

MagMAX[™] CORE Nucleic Acid Purification Kit

USER GUIDE

**Automated purification of high-quality DNA and RNA from
veterinary samples**

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Product information

IMPORTANT! Before using this product, read and understand the information in the “Safety” appendix in this document.

Product description

The MagMAX™ CORE Nucleic Acid Purification Kit is designed for rapid purification of nucleic acid (RNA and DNA) using a simple magnetic separation process in preparation for downstream molecular analysis. The kit is compatible with the following magnetic particle processors:

- KingFisher™ Flex Magnetic Particle Processor
- MagMAX™ Express-96 Deep Well Magnetic Particle Processor
- KingFisher™ Duo Prime Magnetic Particle Processor
- KingFisher™ mL Magnetic Particle Processor

The kit is optimized for a wide range of sample types. See “Workflow options” on page 10.

Contents and storage

Table 1 MagMAX™ CORE Nucleic Acid Purification Kit

Contents	Cat. No. A32700 (100 reactions)	Cat. No. A32702 (500 reactions)	Storage
MagMAX™ CORE Lysis Solution	50 mL	275 mL	15–30°C
MagMAX™ CORE Binding Solution	45 mL	220 mL	
MagMAX™ CORE Wash Solution 1	60 mL	300 mL	
MagMAX™ CORE Wash Solution 2	60 mL	300 mL	
MagMAX™ CORE Elution Buffer	12 mL	55 mL	
MagMAX™ CORE Magnetic Beads	2.2 mL	11 mL	
MagMAX™ CORE Proteinase K	1.25 mL	5 mL	



Required materials not supplied

Table 2 Required materials and equipment not included with the kit

Item	Source ^[1]
Instruments and equipment	
One of the following magnetic particle processors: - KingFisher™ Flex Magnetic Particle Processor - MagMAX™ Express-96 Deep Well Magnetic Particle Processor See Appendix B for alternative magnetic particle processors on page 24.	Contact your local sales office.
Benchtop microcentrifuge capable of 15,000 × <i>g</i>	MLS
Benchtop centrifuge with plate and tube adaptors	MLS
Laboratory mixer, Vortex or equivalent	MLS
Biotang Inc MICROPLATE SHAKER 4 PLATES or equivalent titer plate shaker	Fisher Scientific™ 50-751-4965
Reagents	
(Optional) One of the following internal positive controls: - VetMAX™ Xeno™ Internal Positive Control RNA - VetMAX™ Xeno™ Internal Positive Control DNA - Other internal positive control	- A29763 - A29764 - MLS
PBS, pH 7.4 ^[2]	10010023
Tubes, plates, and other consumables	
Thermo Scientific™ Easy Peel Heat Sealing Foil or equivalent	Thermo Scientific™ AB-0745
KingFisher™ Flex Microtiter Deepwell 96 plate	95040460
MagMAX™ Express-96 Deep Well Plates	4388476
MagMAX™ Express-96 Standard Plates	4388475
MagMAX™ Express-96 Deep Well Tip Combs	4388487

^[1] Unless otherwise indicated, all materials are available through thermofisher.com. MLS: Fisher Scientific (fisherscientific.com) or other major laboratory supplier.

^[2] Not required for Workflow A.

Table 3 Additional materials and equipment required for Workflow C

Item	Source
Fisher Scientific™ Bead Mill 24 Homogenizer	Fisher Scientific™ 15-340-163
PYREX™ Solid Glass Beads for Distillation Columns	Fisher Scientific™ 11-312-10A

**Table 4** Additional materials and equipment required for Workflow D

Item	Source
PK Buffer for MagMAX™-96 DNA Multi-Sample Kit	4489111

Workflow overview

This workflow describes processing on the KingFisher™ Flex Magnetic Particle Processor or the MagMAX™ Express-96 Magnetic Particle Processor. For the KingFisher™ Duo Prime Magnetic Particle Processor or the KingFisher™ mL Magnetic Particle Processor, see Appendix B, “Workflow for alternative magnetic particle processors”.

Set up the processing plates or strip tubes



Prepare the Bead/Proteinase K mix
(Workflows A, B, C only)



Prepare the sample lysate



Process samples on the magnetic particle processor



Methods

Procedural guidelines

- Mix solutions and buffers by inverting the tubes several times before use.
- (Recommended) Use a plate shaker for thorough mixing. If a plate shaker is not available, manually pipet to mix.
Note: If using the KingFisher™ mL Magnetic Particle Processor, do not use a plate shaker.
- Cover the plate or strip tube during the incubation and shaking steps to prevent spill-over and cross-contamination.
- To prevent nuclease contamination:
 - Wear laboratory gloves for this protocol. Gloves protect you from the reagents and protect the nucleic acid from nucleases that are present on skin.
 - Use nucleic acid-free pipette tips to handle the reagents, and avoid putting used tips into the reagent containers.
 - Decontaminate lab benches and pipettes before you begin.

Before first use of the kit

(Optional)

Determine the maximum plate shaker setting

If a plate shaker is used, determine the maximum setting:

1. Verify that the plate fits securely on your shaker.
2. Add 1 mL of water to each well of the plate, then cover with Thermo Scientific™ Easy Peel Heat Sealing Foil.
3. Determine the maximum setting that you can use on your shaker without any of the water splashing onto the Thermo Scientific™ Easy Peel Heat Sealing Foil.

Download the script

The scripts for the MagMAX™ CORE Nucleic Acid Purification Kit are not pre-installed on the magnetic particle processors.

1. On the MagMAX™ CORE Nucleic Acid Purification Kit product web page, scroll down to the Product Literature section.
2. Right-click the appropriate file to download the latest version of the MagMAX_CORE script for your instrument. For example, MagMAX_CORE_Flex.

Note: A non-heated version of each instrument script is also available for download. For example, MagMAX_CORE_Flex_no_heat.

3. See your instrument user guide or a Thermo Fisher Scientific representative for instructions on installation of the script.



Set up the processing plates or strip tubes

1. Set up the processing plates before sample preparation.

Table 5 Plate setup: KingFisher™ Flex Magnetic Particle Processor 96DW or MagMAX™ Express-96

Plate ID	Plate position ^[1]	Plate type	Reagent	Volume per well
Wash Plate 1	2	Deep Well	MagMAX™ CORE Wash Solution 1	500 µL
Wash Plate 2	3	Deep Well	MagMAX™ CORE Wash Solution 2	500 µL
Elution	4	Standard	MagMAX™ CORE Elution Buffer	90 µL
Tip Comb	5	Standard	Place a tip comb in the plate.	

^[1] Position on the instrument.

2. (Optional) To prevent evaporation and contamination, cover the prepared processing plates or strip tubes with Thermo Scientific™ Easy Peel Heat Sealing Foil until they are loaded into the instrument.

Prepare the Bead/Proteinase K mix

Note: Do not prepare this mix when using Workflow D.

Note: (Recommended) Prepare new Bead/Proteinase K mix daily.

Vortex MagMAX™ CORE Magnetic Beads thoroughly to ensure that the beads are fully resuspended, then combine with MagMAX™ CORE Proteinase K according to the following table.

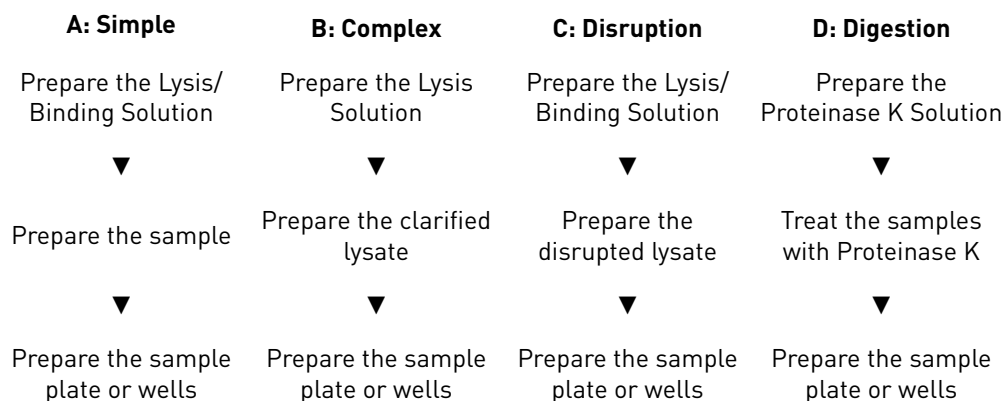
Component	Volume per sample
MagMAX™ CORE Magnetic Beads	20 µL
MagMAX™ CORE Proteinase K	10 µL
Total bead mix	30 µL

(Optional) Bead/Proteinase K mix can be stored at 4°C for up to one week.



Prepare the sample lysate

Workflow options



Workflow by sample matrix

A: Simple	B: Complex ^[1]	C: Disruption ^[1]	D: Digestion ^[2]
• Biomed Diagnostics InPouch™ TF (<i>Tritrichomonas foetus</i>) culture • Ear notches and ear punches • Milk • Plasma • Semen • Serum • Swabs—animal • Whole blood	• Environmental samples • Feces • Oral fluid • Swabs—environmental or fecal	• Tissue	• Environmental samples • Feces • Hair follicles • Swabs—environmental or fecal • Tissue

^[1] Workflows B and C are recommended for viral nucleic acid purification and for users purifying both RNA and DNA.

^[2] Workflow D is recommended for bacterial and genomic DNA nucleic acid purification. The kit is not recommended for tough-to-lyse bacteria, such as *M. paratuberculosis* [MAP].



Workflow A: Simple

Workflow A is recommended for:

- Biomed Diagnostics InPouch™ TF (*Tritrichomonas foetus*) culture
- Ear notches and punches
- Milk
- Plasma
- Semen
- Serum
- Swabs (animal)
- Whole blood

Prepare the Lysis/Binding Solution

1. Combine the following components for the required number of samples plus 10% overage.

Component	Volume per sample
MagMAX™ CORE Lysis Solution	350 µL
{Optional} VetMAX™ Xeno™ Internal Positive Control RNA, VetMAX™ Xeno™ Internal Positive Control DNA, or other internal positive control.	2 µL ^[1]
MagMAX™ CORE Binding solution	350 µL
Total Lysis/Binding Solution	702 µL

^[1] Follow manufacturer guidelines for volume of internal positive control.

2. Vortex at maximum speed for 10 seconds.
3. Store at room temperature for up to 24 hours.



Prepare the sample

Prepare samples according to sample type.

For...	Do this...
Ear notches	1. Add an ear notch to a 5-mL specimen tube. 2. Add 2 mL of PBS, pH 7.4 to each sample. 3. Incubate at room temperature for 15 minutes without shaking, or for 10 minutes with moderate shaking. 4. Use 200 μL of supernatant.
Ear punches	1. Add an ear punch to a 2-mL tube. 2. Add 200 μL of PBS, pH 7.4 to each sample. 3. Incubate at room temperature for 15 minutes without shaking, or for 10 minutes with moderate shaking. 4. Use 100 μL of supernatant.
Semen	1. Add 500 μL of semen to a fresh tube. 2. Centrifuge at 15,000 $\times g$ for 2 minutes. 3. Use 200 μL of supernatant.
Swabs-Animal	1. Break off the tip of the swab and add to a 2-mL tube. 2. Add 1 mL of PBS, pH 7.4 to each sample. 3. Vortex for 3 minutes. 4. Use 200 μL of supernatant.
InPouch™ TF culture	Use 300 μ L of previously enriched culture media.
Milk, plasma, serum, or whole blood	Use 200 μ L of sample.

Prepare the sample plate or wells

1. Invert the tube of Bead/Proteinase K mix several times to resuspend the beads, then add 30 μ L of the Bead/Proteinase K mix to the required wells in the plate or strip tube.
2. Add the appropriate volume of each sample (see “Prepare the sample” on page 12) to a well with bead mix.
3. Mix the sample with bead mix for 2 minutes at room temperature.
 - Using a plate shaker: shake vigorously for 2 minutes (see “(Optional) Determine the maximum plate shaker setting” on page 8).
 - By pipetting: pipet up and down several times, then incubate for 2 minutes at room temperature.

Note: Use this method with downstream processing on the KingFisher™ mL Magnetic Particle Processor, or if a plate shaker is unavailable.



4. Add 700 μ L of Lysis/Binding Solution to each sample.
5. Immediately proceed to “Process samples on the magnetic particle processor” on page 22.



Workflow B: Complex

Workflow B is recommended for viral nucleic acid purification and for users purifying both RNA and DNA from the following samples:

- Environmental samples
- Feces
- Oral fluid
- Swabs-environmental and fecal

Prepare the Lysis Solution

1. Combine the following components for the required number of samples plus 10% overage.

Component	Volume per sample
MagMAX™ CORE Lysis Solution	450 µL
[Optional] VetMAX™ Xeno™ Internal Positive Control RNA, VetMAX™ Xeno™ Internal Positive Control DNA, or other internal positive control.	2 µL ^[1]
Total Lysis Solution	452 µL

^[1] Follow manufacturer guidelines for volume of internal positive control.

2. Vortex at maximum speed for 10 seconds.
3. Store at room temperature for up to 24 hours.



Prepare the clarified lysate

1. For each sample, add 450 μL of Lysis Solution to a new 2-mL tube.
2. Prepare samples according to sample type.

For...	Do this...
Oral fluid	1. Briefly mix the oral fluid sample. 2. Use 300 μL of sample.
Environmental samples and feces	1. Transfer 0.2-0.3 g of sample to a 2-mL tube. 2. Add 1 mL of PBS, pH 7.4, then vortex vigorously for 3 minutes. 3. Centrifuge at $100 \times g$ for 1 minute. Note: When extracting viral RNA, centrifuge at $15,000 \times g$ for 1 minute. 4. Use 200 μL of supernatant.
Swabs	1. Swab the environmental area, or swirl a clinical swab in a fecal sample. 2. Add 1 mL of PBS, pH 7.4 to a 2-mL tube. 3. Resuspend the swab in 1 mL of PBS, pH 7.4 by swirling for 5-10 seconds, removing as much fecal sample as possible, then discard the swab. Alternatively, break off swab tip and leave the swab in the PBS, pH 7.4. 4. Vortex vigorously for 3 minutes, or until the sample is suspended. 5. Centrifuge at $100 \times g$ for 1 minute. Note: When extracting viral RNA, centrifuge at $15,000 \times g$ for 1 minute. 6. Use 200 μL of supernatant.

3. Add sample to the Lysis Solution.
4. Vortex vigorously for 3 minutes.
5. Centrifuge at $15,000 \times g$ for 2 minutes.
6. Remove the supernatant (clarified lysate) without disturbing the pellet.



Prepare the sample plate or wells

1. Invert the tube of Bead/Proteinase K mix several times to resuspend the beads, then add 30 μL of the Bead/Proteinase K mix to the required wells in the plate or strip tube.
2. Add the appropriate volume of each clarified lysate (see “Prepare the clarified lysate” on page 15) to a well with the bead mix.

For...	Use...
Oral fluid	600 μL
Environmental samples, fecal samples, and swabs	500 μL

3. Mix the sample with bead mix for 2 minutes at room temperature.
 - Using a plate shaker: shake vigorously for 2 minutes (see “(Optional) Determine the maximum plate shaker setting” on page 8).
 - By pipetting: pipet up and down several times, then incubate for 2 minutes at room temperature.

Note: Use this method with downstream processing on the KingFisher™ mL Magnetic Particle Processor, or if a plate shaker is unavailable.
4. Add 350 μL of MagMAX™ CORE Binding Solution.
5. Immediately proceed to “Process samples on the magnetic particle processor” on page 22.



Workflow C: Disruption

Workflow C is recommended for viral nucleic acid purification from tissue and for users testing for both RNA and DNA.

Prepare the Lysis/Binding Solution

1. Combine the following components for the required number of samples plus 10% overage.

Component	Volume per sample
MagMAX™ CORE Lysis Solution	350 µL
{Optional} VetMAX™ Xeno™ Internal Positive Control RNA, VetMAX™ Xeno™ Internal Positive Control DNA, or other internal positive control.	2 µL ^[1]
MagMAX™ CORE Binding solution	350 µL
Total Lysis/Binding Solution	702 µL

^[1] Follow manufacturer guidelines for volume of internal positive control.

2. Vortex at maximum speed for 10 seconds.
3. Store at room temperature for up to 24 hours.

Prepare the disrupted lysate

1. Add the following components to a 2-mL tube:

Component	Amount
Tissue	20–30 mg
PBS, pH 7.4	1 mL
PYREX™ Solid Glass Beads for Distillation Columns	2 beads

2. Bead beat the samples in a Fisher Scientific™ Bead Mill 24 Homogenizer at 6 m/s for 45 seconds.
3. Centrifuge at 1,000 × g for 1 minute.
4. Use 100 µL of supernatant for purification.

Prepare the sample plate or wells

1. Invert the tube of Bead/Proteinase K mix several times to resuspend the beads, then add 30 µL of the Bead/Proteinase K mix to the required wells in the plate or strip tube.
2. Add 100 µL of supernatant to a well with bead mix.



3. Mix the sample with bead mix for 2 minutes at room temperature.
 - Using a plate shaker: shake vigorously for 2 minutes (see “(Optional) Determine the maximum plate shaker setting” on page 8).
 - By pipetting: pipet up and down several times, then incubate for 2 minutes at room temperature.

Note: Use this method with downstream processing on the KingFisher™ mL Magnetic Particle Processor, or if a plate shaker is unavailable.
4. Add 700 µL of Lysis/Binding Solution to each sample.
5. Immediately proceed to “Process samples on the magnetic particle processor” on page 22.



Workflow D: Digestion

Workflow D is recommended for all bacterial and genomic DNA nucleic acid purification from the following sample types:

- Environmental samples
- Feces
- Hair follicles
- Swabs-environmental or fecal
- Tissue

Prepare the Proteinase K Solution

1. Combine the following components for the required number of samples plus 10% overage.

Component	Volume per sample
PK Buffer for MagMAX™ -96 DNA Multi-Sample Kit	90 µL
MagMAX™ CORE Proteinase K	10 µL
Total Proteinase K Solution	100 µL

2. Invert the tube several times to mix, then centrifuge briefly to collect contents at the bottom of the tube.
3. Proceed immediately to “Treat the samples with Proteinase K”.



Treat the samples with Proteinase K

Prepare samples according to sample type.

For...	Do this....
Hair follicles	1. Place 10–15 hair follicles in a 2-mL tube. 2. Add 100 μL of Proteinase K Solution to each sample. 3. Incubate the sample for 30 minutes at 55°C. 4. Use the volume of digested sample that is available to pipet. The available volume will be less than 100 μL.
Tissue	1. Transfer 20–30 mg of tissue to a 2-mL tube. 2. Add 100 μL of Proteinase K Solution to each sample. 3. Incubate the sample for 2 hours at 55°C. 4. Use the volume of digested sample that is available to pipet. The available volume will be less than 100 μL.
Environmental samples and feces	1. Transfer 0.2–0.3 g of sample to a 2-mL tube. 2. Add 1 mL of PBS, pH 7.4, then vortex vigorously for 3 minutes. 3. Centrifuge at $100 \times g$ for 1 minute. 4. Transfer 200 μL of the supernatant to a new tube. 5. Add 100 μL of Proteinase K Solution to each sample, then vortex briefly to mix. 6. Incubate the supernatant with Proteinase K Solution for 30 minutes at 55°C. 7. Centrifuge samples at $15,000 \times g$ for 2 minutes. 8. Use 200 μL of digested sample.
Swabs	1. Swab the environmental area, or swirl a clinical swab in a fecal sample. 2. Add 1 mL of PBS, pH 7.4 to a 2-mL tube. 3. Swirl the swab in the PBS, pH 7.4 for 5–10 seconds, removing as much fecal sample as possible, then discard the swab. Alternatively, break off the swab tip and leave the swab in the PBS, pH 7.4. 4. Vortex vigorously for 3 minutes, or until the sample is suspended. 5. Centrifuge at $100 \times g$ for 1 minute. 6. Transfer 200 μL of the supernatant to a new tube. 7. Add 100 μL of Proteinase K Solution to each sample, then vortex briefly to mix. 8. Incubate the supernatant with Proteinase K Solution for 30 minutes at 55°C. 9. Centrifuge the samples at $15,000 \times g$ for 2 minutes. 10. Use 200 μL of digested sample.



Prepare the sample plate or wells

1. Invert the tube of MagMAX™ CORE Magnetic Beads several times to resuspend, then add 20 µL of the beads to the required wells in the plate or strip tube.

Note: Do not prepare the Bead/Proteinase K mix.

2. Add the appropriate volume of each sample (see “Treat the samples with Proteinase K” on page 20) to a well with the bead mix.
3. Mix the sample with beads for 2 minutes at room temperature.
 - Using a plate shaker: shake vigorously for 2 minutes (see “(Optional) Determine the maximum plate shaker setting” on page 8).
 - By pipetting: pipet up and down several times, then incubate for 2 minutes at room temperature.

Note: Use this method with downstream processing on the KingFisher™ mL Magnetic Particle Processor, or if a plate shaker is unavailable.

4. Add 700 µL of Lysis/Binding Solution to each sample.
5. Immediately proceed to “Process samples on the magnetic particle processor” on page 22.



Process samples on the magnetic particle processor

1. Select the appropriate script on the instrument.

Note: The MagMAX_CORE_No_Heat script can be used in labs that require a non-heated version of the script.

2. Start the run, then load the prepared plates or strip tubes in their positions when prompted by the instrument.

Store purified nucleic acid on ice for immediate use, at -20°C for up to 1 month, or at -80°C for long-term storage.



Troubleshooting

Observation	Possible cause	Recommended action
Poor or no RNA or DNA signal (that is, the C_t value is higher than expected)	There are inhibitors in the recovered nucleic acid.	Dilute the eluted nucleic acid 10-fold and repeat the RT-PCR or PCR. If a signal is observed using the diluted sample, inhibitors might be present in the eluted nucleic acid.
	This protocol yields high-quality nucleic acid for most samples. However, samples that contain exceptionally high amounts of inhibitors can carry over inhibitors at levels sufficient to affect RT-PCR or PCR.	Repeat the purification using Workflow B (for complex matrices).
	Samples with high amounts of nucleic acid, such as tissue, avian blood, and bacterial cultures, can saturate the magnetic beads. Bead saturation reduces nucleic acid recovery.	For the samples that show reduced recovery of the internal positive control RNA or DNA, dilute samples 1:2 1:4, 1:8, and 1:16 in PBS. Use the dilution that shows the best internal positive control recovery.
Well-to-well variation in RNA/DNA yield from replicate samples	The MagMAX™ CORE Magnetic Beads were not fully resuspended/dispersed.	In general, the beads disperse more easily when the temperature of the mixture is $>20^{\circ}\text{C}$. Be sure that you: • Vortex the MagMAX™ CORE Magnetic Beads thoroughly before preparing the Bead Mix. • Fully resuspend the Bead Mix before adding it to the plate or strip tube.
The eluate is light brown in color	The MagMAX™ CORE Magnetic Beads were carried over into the eluate.	A small quantity of beads in the sample does not inhibit RT-PCR or PCR reactions. See “Well-to-well variation in RNA/DNA yield from replicate samples” on page 23 for suggestions for avoiding bead carryover. Remove the beads from the eluted nucleic acid by placing the plate or strip tube on a magnetic stand (~1 minute), then transfer the nucleic acid solution to a new nuclease-free plate or strip tube.
Poor yield of viral RNA from tissue, fecal or environmental samples, or swabs	Workflow D was used for viral nucleic acid purification.	Follow the appropriate workflow. See “Workflow options” on page 10.



Workflow for alternative magnetic particle processors

Required materials not supplied

Unless otherwise indicated, all materials are available through thermofisher.com.
MLS: Fisher Scientific (fisherscientific.com) or other major laboratory supplier.

Item	Source
One of the following magnetic particle processors:	
KingFisher™ Duo Prime Magnetic Particle Processor	5400110
KingFisher™ mL Magnetic Particle Processor	5400050
Tubes, plates, and other consumables (KingFisher™ Duo Prime Magnetic Particle Processor)	
Elution Strip	97003520
Combi pack for Microtiter 96 Deepwell plate (tips combs, plates and elution strips for 96 samples)	97003530
12-tip comb, for Microtiter 96 Deepwell plate	97003500
Tubes, plates, and other consumables (KingFisher™ mL Magnetic Particle Processor)	
Tubes and tip combs for 240 samples	97002141
Tip comb, 800 pieces	97002111
Tube, 20 x 45 pieces	97002121

Purification of nucleic acid

1. Follow “Prepare the Bead/Proteinase K mix” on page 9 as appropriate for your sample type (Workflows A, B, or C).
2. Follow “Prepare the sample lysate” on page 10, as appropriate for your sample type.
3. Add the Wash Solutions and Elution Buffer to the indicated positions for your magnetic particle processor after the samples have been lysed.

Table 6 Plate setup: KingFisher™ Duo Prime Magnetic Particle Processor

Row ID	Row in the plate	Plate type	Reagent	Volume per well
Sample	A	Deep Well	Sample lysate/bead mix	Varies by sample
Wash 1	B		MagMAX™ CORE Wash Solution 1	500 µL
Wash 2	C		MagMAX™ CORE Wash Solution 2	500 µL
Elution ^[1,2]	Separate strip tube ^[3]	Elution strip	MagMAX™ CORE Elution Buffer	90 µL
Tip Comb ^[4]	H	Deep Well	Place a tip comb in the plate.	

^[1] Load before the run starts.

^[2] Ensure that the elution strip is placed in the correct direction in the elution block.

^[3] Placed on the heating element.

^[4] Load before the run starts.

Table 7 Strip tube setup: KingFisher™ mL Magnetic Particle Processor

Position ID	Strip tube position	Strip tube	Reagent	Volume per well
Sample	1	Standard	Sample lysate/bead mix	Varies by sample
Wash 1	2		MagMAX™ CORE Wash Solution 1	500 µL
Wash 2	3		MagMAX™ CORE Wash Solution 2	500 µL
Elution	4		MagMAX™ CORE Elution Buffer	90 µL
Tip Comb ^[1]	N/A	N/A	Slide the tip comb into the tip comb holder.	

^[1] Load before the run starts.

4. Follow “Process samples on the magnetic particle processor” on page 22.



Safety



WARNING! GENERAL SAFETY. Using this product in a manner not specified in the user documentation may result in personal injury or damage to the instrument or device. Ensure that anyone using this product has received instructions in general safety practices for laboratories and the safety information provided in this document.

- Before using an instrument or device, read and understand the safety information provided in the user documentation provided by the manufacturer of the instrument or device.
 - Before handling chemicals, read and understand all applicable Safety Data Sheets (SDSs) and use appropriate personal protective equipment (gloves, gowns, eye protection, etc). To obtain SDSs, see the “Documentation and Support” section in this document.
-



Chemical safety



WARNING! GENERAL CHEMICAL HANDLING. To minimize hazards, ensure laboratory personnel read and practice the general safety guidelines for chemical usage, storage, and waste provided below. Consult the relevant SDS for specific precautions and instructions:

- Read and understand the Safety Data Sheets (SDSs) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials. To obtain SDSs, see the “Documentation and Support” section in this document.
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing).
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood).
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer's cleanup procedures as recommended in the SDS.
- Handle chemical wastes in a fume hood.
- Ensure use of primary and secondary waste containers. (A primary waste container holds the immediate waste. A secondary container contains spills or leaks from the primary container. Both containers must be compatible with the waste material and meet federal, state, and local requirements for container storage.)
- After emptying a waste container, seal it with the cap provided.
- Characterize (by analysis if necessary) the waste generated by the particular applications, reagents, and substrates used in your laboratory.
- Ensure that the waste is stored, transferred, transported, and disposed of according to all local, state/provincial, and/or national regulations.
- **IMPORTANT!** Radioactive or biohazardous materials may require special handling, and disposal limitations may apply.

Biological hazard safety



WARNING! BIOHAZARD. Biological samples such as tissues, body fluids, infectious agents, and blood of humans and other animals have the potential to transmit infectious diseases. Conduct all work in properly equipped facilities with the appropriate safety equipment (for example, physical containment devices). Safety equipment can also include items for personal protection, such as gloves, coats, gowns, shoe covers, boots, respirators, face shields, safety glasses, or goggles. Individuals should be trained according to applicable regulatory and company/ institution requirements before working with potentially biohazardous materials. Follow all applicable local, state/provincial, and/or national regulations. The following references provide general guidelines when handling biological samples in laboratory environment.

- U.S. Department of Health and Human Services, *Biosafety in Microbiological and Biomedical Laboratories (BMBL)*, 5th Edition, HHS Publication No. (CDC) 21-1112, Revised December 2009; found at:
www.cdc.gov/biosafety/publications/bmbl5/BMBL.pdf
- World Health Organization, *Laboratory Biosafety Manual*, 3rd Edition, WHO/CDS/CSR/LYO/2004.11; found at:
www.who.int/csr/resources/publications/biosafety/Biosafety7.pdf

Documentation and support

Related documentation

Document	Publication number
<i>Thermo Scientific™ KingFisher™ Flex User Manual</i>	N07669
<i>Thermo Scientific™ KingFisher™ Duo Prime Technical Manual</i>	N16621
<i>Thermo Scientific™ KingFisher™ mL User Manual</i>	1508260
<i>Applied Biosystems™ MagMAX™ Express 96 User Manual</i>	N07849

Customer and technical support

Visit thermofisher.com/support for the latest in services and support, including:

- Worldwide contact telephone numbers
- Product support, including:
 - Product FAQs
 - Software, patches, and updates
 - Training for many applications and instruments
- Order and web support
- Product documentation, including:
 - User guides, manuals, and protocols
 - Certificates of Analysis
 - Safety Data Sheets (SDSs; also known as MSDSs)

Note: For SDSs for reagents and chemicals from other manufacturers, contact the manufacturer.

Limited product warranty

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