

## MagNA Pure Compact System

*Versatile Nucleic Acid Purification – Smart. Small. Simple.*



[www.roche-applied-science.com](http://www.roche-applied-science.com)

*The MagNA Pure Compact System is the automated benchtop solution for nucleic acid purification. With its small instrument size, extensive integrated features, and a sample throughput of one to eight samples per run, the instrument meets the demanding nucleic acid isolation needs of research laboratories with low to medium sample throughput.*

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MagNA Pure Compact Nucleic Acid Isolation Kit I

MagNA Pure Compact Nucleic Acid Isolation Kit I –  
Large Volume

MagNA Pure Compact RNA Isolation Kit

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## The MagNA Pure Compact System

### *Versatile Nucleic Acid Purification – Smart. Small. Simple.*

**Conserve valuable laboratory space** with the small footprint.

**Obtain high-quality nucleic acids** from diverse sample types with proven reagent chemistry.

**Incorporate a variety of protocols** using different specimen and elution volumes for a broad range of sample materials.

**Save time** through easy setup with prefilled reagents and disposables.

**Eliminate contamination** with prefilled reagents and disposables, an integrated HEPA filter, and synchronized stage movement.

**Ensure isolation success** with a sensor for tip loss, clot, and cartridge detection.

**Track sample identification** with the supplied bar-code scanner.

**Simplify documentation** via host connectivity.

**Navigate easily** with the intuitive software and touch-screen monitor.



Figure 1: The MagNA Pure Compact Instrument

## The MagNA Pure Compact Instrument — *New dimensions of automated nucleic acid purification at your benchtop*

### Save space in your lab — small instrument footprint design

Benefit from a benchtop instrument with a small footprint (540 mm W x 610 mm D [21.3 in W x 24.0 in D]). The MagNA Pure Compact Instrument fits on all conventional laboratory countertops. Even in labs with limited space, you can integrate automated nucleic acid isolation of up to eight samples right at your bench.

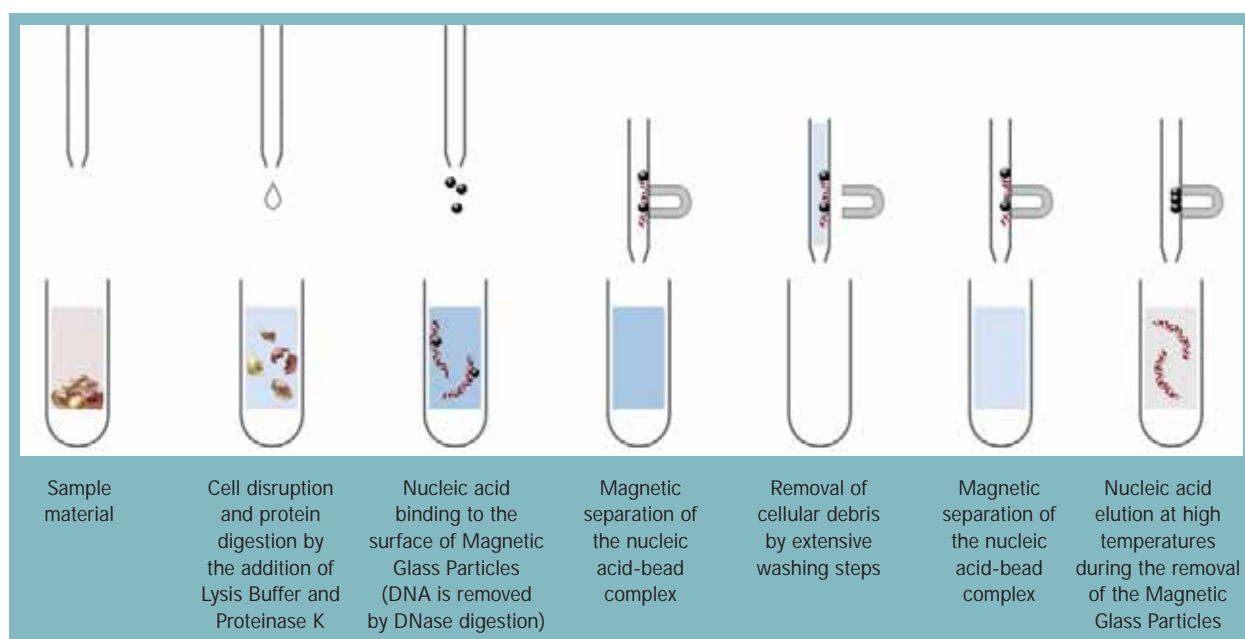
### Utilize purification options as diverse as your nucleic acid research

Different applications and sample types require different nucleic acid purification methods. The MagNA Pure Compact System incorporates a variety of experimental protocols using different specimen (100–1000 µl) and elution (50–200 µl) volumes from a wide variety of sample materials (*e.g.*, blood, tissue, or cultured cells).

### Proven purification technology

The MagNA Pure Compact Instrument utilizes a proven magnetic-bead technology (Figure 2) which has been successfully used throughout the world to generate research success and publications for over five years.

Figure 2: Schematic principle of nucleic acid purification with the MagNA Pure Compact Instrument.



## Convenience and automation – everything you need and ready to go

Start your nucleic acid purification with minimum effort and obtain high-quality nucleic acid. Save time with the MagNA Pure Compact Instrument's integrated system, from the beginning to the end of your isolation. Experimental setup is easy to understand and requires a minimum of handling time. Intuitive, software-guided setup, and prefilled and sealed Reagent Cartridges and disposables guarantee excellent performance. Ready-to-use protocols for all available applications are stored onboard, eliminating the need to shut down and restart the instrument for reagent or protocol changes.

The MagNA Pure Compact nucleic acid purification kits contain all reagents and disposables needed for 32 nucleic acid isolation reactions. The disposable configuration eliminates reagent pipetting, single tip loading, and Piercing Tool cleaning while minimizing waste (Figure 3).



**Figure 3: Reagent Cartridge and accessories.** Each set of single-sample reagents and disposables consists of a prefilled and sealed Reagent Cartridge, an individually-packaged Tip Tray, and a disposable Piercing Tool for automated opening of the cartridge seals.

## Eliminate risk — innovative design protects the safety of your samples

The MagNA Pure Compact System is designed with a variety of intelligent features to eliminate cross-contamination and to assure a maximum of safety throughout the purification workflow. Quickly and easily track samples and reagents with the integrated bar-code scanner and prelabeled Reagent Cartridges and Elution Tubes (Figure 4). Protect each sample from cross-contamination with the instrument's synchronized stage movement, integrated HEPA filter, UV decontamination, and prefilled and sealed reagents and disposables. Ensure isolation success throughout the purification with the instrument's sensor for tip loss, clot, and cartridge detection (Figure 5). Isolation protocols for blood and plasma automate pipetting of an internal control during the isolation process directly into the lysis buffer, to avoid its degradation by extracellular nucleases present in these specimens.



**Figure 4: Bar-code scanning of an Elution Tube in the Elution Tube Rack.** In addition to the Reagent Cartridge, each Elution Tube is labeled with a unique bar code that is unambiguously identified and tracked throughout the remaining processing steps.



**Figure 5: Pipetting station and nozzle head.** During the isolation process, a stepper motor moves the cartridge stage holding the Reagent Cartridges and the Sample and Elution tubes. An eight-nozzle pipetting head processes the samples, from piercing the sealing foil on the cartridge to the final nucleic acid elution. A pressure sensor integrated into the nozzle head detects accidental clotting or tip loss during sample processing.



## MagNA Pure Compact Software – *Integrated, intuitive, and at your fingertips*

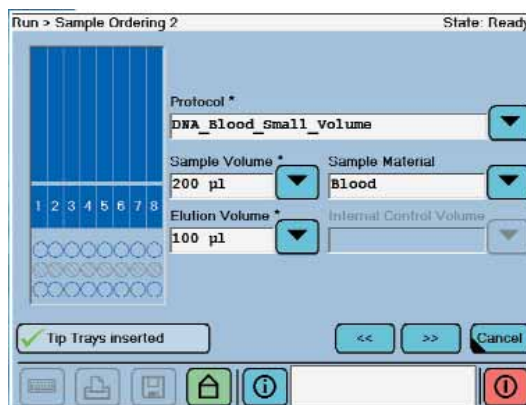
### Navigate with touch-screen-driven software

The MagNA Pure Compact Software is controlled by an integrated computer and navigated by a touch-screen monitor (Figure 6), easily guiding the user through the setup procedure and run (Figure 8). Preinstalled isolation protocols are selected by scanning the bar code on the kit's Reagent Cartridges (Figure 7). State-of-the-art user management and host connectivity (ASTM/RS232) complete the comprehensive features of this streamlined software for automated nucleic acid purification.

**Figure 6: Touch-screen monitor.** The MagNA Pure Compact Instrument features a touch-screen monitor, integrated computer, and a bar-code scanner for sample tracking. All available isolation protocols are preinstalled and can be selected by scanning the bar code on the kit's Reagent Cartridges. The user is guided through the setup procedure and run; state-of-the-art user management and host connectivity (ASTM/RS232) compatibility complete the comprehensive features of a streamlined software for automated nucleic acid purification.



**Figure 7: Kit information in the Reagent Cartridge bar code.** Each kit's Reagent Cartridges are labeled with a bar code that contains information about the kit name, lot, and expiration date. Based on this information, the MagNA Pure Compact software selects the appropriate protocols for the kit, and notifies the user if the kit is expired. All data generated by the bar code are automatically saved by the system.



**Figure 8: Sample Ordering Screen.** Pull-down menus allow the user to select the appropriate parameters for sample and elution volume or sample material. Protocol selection may also be done by bar-code scanning of the kit's Reagent Cartridges.

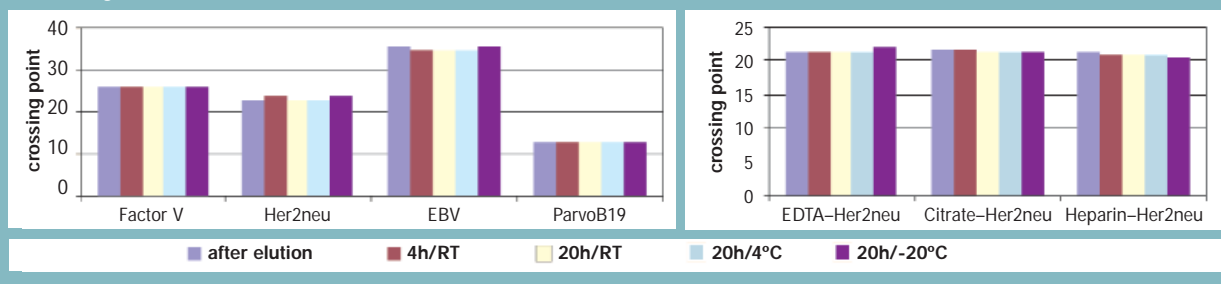
## MagNA Pure Compact – Reagent kit selection guide

Research Sample Type							
Product	Cat. No.	Whole Blood	Blood Cells (WBCs, PBMCs)	Cultured Cells	Tissue	Serum, Plasma	Body Fluids*, Bacterial Cultures
MagNA Pure Compact Nucleic Acid Isolation Kit I	03 730 964 001	Genomic DNA				Viral Nucleic Acids	Bacterial DNA
MagNA Pure Compact Nucleic Acid Isolation Kit I – Large Volume	03 730 972 001	Genomic DNA				Viral Nucleic Acids	
MagNA Pure Compact RNA Isolation Kit	04 802 993 001	Total RNA					

\* e.g., BAL (bronchoalveolar lavage), sputum, cerebrospinal fluid, urine, swabs.

### Reagent Kits

#### Stability



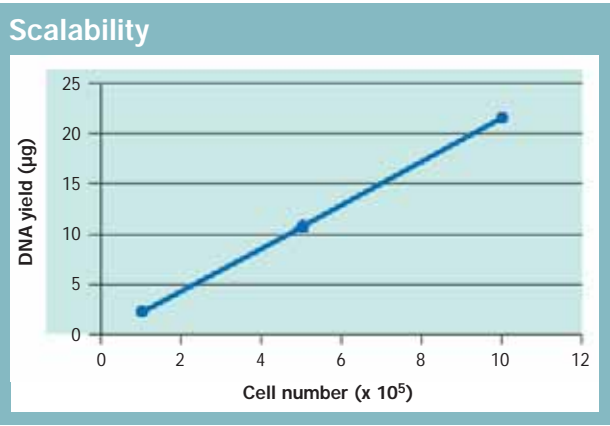
**Figure 9: PCR detection of different human targets in research samples using the LightCycler® Carousel-Based System.** DNA eluates from whole blood samples were generated with the MagNA Pure Compact System, split immediately after elution, and stored at different conditions. PCR was performed using two parameters which detect internal sequences (Factor V and Her2neu) and two parameters which detect spiked sequences using the internal control function of the MagNA Pure Compact Instrument (Epstein-Barr Virus and Parvovirus B19). No significant influence of different storage conditions on amplification performance was observed. Crossing point as determined by analysis with the LightCycler® Carousel-Based System.

**Figure 10: PCR detection of Her2neu sequences using the LightCycler® Carousel-Based System.** DNA was isolated from human whole blood research samples (stabilized with different anticoagulants) using the MagNA Pure Compact System. The endogenous sequence Her2neu was detected by PCR using the LightCycler® Carousel-Based System. Additionally, the eluate stability at different conditions was demonstrated. No significant deviation in LightCycler® crossing points is observed using either anticoagulants or different storage conditions. Crossing point as determined by analysis with the LightCycler® Carousel-Based System.

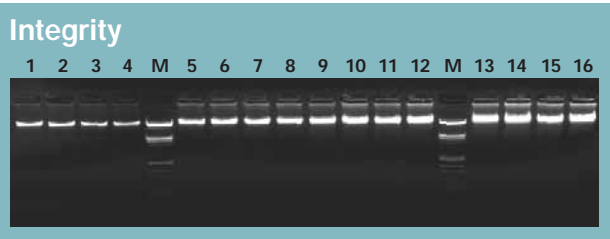


# MagNA Pure Compact Reagent Kits – Kit specifications and results data

MagNA Pure Compact Nucleic Acid Isolation Kit I		Cat. No. 03 730 964 001
Sample types	Mammalian whole blood, buffy coat, serum, plasma, cultured cells, bacterial cultures, body fluids	
Sample amount	100 µl, 200 µl, 300 µl, 400 µl serum, plasma, or whole blood (with up to 2 x 10 <sup>6</sup> blood cells), up to 1 x 10 <sup>6</sup> cultured cells, and 200 µl bacterial cultures or body fluids	
Eluate volumes	50 µl, 100 µl, or 200 µl; dependent on protocol type	
Type of nucleic acid purified	Genomic DNA from whole blood or cultured cells; total nucleic acid from serum or plasma	
Yield	Typical DNA yield from whole blood (100 µl to 400 µl sample volume): 5 – 15 µg Typical DNA yield from cultured cells (100 µl K-562, containing 1 x 10 <sup>6</sup> cells): approximately 20 µg	
Internal control	Isolation protocols for blood and plasma allow you to choose automated pipetting of an internal control	

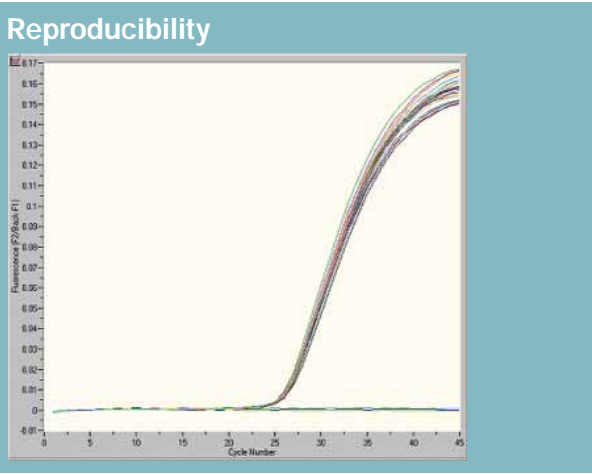


**Figure 11: Scalability of DNA yield.** Different amounts of K-562 tissue culture cells were used to isolate DNA using the MagNA Pure Compact Nucleic Acid Isolation Kit I. In the range from 1 x 10<sup>5</sup> to 1 x 10<sup>6</sup> cells, DNA yield (determined by OD measurement) perfectly matches the number of cells that were processed by the MagNA Pure Compact Instrument.



**Figure 12: Integrity of DNA isolated from different volumes of EDTA-stabilized whole blood using the MagNA Pure Compact Nucleic Acid Isolation Kit I.**

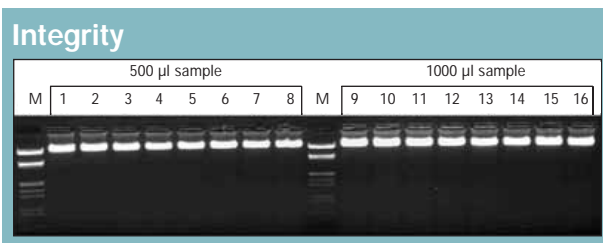
Lanes 1-4: 100 µl sample volume/100 µl elution volume;  
 Lanes 5-8: 200 µl sample volume/100 µl elution volume;  
 Lanes 9-12: 300 µl sample volume/100 µl elution volume;  
 Lanes 13-16: 400 µl sample volume/100 µl elution volume;  
 M: Roche DNA Molecular Weight Marker III (Cat. No. 10 528 552 001).



**Figure 13: Reproducibility in analysis using the LightCycler® Carousel-Based System.** Twenty-four plasma samples were spiked with Parvovirus B19 (10<sup>5</sup> copies/ml). Nucleic acids were isolated from 400 µl of the spiked plasma samples using two different MagNA Pure Compact Instruments and the MagNA Pure Compact Nucleic Acid Isolation Kit I. Samples were eluted in 50 µl elution buffer and the eluates were analyzed for the presence of Parvovirus DNA with the LightCycler® Carousel-Based System. The results show the excellent reproducibility of the isolation procedure.

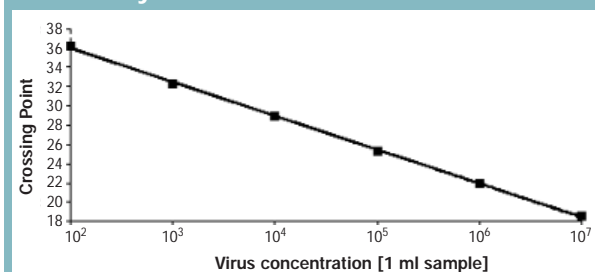
## MagNA Pure Compact Reagent Kits – *Kit specifications and results data*

MagNA Pure Compact Nucleic Acid Isolation Kit I – Large Volume		Cat. No. 03 730 972 001
Sample types	Mammalian plasma, whole blood, tissue, and cultured cells	
Sample amount	500 µl and 1000 µl plasma or whole blood (with up to $1 \times 10^7$ blood cells); 1 to 10 mg tissue; $1 \times 10^6$ to $2 \times 10^6$ cultured cells	
Eluate volumes	50 µl, 100 µl, or 200 µl	
Type of nucleic acid purified	Genomic DNA from whole blood, tissue, or cultured cells; total nucleic acid from serum or plasma	
Yield	Typical DNA yield for whole blood (500 µl or 1000 µl sample volume): 15 – 28 µg Typical DNA yield from tissue (10 mg mammalian tissue): 5 – 45 µg depending on tissue type Typical DNA yield for cultured cells (100 µl K-562 containing $2 \times 10^6$ cells): 40 – 50 µg	
Internal control	Isolation protocols for blood and plasma allow you to choose automated pipetting of an internal control	



**Figure 14: Integrity of DNA isolated from different volumes of EDTA-stabilized whole blood with the MagNA Pure Compact Nucleic Acid Isolation Kit I – Large Volume.** DNA was isolated from 500 and 1000 µl of EDTA-stabilized whole blood, each in an elution volume of 200 µl. Sixteen microliters of each sample eluate was analyzed on a 0.8% agarose gel and compared to Molecular Weight Marker III (Roche Applied Science Cat. No. 10 528 552 001).

### Sensitivity



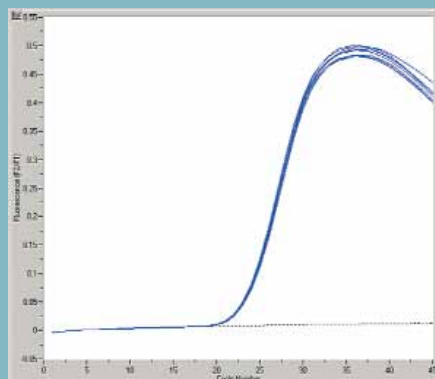
**Figure 15: Citrated plasma was spiked with a dilution series of human Parvovirus B19 in the range of  $10^2$  to  $10^7$  copies per ml of plasma (this virus is of significance in the quality control of the plasma processing industry).** Nucleic acids were isolated from 1000 µl of spiked plasma using the MagNA Pure Compact Nucleic Acid Isolation Kit I – Large Volume, with an elution volume of 100 µl. Five microliters of eluate was used for PCR analysis with the LightCycler® Carousel-Based System (corresponding to 5 copies to  $5 \times 10^6$  copies per PCR, assuming a 100% recovery). As little as 500 copies/ml (= 5 copies per PCR) are detected, showing excellent sensitivity and linearity. Crossing point as determined by analysis with the LightCycler® Carousel-Based System.

## MagNA Pure Compact RNA Isolation Kit

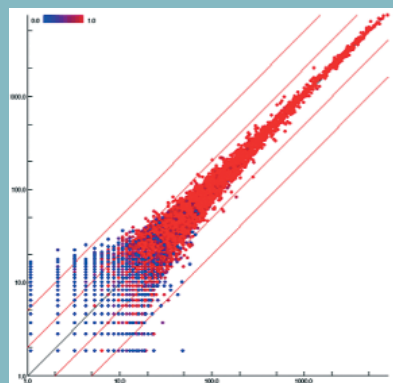
Cat. No. 04 802 993 001

<b>Sample types</b>	Mammalian tissue, cultured cells, whole blood, blood cells
<b>Sample amount</b>	2.5 – 10 mg tissue; $1 \times 10^3$ – $1 \times 10^6$ cultured cells; 50 – 200 $\mu$ l whole blood (with up to $1.4 \times 10^6$ blood cells); $1 \times 10^6$ blood cells
<b>Eluate volumes</b>	50 $\mu$ l or 100 $\mu$ l
<b>Type of nucleic acid purified</b>	Total RNA
<b>Yield</b>	Typical RNA yield for mouse liver (5 mg or 10 mg): 15 – 50 $\mu$ g Typical RNA yield for whole blood (200 $\mu$ l): 0.7 – 1 $\mu$ g Typical RNA yield for cultured cells ( $1 \times 10^6$ HeLa cells): 7 – 15 $\mu$ g

### Reproducibility

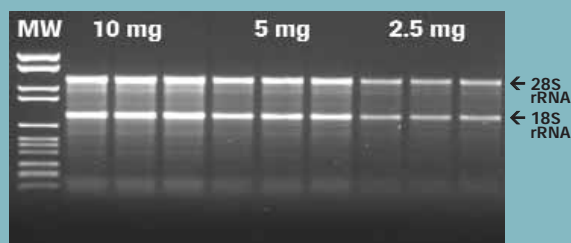


**Figure 16: LightCycler® RT-PCR analysis of RNA isolated with the MagNA Pure Compact RNA Isolation Kit.** RNA was isolated from 200  $\mu$ l whole blood in eight replicates, each in an elution volume of 50  $\mu$ l. Five microliters of each sample was analyzed by RT-PCR on the LightCycler® Carousel-Based System using Cyclophilin A-specific primers/HybProbe probes. The results show the excellent reproducibility of the isolation procedure. No signs of PCR inhibition were observed.



**Figure 17: Affymetrix GeneChip Analysis of RNA from two independent isolations with the MagNA Pure Compact RNA Isolation Kit.** RNA was isolated from  $1 \times 10^6$  K-562 cells in two independent isolation runs and analyzed on an Affymetrix GeneChip HG-U133 Plus 2.0. The log intensity scatter plot shows highly reproducible results with an  $r^2$  value of 0.995.

### Integrity



**Figure 18: MagNA Pure Compact RNA Isolation Kit, RNA integrity and scalability.** Total RNA was isolated from 10, 5, and 2.5 mg of mouse liver in triplicate, each in an elution volume of 100  $\mu$ l. The integrity of the RNA was shown by subjecting 2.5  $\mu$ l of each eluate to agarose gel electrophoresis and comparison to Molecular Weight Marker VI (Roche Applied Science Cat. No. 11 062 590 001). All samples show intact 28S and 18S rRNA bands. The resulting band intensities confirm the excellent scalability of the isolation procedure.

## The MagNA Pure Compact System – *A valuable part of our Integrated Solutions for genomic research*

Take advantage of Roche Applied Science's 50 years of research experience, and integrate any part of our Genomics Systems to meet your demanding research needs:

**MagNA Lyser Instrument** – automated tissue homogenization

**MagNA Pure LC System** – nucleic acid isolation and reaction setup

**LightCycler® Real-Time PCR Systems** – genotyping, qualitative and quantitative PCR in 32-sample carousel-based and interchangeable 96- or 384-multiwell plate-based formats

For additional information on all of the Roche Applied Science instruments and systems, visit [www.roche-applied-science.com](http://www.roche-applied-science.com)

## The MagNA Lyser Instrument – *Simplify labor-intensive sample preparation*



Use the MagNA Lyser Instrument to easily homogenize your samples. This unique and automated instrument is the ideal companion to the **MagNA Pure Compact Instrument**. Homogenize up to 16 samples in just

a few minutes and then proceed to your automated nucleic acid purification.

### MagNA Lyser Instrument

**Characteristics** Cat. No. 03 358 976 001 (230 Volt)  
Cat. No. 03 358 968 001 (110 Volt)

**Dimensions** W 305 mm x D 381 mm x H 280 mm  
W 12 in x D 15 in x H 11 in

**Weight** 19.8 kg (44 lbs)

**Capacity** Rotor with 1 – 16 positions

**Rotor** Quick-release rotor

**Power Source** AC 110 to 240 V

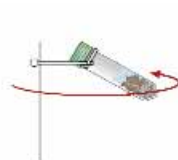
**Power Usage** Max. 1 kW



Add your sample and lysis buffer to the MagNA Lyser Green Beads.



Homogenize with the MagNA Lyser Instrument.



Centrifuge to pellet the debris.



Use the supernatant to prepare nucleic acids or proteins.



**Figure 20: MagNA Lyser Green Beads**

**Figure 19: MagNA Lyser Workflow**

# The MagNA Pure LC and MagNA Pure Compact Systems – *Versatile nucleic acid purification*

## The MagNA Pure LC System

True walk-away automation for nucleic acid purification from 1 – 32 samples and automated PCR setup in different formats (e.g., LightCycler® Capillaries or 96-well plates).



- Innovative, reliable magnetic-bead technology.
- Highly flexible – purifies nucleic acids from almost any sample using appropriate kits.
- User-friendly software protocols are optimized to meet your experimental needs.

### MagNA Pure LC Instrument

Characteristics	Cat. No. 12 236 931 001
Type	Standalone desktop instrument
Dimensions w/o computer	W 1000 mm x D 650 mm x H 890 mm W 40 in x D 26 in x H 35 in
Weight	151 kg (332 lbs)
Computer	Pentium PC with Windows 2000
Sample Number	1 – 32 tests/batch
Dispensable volume	5 µl to 1000 µl
Dispensing accuracy	5 µl to 100 µl; ≤3% variance 50 µl to 1000 µl; 2% variance
User interface	User-friendly interface on Windows 2000
Power Source	AC 110 - 240 V, 10 A, 50/60 Hz
Power Usage	Max. 1000 W

## The MagNA Pure Compact System

### MagNA Pure Compact Instrument Characteristics

Cat. No. 03 731 146 001

Processing capability	1 to 8 samples per batch
Processing time	20 to 45 minutes (protocol dependent)
Sample volume	100 to 1000 µl
Elution volume	50 to 200 µl
Dimensions	W 540 mm x D 610 mm x H 570 mm W 21.3 in x D 24.0 in x H 22.4 in
Weight	Approximately 60 kg (132 lbs)
Power supply	100 - 240 V AC +/- 10%, 50/60 Hz +/- 5%
Computer	Integrated processor with touch-screen monitor
Protocols	Onboard protocols (preinstalled)
Bar code	Integrated bar-code scanner

True walk-away automation for nucleic acid purification from 1 – 8 samples, using pre-dispensed reagents in sealed cartridges for easy and convenient handling.



Additional  
Products

## Ordering Information

Product	Cat. No.	Pack Size	Application Range
<b>MagNA Pure Compact Instrument</b>	03 731 146 001	1 instrument including internal PC with touch-screen monitor and bar-code scanner	Automated nucleic acid isolation for a broad range of applications
<b>MagNA Pure Compact Nucleic Acid Isolation Kit I</b>	03 730 964 001	1 kit (32 isolations) including all required plastic disposables	<ul style="list-style-type: none"> <li>• Genomic DNA from mammalian whole blood or cultured cells</li> <li>• Viral nucleic acids from plasma or serum</li> <li>• Sample volume range 100 µl – 400 µl</li> </ul>
<b>MagNA Pure Compact Nucleic Acid Isolation Kit I – Large Volume</b>	03 730 972 001	1 kit (32 isolations) including all required plastic disposables	<ul style="list-style-type: none"> <li>• Genomic DNA from mammalian whole blood or cultured cells</li> <li>• Viral nucleic acids from plasma or serum</li> <li>• Sample volume range 500 µl – 1000 µl</li> </ul>
<b>MagNA Pure Compact RNA Isolation Kit</b>	04 802 993 001	1 kit (32 isolations) including all required plastic disposables	<ul style="list-style-type: none"> <li>• RNA from mammalian tissue, blood, cultured cells, and blood cells</li> <li>• Sample amount up to 10 mg</li> </ul>
<b>MagNA Pure Bacteria Lysis Buffer</b>	04 659 180 001	20 ml	<ul style="list-style-type: none"> <li>• DNA from bacteria in many different sample types, such as urine, BAL (bronchoalveolar lavage), sputum, CSF, swabs, or bacterial cultures</li> </ul>
<b>MagNA Pure DNA Tissue Lysis Buffer</b>	04 805 160 001	100 ml	<ul style="list-style-type: none"> <li>• Genomic DNA from mammalian tissue. Sample volume range 1 – 10 mg</li> </ul>

### Additional Products for the MagNA Pure Compact System

Product	Cat. No.	Pack Size
<b>MagNA Pure Compact Tip Tray Kit</b>	03 753 166 001	10 tip trays
<b>MagNA Pure Compact Waste Tank</b>	03 788 300 001	1 waste tank
<b>MagNA Pure Compact Tube Rack</b>	03 788 296 001	1 tube rack
<b>MagNA Pure Compact Elution Tube Rack</b>	03 788 288 001	1 tube rack
<b>MagNA Pure Compact Drip Tray</b>	04 347 005 001	1 drip tray
<b>MagNA Pure Compact Cartridge Rack</b>	03 788 237 001	1 cartridge rack
<b>MagNA Pure Compact Drop Catcher</b>	03 788 270 001	1 drop catcher



## Additional Products

Product	Cat. No.	Pack Size
MagNA Lyser Instrument	03 358 976 001	1 instrument (230 Volt) plus 2 rotors, 1 rotor stand, and 1 cooling block
	03 358 968 001	1 instrument (110 Volt) plus 2 rotors, 1 rotor stand, and 1 cooling block
MagNA Lyser Green Beads	03 358 941 001	100 tubes, prefilled with ceramic beads
MagNA Pure LC Instrument	12 236 931 001	1 instrument plus accessories
LC Carousel Centrifuge 2.0	03 709 582 001	1 instrument (230 Volt)
	03 709 507 001	1 instrument (110 Volt)
LightCycler® 2.0 Instrument†	03 531 414 201	1 instrument plus related products and data station (desktop or notebook version)
LightCycler® 1.5 Instrument†	04 484 495 001	1 instrument plus related products and data station (desktop or notebook version)
LightCycler® 480 Instrument§	04 640 268 001	1 instrument (96 well)
	04 545 885 001	1 instrument (384 well)

### Limited Label Licenses, Disclaimers, and Trademarks

† This LightCycler® 2.0 Instrument is a real-time thermal cycler licensed for use in research, *in vitro* diagnostics and other applied fields under U.S. Patent No. 6,814,934 and corresponding claims in its non-U.S. counterparts, owned by Applied Biosystems Corporation. No right is conveyed expressly, by implication or by estoppel under any other patent claim, such as claims to apparatus, reagents, kits, or methods such as 5' nuclease methods. A license to practice PCR methods with real-time detection under patents of F. Hoffmann-La Roche Ltd, and Roche Molecular Systems ("Roche") for *in vitro* diagnostic applications may be purchased from Roche or may be obtained by purchasing *in vitro* diagnostic reagents from Roche or any other Authorized third party. License rights to practice PCR methods under the foregoing Roche patents for research and other non-*in vitro* diagnostic applications may be purchased from Applied Biosystems or may be obtained by purchasing licensed reagents from Roche, Applied Biosystems, or other Authorized third party. For information on purchasing licenses for research and other non-*in vitro* diagnostic applications, contact the Director of Licensing at Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA.

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The technology used for the LightCycler® System is licensed from Idaho Technology Inc., Salt Lake City, UT, USA.

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§ For general laboratory use. Not for use in diagnostic procedures.

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### Ordering Information

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