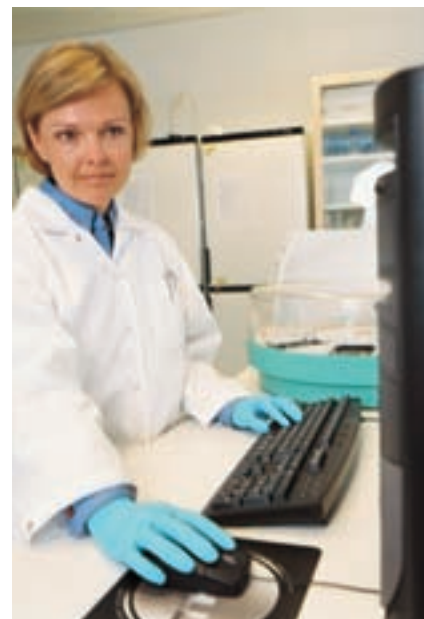
Equally important, sample cross contamination and reagent cross-over is effectively eliminated by the automated purification process.

### Adapt to your own routine

KingFisher enables you to increase your workflow flexibility. Ready made application protocols are available for many existing magnetic particle-based methods. In addition, it is easy to either customise the existing protocols or create entirely new ones using the intuitive KingFisher software. Protocols can then be run either via the KingFisher instrument or via a PC.

### See instant benefits in productivity

Installing a KingFisher will make an instant impact on your work. You will be able to purify samples at speeds you never believed possible. All with minimal hands-on requirement, as the automation takes over. Leaving you free to concentrate on more involved downstream analysis.



## The KingFisher family



### KingFisher

KingFisher gives you the ability to purify small-scale samples. All purification and processing steps are carried out in microplates with simple push button operation.

Samples/run	24
Working volume in $\mu\text{l}$	20-200



### KingFisher mL

KingFisher mL is your choice for high volumes. It allows all purification and processing steps to be carried out in a single strip of five tubes. Being able to go as low as 50  $\mu\text{l}$  to release target molecules, enables cells and proteins from larger starting volumes to be isolated and concentrated simultaneously.

Samples/run	15
Working volume in $\mu\text{l}$	50-1000



### KingFisher 96

Using a 96 plate format, KingFisher 96 provides the fastest and easiest way to purify genomic DNA or RNA and proteins from a variety of sample material. Supplied with ready made protocols, Kingfisher 96 also allows you to create your own custom-made protocols for special applications.

Samples/run	96
Working volume in $\mu\text{l}$	20-1000

## KingFisher Plastics

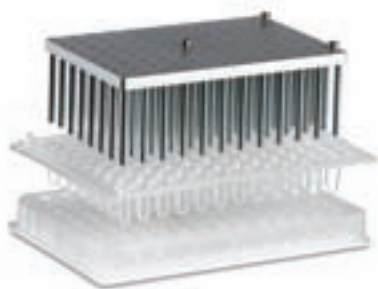
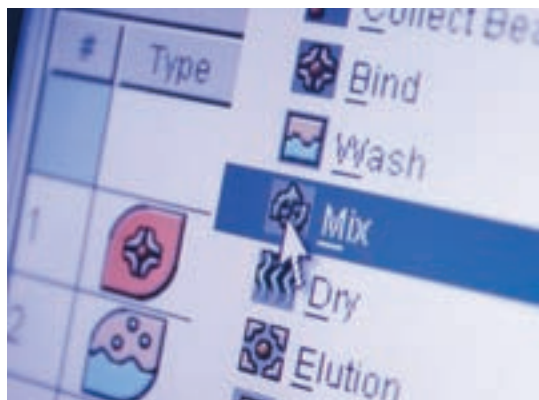
KingFisher instruments utilize disposable plastics which are made of polypropylene and specially designed for processing and isolation of target molecules. The plastics are optimal for magnetic particle processing due to low binding of biomolecules. KingFisher mL processes the samples in tube strips and KingFisher and KingFisher 96 in specially designed microplates. The magnets are protected by disposable tip combs. The design of plastics enables excellent recovery of magnetic particles.

Microtiter® deep well plates, which are specially designed for KingFisher 96, enable efficient processing and mixing of magnetic particles. Both the yield and quality of the isolated DNA/RNA is significantly improved with these new deep well plates (Fig. 1).

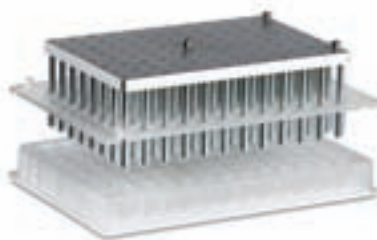
- High resistance to organic solvents
- High temperature resistance (-196 to +121 °C)
- Sealable with adhesive films
- DW plate sealable with cap mat

## KingFisher Software - the perfect compliment to a peerless system

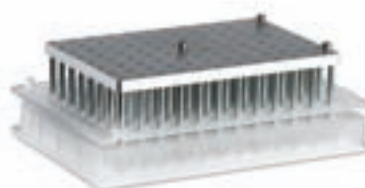
KingFisher Software is designed to allow you to develop custom-made protocols for your own applications, allowing increased flexibility. The KingFisher software enables the KingFisher 96 to interface with liquid handling, robotics and plate stacking instruments, providing a fully automated solution and the highest throughput.



KingFisher 96 magnetic head for deepwell plates



KingFisher 96 magnetic head for KingFisher 96 plate



KingFisher 96 magnetic head for PCR plate



## KingFisher applications

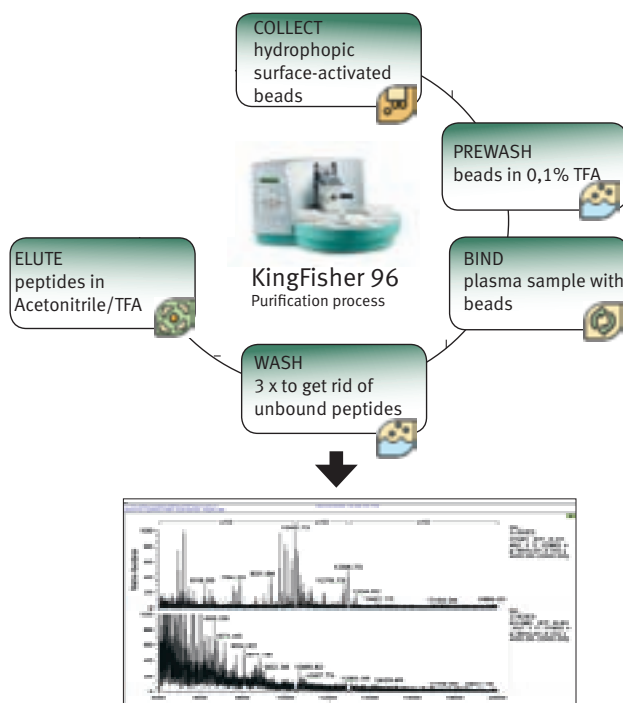
### High speed protein purification of even the most delicate complexes

KingFisher can be used to purify all kinds of proteins – from recombinant to therapeutic antibodies. The system's magnetic separation technology ensures even the most delicate complexes are isolated intact.

With their highly complex structures and varying physiochemical properties, recombinant proteins have until now proven difficult to purify on a routine basis using standardized protocols. KingFisher solves this problem enabling routine purification of antibodies/antigens, pharmaceuticals and vaccines using any kind of host cell – mammalian, insect, yeast, bacteria or transgenic animals/plants.

KingFisher can also significantly improve the phage display process by fully automating the 5 cycles of the biopanning phase – incubation/binding, washing and elution.

KingFisher technology and magnetic bead based chromatography enable you to purify hundreds of samples per day in an easy, robust and reproducible way, and perform high throughput profiling of peptidomic markers from plasma. No need for centrifugation or micro-columns! The unique KingFisher technology and range of chromatography beads supports a variety of proteomics applications.



Rapid and robust sample preparation prior to mass spectrometry analysis

The KingFisher software also allows you to develop your own robust protocols for other protein applications – protein interaction studies, protein phosphorylation studies, glycoprotein purification and protein arrays.

### Genomics

The range of source material for DNA & RNA research is immense – from blood and urine for routine testing to nails, hair and cigarette butts for forensics. KingFisher enables you to successfully purify DNA & RNA in sufficient quantities from them all.

### DNA & RNA purification kits

Magnetic particle based kits offer excellent performance using KingFisher, KingFisher mL or KingFisher 96 for purification of DNA and RNA. Furthermore, the yields are excellent for a variety of tissues. Plant kits can be used with KingFisher mL and KingFisher 96 to purify DNA from several plant species and sources e.g. leaves and seeds. Using magnetic bead based separation technology also ensures the resulting DNA and RNA is free of protein, nucleases and other contaminants. This means you can use it direct in downstream applications.

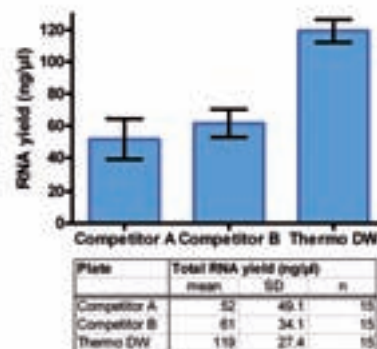


Figure 1. Comparison of total RNA average yields (from 1 million cells) and standard deviations between Thermo Microtiter DW plate and two other plates. Analysis performed using Agilent Bioanalyzer 2100 (Agilent Technologies).

## Technical Specifications

	KingFisher 96	KingFisher mL	KingFisher
Processing volume	20-1000µl	50-1000µl	20-200µl
Capacity samples/run	96	15	24
Collection efficiency of the particles	≥95%	≥95%	≥99%
Magnetic rods	96	15	24
Plate types	Deep well plate (50 – 1000 µl), KingFisher 96 plate (20 – 200 µl), PCR plate (20 – 100 µl)	Special tube strip, 1 x 5 tubes, 1000µl tube	Special microstrips, 1 x 8 wells , 8 x 12 grid format, 100 & 200µl well volumes
Tip combs	Special design, 96 format	Special design, 1 x 5 format	Special design, 1 x 12 format
Heating temperature	From +4°C above ambient temperature to +96°C	Ambient, no heating	Ambient, no heating
Magnetic particle size	ca. > 1 µm	ca. > 1 µm	ca. > 1 µm
Keyboard / Display	START/STOP/four cursor keys /LCD	START/STOP/two cursor keys/LCD	START/STOP/two cursor keys/LCD
Internal Software	Space for ca. 100 internal protocols	Space for ca. 8 internal protocols	Space for ca. 8 internal protocols
KingFisher Software compatibility	yes	yes	yes
Computer interface	Serial RS-232C port	Serial RS-232C port.	Serial RS-232C port.
Robot compatibility	Yes	No	No
Size WXDHX mm	ca. 680 x 600 x 380	290 X 290 X 31	290 X 290 X 31
Weight kg	28	10	10
<b>KingFisher Software specifications:</b>			
Supported operating system	Microsoft Windows 2000 with SP4 or later and XP Professional with SP2 or later. Internet Explorer 6.0 or later must be installed.		
Used to	create, modify and run the protocols with KingFisher instruments		

## KingFisher Ordering Information

5400000	KingFisher, Magnetic Particle Processor, 100-240 V, 50/60 Hz (for microplates)
5400050	KingFisher mL, Magnetic Particle Processor, 100-240 V, 50/60 Hz
5400500	KingFisher 96 Magnetic Particle Processor, 100-240 V, 50/60 Hz (price includes KingFisher 96 head for Deep Well Plate)
24073410	KingFisher 96 Head for PCR plate
24073420	KingFisher 96 Head for KingFisher 96 plate
24073430	KingFisher 96 Head for Deep Well plate
<b>Accessories and spare parts:</b>	
11273100	KingFisher mL Tube tray
24073180	KingFisher mL Microtube tray
<b>Consumables for KingFisher microplates:</b>	
97002070	KingFisher tip comb, 50 pcs/box
97002080	KingFisher plate 100 µl, 50 pcs/box
97002084	KingFisher plate 200 ul, 50 pcs/box
97002090	KingFisher plastics 100 µl 8-pack, 8 plates (100 µl) + 8 tip combs / box
97002094	KingFisher plastics 200 µl 8-pack, 8 plates (200 µl) + 8 tip combs / box
<b>Consumables for KingFisher mL:</b>	
97002111	KingFisher mL tip comb, 800 pcs
97002121	KingFisher mL tube, 900 pcs (20x45 pcs)
97002131	KingFisher mL Combi 60 (tubes and tip combs for 60 samples)
97002141	KingFisher mL Combi 240 (tubes and tip combs for 240 samples)
<b>Consumables for KingFisher 96:</b>	
97002514	KingFisher 96 tip comb for PCR magnets, 8 x 10 pcs / box
97002524	KingFisher 96 tip comb for KF magnets, 10 x 10 pcs / box
97002534	KingFisher 96 tip comb for DW magnets, 10 x 10 pcs / box
97002540	KingFisher 96 KF plate (200ul), 48 plates / box
95040450	DW 96 plate, V-bottom, polypropylene, 50 pcs/ box
95040460	DW 96 plate, V-bottom, sterile, polypropylene, 50 pcs / box
9503230	Cap mat for DW 96 Plate, 50 pcs / box
9503233	Cap mat for DW 96 Plate, sterile, 25 pcs / box

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Countries not listed: +49 6184 90 6940 or +33 2 28 03 20 00

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