December 2025 | EN

# IndiMag® Handheld
# User Manual

For manual processing of magnetic bead-based extraction kits, e.g. the IndiMag Pathogen IM48 Cartridge (SP947654P608) or the IndiMag Pathogen Kit w/o plastics (SP947257)

REF IN960008

INDICAL BIOSCIENCE GmbH, Deutscher Platz 5b,
04103 Leipzig, Germany

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# Contents

# Intended use

The IndiMag Handheld is a manually operated magnetic separation device intended for the extraction of nucleic acids by collecting and transferring magnetic beads using the IndiMag rod cover (cat. no. PW940237) on a 2 ml deep-well–plate scale. It is designed for manual processing of magnetic bead-based extraction kits, e.g. the IndiMag Pathogen IM48 Cartridge (SP947654P608) or the IndiMag Pathogen Kit w/o plastics (SP947257).

For molecular biology applications.

# Symbols


Legal manufacturer

Catalog number

Lot number

Material number


Use by date


Temperature limitations for storage


Handbook


Warning

# Safety information

When working with chemicals, always wear a suitable lab coat, disposable gloves and protective goggles. For more information, please consult the appropriate safety data sheets (SDSs). These are available from your local sales representative or by email request under compliance@indical.com.

CAUTION! The IndiMag Handheld contains strong permanent magnets. Keep loose ferrous objects away and avoid direct contact with the magnet material.

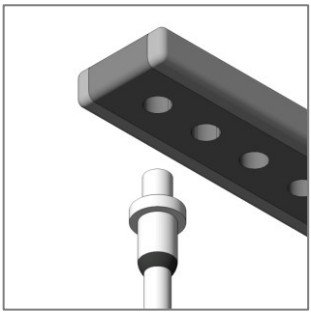
CAUTION! Persons with pacemakers or other implanted medical devices must keep a safe distance, as magnetic fields may interfere with their function.

CAUTION! Keep the device away from magnet-sensitive items such as watches, credit cards, magnetic tapes, and electronic equipment. Maintain distance between multiple units.

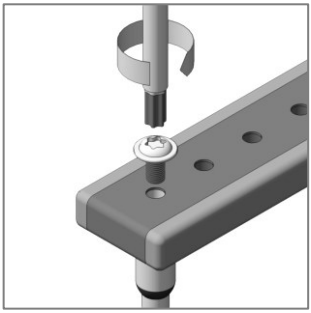
# Quality control

In accordance with INDICAL's ISO-certified Quality Management System, each lot of IndiMag Handheld is tested against predetermined specifications to ensure consistent product quality.

# Assembly



1. Insert the thicker end of the magnet rod into the opening of the IndiMag Handheld.



2. Place screw through IndiMag Handheld and tighten it using the T10 Torx® angle key wrench.
3. Repeat the procedure until all eight magnetic rods are incorporated into the IndiMag Handheld.

**Important:** After assembly, check and ensure all eight magnetic rods are levelled by placing the rod-end on a flat surface (e.g., workbench) and check if all rods are touching the flat surface.

# Care

Do not autoclave. Clean by rinsing with water or 70 % ethanol, or by wiping with a soft cloth. The device tolerates diluted acetic acid, ethanol, guanidine-HCl, NaCl, NaOH, and sodium dodecyl sulfate (SDS), but prolonged exposure should be avoided.

Important: Never use the device without the rod cover protection to prevent contact with extraction reagents and avoid corrosion.

# Introduction

Magnetic bead technology enables purification of high-quality nucleic acids that are free of proteins, nucleases, and other impurities. The purified nucleic acids are ready for use in downstream applications, such as amplification or other enzymatic reactions.

During the IndiMag Handheld workflow, magnetic beads are freely suspended in the wash and elution buffers. Proper mixing is achieved by moving the rod cover up and down to fully disperse the beads in the solution.

Bead collection is performed by inserting the IndiMag Handheld with the rod cover attached into the bead suspension. The beads will be attracted to the magnets and can then be transferred to the next well.

The efficiency and speed of bead attraction may vary depending on total volume, sample type, sample volume, and viscosity. The attraction times recommended in this manual are general guidelines and should be verified for each specific workflow or sample type.

The IndiMag Handheld is designed for manual processing of magnetic bead-based extraction kits, e.g. the IndiMag Pathogen IM48 Cartridge (SP947654P608) or the IndiMag Pathogen Kit w/o plastics (SP947257).

For further information, visit **www.indical.com/handbooks** or contact INDICAL Support at **support@indical.com**

# Protocol: Purification of pathogen nucleic acids from fluid samples

This protocol is for the purification of viral RNA and DNA, and the DNA of easy-to-lyse bacteria from fluid samples or pretreated tissue samples using IndiMag Pathogen IM48 Cartridge or the IndiMag Pathogen Kit.

## Important points before starting

Before beginning the procedure, please read the respective handbooks for the IndiMag Pathogen IM48 Cartridge or the IndiMag Pathogen Kit.

# Equipment and reagents to be supplied by user

- Pipettes/Multi dispenser and corresponding tips
- Optional: Phosphate-buffered saline (PBS), 0.9 % NaCl, or nuclease-free water may be required for diluting samples
- Soft cloth or tissue and 70 % ethanol or other disinfectant to clean the used IndiMag Handheld.

For use with IndiMag Pathogen IM48 Cartridge:

- IndiMag Pathogen IM48 Cartridge (cat. no SP947654P608)
- IndiMag 48/S Cartridge Adapter (cat. No. 1300050)

For use with IndiMag Pathogen Kit w/o plastics:

- IndiMag Pathogen Kit w/o plastics (cat. no. SP947257)
- IndiMag 48 PW 8-Sample Block (cat. no PW940166)
- IndiMag 48 PW Rod cover (cat. no PW940237)

# Procedure for use with the IndiMag Pathogen IM48 Cartridge

1. Invert the cartridge several times prior use, until the beads appear free in solution.
2. Centrifuge the IndiMag Pathogen IM48 Cartridge in the IndiMag specific centrifugation adapter at room temperature (15 - 25°C) for 1 minute at 500 x g. All following procedures are carried out at room temperature.
3. Carefully peel off the foil covering the cartridge.
4. Pipet 200 µl sample into the bottom of column 1 according to Figure 1 (marked in purple).

   Note: If working with insufficient volume of sample, add PBS, 0.9 % NaCl or nuclease-free water to achieve a total sample volume of 200 µl.

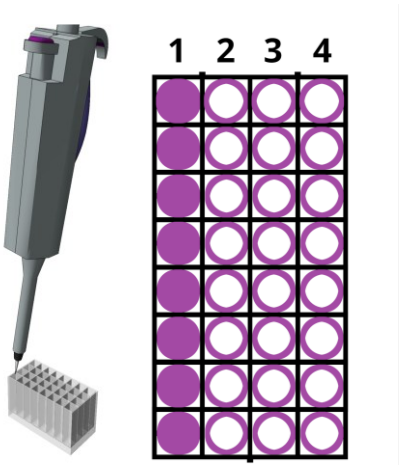



Figure 1. Sample setup.

5. Add 500 µl Lysis Buffer to each sample in column 1 of the cartridges (marked in purple).
6. Place the rod cover over the eight magnetic rods of the IndiMag Handheld as illustrated in Figure 2 below.

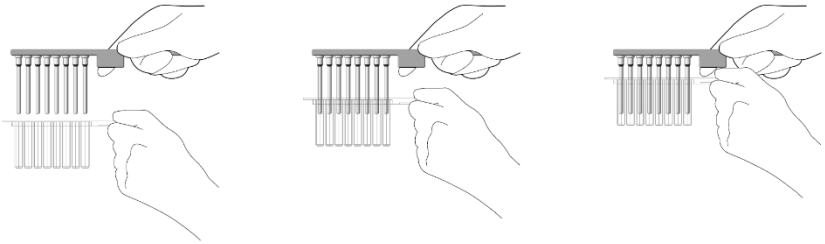


Figure 2. Attaching the rod cover.

7. Use the IndiMag Handheld with the attached rod cover and slowly mix 10 times up and down to collect the magnetic beads from column 2 (Figure 3). Wait until all the beads have attached to the rod cover. Now, transfer the IndiMag Handheld with rod cover and attached magnetic beads into column 1.

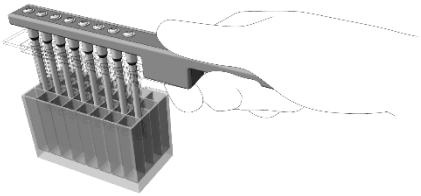


Figure 3. Collecting the magnetic beads from column 2.

8. With the rod cover in column 1, remove the IndiMag Handheld from the rod cover to release magnetic beads into the solution. Carefully set the IndiMag Handheld aside.

9. Using only the rod cover, mix the contents of column 1 by slowly lifting the rod cover to the top of the solution and returning the rod cover to the bottom of the wells. Continue to mix the contents 4 times per minute for 15 minutes (Figure 4).

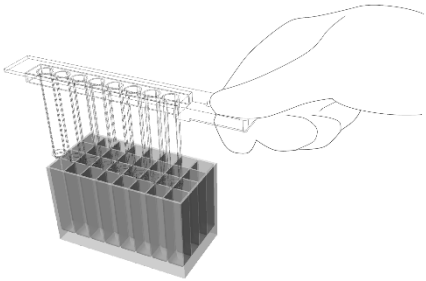


Figure 4. Mixing of content in column 1 using the rod cover only.

10. While holding the rod cover in column 1, place the IndiMag Handheld back into the rod cover.
11. Using the IndiMag Handheld with the rod cover, slowly mix 10 times up and down to collect the magnetic beads from column 1 (Figure 5). Wait until all the beads have attached to the rod cover.

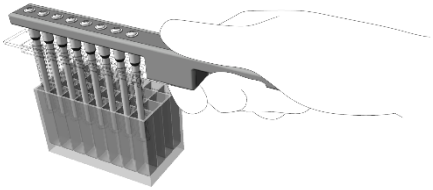


Figure 5. Collecting magnetic beads from column 1.

12. Transfer the IndiMag Handheld with the rod cover and attached magnetic beads to column 2.

13. With the rod cover in column 2, remove the IndiMag Handheld from the rod cover to release the magnetic beads into solution. Carefully set the IndiMag Handheld aside.
14. Using only the rod cover, mix the contents of column 2, by slowly lifting the rod cover to the top of the solution and returning the rod cover to the bottom of the wells 10 times for 1 minute (Figure 6).

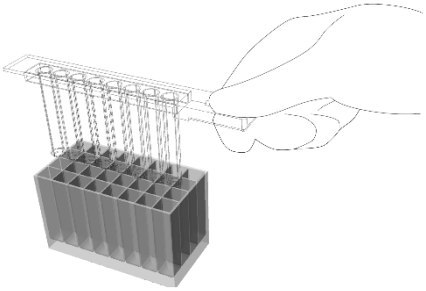


Figure 6. Mixing of content in column 2 using the rod cover only.

15. While holding the rod cover in column 2, place the IndiMag Handheld back into the rod cover.
16. Using the IndiMag Handheld with the rod cover, slowly mix 10 times up and down to collect the magnetic beads from column 2 (Figure 7). Wait until all the magnetic beads have attached to the rod cover.

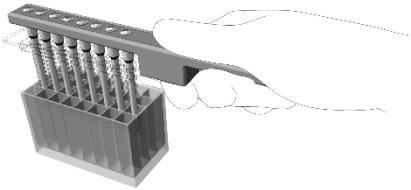


Figure 7. Collecting magnetic beads from column 2.

17. Transfer the IndiMag Handheld with the rod cover and attached magnetic beads into the solution in column 3.

18. With the rod cover in column 3, remove the IndiMag Handheld from the rod cover to release the magnetic beads into solution. Carefully set the IndiMag Handheld aside.
19. Using only the rod cover, mix the contents of column 3, by slowly lifting the rod cover to the top of the solution and returning the rod cover to the bottom of the wells 10 times for 1 minute (Figure 8).

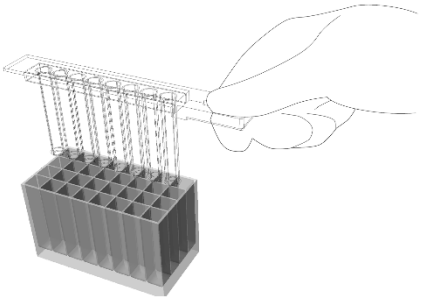


Figure 8. Mixing of content of column 3 using the rod cover only.

20. While holding the rod cover in column 3, place the IndiMag Handheld back into the rod cover.
21. Using the IndiMag Handheld with the rod cover, slowly mix 10 times up and down to collect the magnetic beads from column 3. Wait until all the magnetic beads have attached to the rod cover (Figure 9).

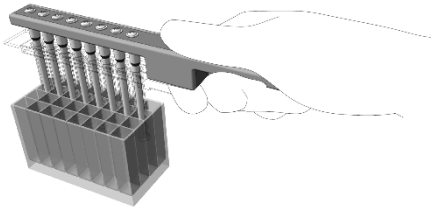


Figure 9. Collecting magnetic beads from column 3.

22. Remove the IndiMag Handheld with the rod cover and attached magnetic beads from column 3 and place them upside down on a flat, stable surface. Ensuring it is positioned securely so it cannot tip over (Figure 10). Allow the magnetic beads to air dry for 10 minutes.

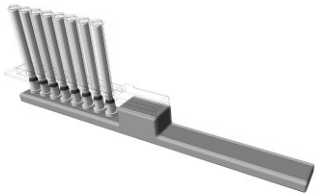


Figure 10. Air-drying the magnetic beads.

23. After drying, transfer IndiMag Handheld with the rod cover and attached magnetic beads into the solution in column 4.
24. While the rod cover in column 4, remove the IndiMag Handheld from the rod cover to release the magnetic beads into solution. Carefully set the IndiMag Handheld aside.
25. Using only the rod cover, mix the contents of column 4, by slowly lifting the rod cover to the top of the solution and returning the rod cover to the bottom of the wells 10 times for 4 minutes (Figure 11).

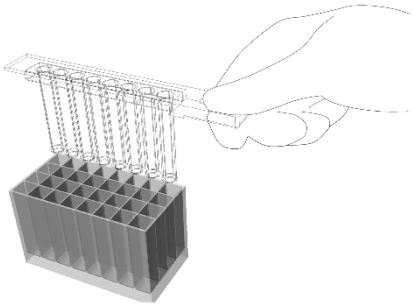


Figure 11. Mixing of content in column 4 using the rod cover only.

26. While holding the rod cover in column 4, place the IndiMag Handheld back into the rod cover.
27. Using the IndiMag Handheld with the rod cover, slowly mix 10 times up and down to collect the magnetic beads from column 4 (Figure 12). Wait until all the beads have attached to the rod cover.

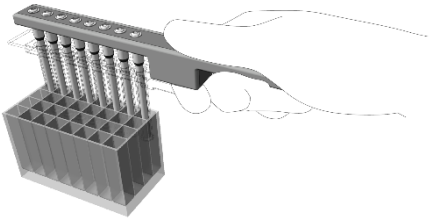


Figure 12. Collecting magnetic beads from column 4.

28. Remove the IndiMag Handheld with the rod cover and attached magnetic beads from the cartridge. Discard the rod cover containing the magnetic beads.
29. The extracted nucleic acids in column 4 can now be used for subsequent real-time PCR amplification or other molecular analyses.

# Procedure for use with the IndiMag Pathogen Kit w/o plastics

Note: This protocol uses 2 wash steps with the 32-well blocks, which is sufficient for most follow-up applications and helps simplify the workflow. For particularly challenging applications, a third wash step with 750 µl of 97–100 % ethanol, as in the standard IndiMag Pathogen Kit w/o plastics protocol, can be performed using a suitable format, such as a 96-well deep well plate (see IndiMag Pathogen w/o plastics handbook).

All following procedures are carried out at room temperature.

1. Label and prepare the 32-well blocks (columns 2-4) according to Table 1.

Table 1: Block setup and reagent volumes

| | Column | Item to add | Volume per well |
|---|---|---|---|
| 1 | Lysate | Lysate* | 720 µl |
| 2 | Wash 1 | Buffer AW1 | 700 µl |
| 3 | Wash 2 | Buffer AW2 | 700 µl |
| 4 | Elution | Buffer AVE | 100 µl |

* Includes 20 µl proteinase K, 200 µl sample and 500 µl Buffer VXL mixture.

2. Prepare Buffer VXL mixture according to Table 2.

**Table 2:** Buffer VXL mixture preparation

| Reagent | Number of samples * | | |
|---|---|---|---|
| | 1 | 48 | 96 |
| Buffer VXL | 100 µl | 4.8 ml | 9.6 ml |
| Buffer ACB | 400 µl | 19.2 ml | 38.4 ml |
| MagAttract | 25 µl | 1.2 ml | 2.4 ml |
| Carrier RNA (1 µg/µl) | 1 µl | 48 µl | 96 µl |

* The volume prepared is 105 % of the required volume to compensate for pipetting error and possible evaporation. Excess buffer should be discarded.

3. Pipet 20 µl Proteinase K into the bottom of **column 1** and add 200 µl sample (see Figure 2).

**Note:** If working with insufficient volume of sample, add PBS, 0.9 % NaCl or nuclease-free water to achieve a total sample volume of 200 µl.

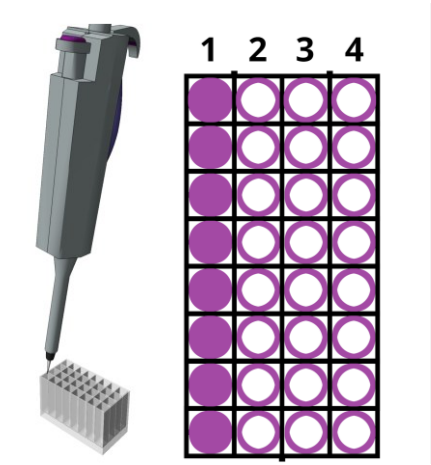



**Figure 13.** Sample setup.

4. Mix Buffer VXL mixture thoroughly for 30 sec and add 500 µl Buffer VXL mixture to each sample in the 32-well block.

5. Using only the rod cover, mix the contents of column 1 by slowly lifting the rod cover to the top of the solution and returning the rod cover to the bottom of the wells. Continue to mix the contents 4 times per minute for 15 minutes (Figure 14).

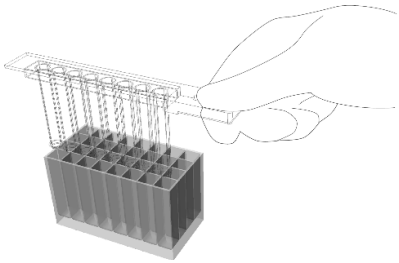


Figure 14. Mixing of content in column 1 using the rod cover only.

6. While holding the rod cover in column 1, place the IndiMag Handheld into the rod cover thus covering the eight magnetic rods of the IndiMag Handheld as illustrated in Figure 15.

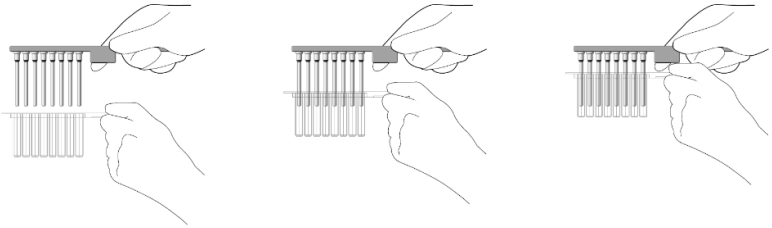


Figure 15. Attaching the rod cover.

7. Using the IndiMag Handheld with the rod cover, slowly mix 10 times up and down to collect the magnetic beads from column 1 (Figure 16). Wait until all the beads have attached to the rod cover.

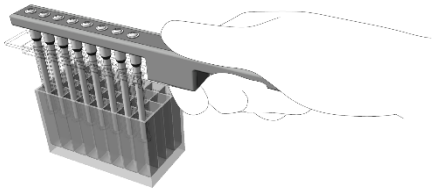


Figure 16. Collecting magnetic beads from column 1.

8. Transfer the IndiMag Handheld with the rod cover and attached magnetic beads to column 2.
9. With the rod cover in column 2, remove the IndiMag Handheld from the rod cover to release the magnetic beads into solution. Carefully set the IndiMag Handheld aside.
10. Using only the rod cover, mix the contents of column 2, by slowly lifting the rod cover to the top of the solution and returning the rod cover to the bottom of the wells 10 times for 1 minute (Figure 17).

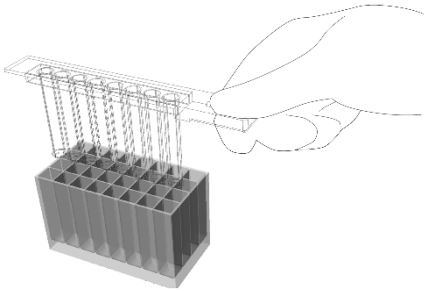


Figure 17. Mixing of content in column 2 using the rod cover only.

11. While holding the rod cover in column 2, place the IndiMag Handheld back into the rod cover.
12. Using the IndiMag Handheld with the rod cover, slowly mix 10 times up and down to collect the magnetic beads from column 2 (Figure 18). Wait until all the magnetic beads have attached to the rod cover.

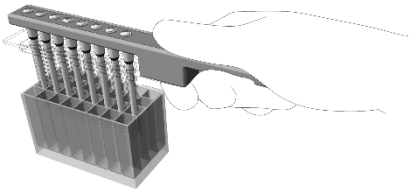


Figure 18. Collecting magnetic beads from column 2.

13. Transfer the IndiMag Handheld with the rod cover and attached magnetic beads into the solution in column 3.
14. With the rod cover in column 3, remove the IndiMag Handheld from the rod cover to release the magnetic beads into solution. Carefully set the IndiMag Handheld aside.
15. Using only the rod cover, mix the contents of column 3, by slowly lifting the rod cover to the top of the solution and returning the rod cover to the bottom of the wells 10 times for 1 minute (Figure 19).

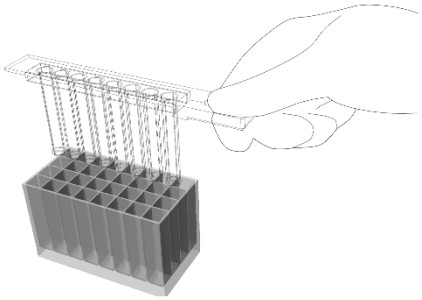


Figure 19. Mixing of content of column 3 using only the rod cover.

16. While holding the rod cover in column 3, place the IndiMag Handheld back into the rod cover.
17. Using the IndiMag Handheld with the rod cover, slowly mix 10 times up and down to collect the magnetic beads from column 3. Wait until all the magnetic beads have attached to the rod cover (Figure 20).

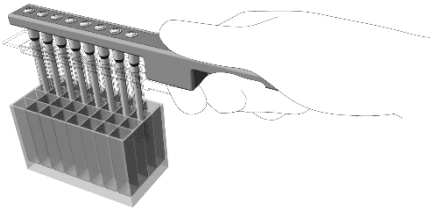


Figure 20. Collecting magnetic beads from column 3.

18. Remove the IndiMag Handheld with the rod cover and attached magnetic beads from column 3 and place them upside down on a flat, stable surface. Ensuring it is positioned securely so it cannot tip over (Figure 21). Allow the magnetic beads to air dry for 10 minutes.

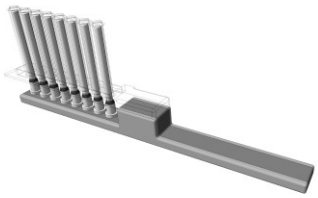


Figure 21. Air-drying the magnetic beads.

19. After drying, transfer IndiMag Handheld with the rod cover and attached magnetic beads into the solution in column 4.
20. While the rod cover in column 4, remove the IndiMag Handheld from the rod cover to release the magnetic beads into solution. Carefully set the IndiMag Handheld aside.

21. Using only the rod cover, mix the contents of column 4, by slowly lifting the rod cover to the top of the solution and returning the rod cover to the bottom of the wells 10 times for 4 minutes (Figure 22).

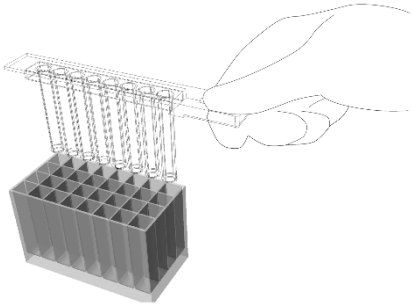


Figure 22. Mixing of content in column 4 using the rod cover only.

22. While holding the rod cover in column 4, place the IndiMag Handheld back into the rod cover.
23. Using the IndiMag Handheld with the rod cover, slowly mix 10 times up and down to collect the magnetic beads from column 4 (Figure 23). Wait until all the beads have attached to the rod cover.

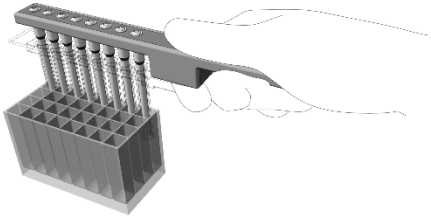


Figure 23. Collecting magnetic beads from column 4.

24. Remove the IndiMag Handheld with the rod cover and attached magnetic beads from the cartridge. Discard the rod cover containing the magnetic beads.

25. The extracted nucleic acids in column 4 can now be used for subsequent real-time PCR amplification or other molecular analyses.

# Ordering information

| Product | Description | Cat. No. |
|---|---|---|
| IndiMag Handheld | For manual processing of magnetic bead-based extraction kits, e.g. the IndiMag Pathogen Kit w/o plastics (SP947257) or the IndiMag Pathogen IM48 Cartridge (SP947654P608) | IN960008 |
| IndiMag Pathogen Kit w/o plastics | For rapid and automated purification of viral RNA/DNA and bacterial DNA from animal samples, excluding plastics | SP947257 |
| IndiMag 48 PW 8-Sample Block (560) | Plasticware (32-well blocks) for 70 x 8 samples on IndiMag 48/s and IndiMag 2 | PW940166 |
| IndiMag 48 PW Rod cover (672) | rod cover strips for 84 x 8 samples on IndiMag 48/s and IndiMag 2 | PW940237 |
| IndiMag Pathogen IM48 Cartridge (6 x 8) | For automated purification of viral RNA and DNA and bacterial DNA from animal samples | SP947654P608 |
| IndiMag 48/S Cartridge Adapter (2 pcs) | Set of 2 pcs centrifuge racks | 1300015 |
| IndiMag Pathogen IM2 Cartridge (6 x 8) | For automated purification of viral RNA and DNA and bacterial DNA from animal samples | SP957654C608 |

INDICAL offers a range of ELISA kits and real-time PCR and real-time RT-PCR kits for the detection of animal pathogens.

Visit www.indical.com for more information about afosa, bactotype, cador, cattletype, flocktype, pigtype, Svanovir and virotype products.

For up-to-date licensing information and product-specific disclaimers, see the respective INDICAL kit handbook or user manual.

Notes

## Limited License Agreement for IndiMag Handheld

Use of this product signifies the agreement of any purchaser or user of the product to the following terms:

1. The product may be used solely in accordance with the protocols provided with the product and this handbook and for use with components contained in the kit only. INDICAL grants no license under any of its intellectual property to use or incorporate the enclosed components of this kit with any components not included within this kit except as described in the protocols provided with the product, this handbook, and additional protocols available at www.indical.com. Some of these additional protocols have been provided by INDICAL users for INDICAL users. These protocols have not been thoroughly tested or optimized by INDICAL. INDICAL neither guarantees them nor warrants that they do not infringe the rights of third-parties.

2. Other than expressly stated licenses, INDICAL makes no warranty that this kit and/or its use(s) do not infringe the rights of third-parties.

3. This kit and its components are licensed for one-time use and may not be reused, refurbished, or resold.

4. INDICAL specifically disclaims any other licenses, expressed or implied other than those expressly stated.

5. The purchaser and user of the kit agree not to take or permit anyone else to take any steps that could lead to or facilitate any acts prohibited above. INDICAL may enforce the prohibitions of this Limited License Agreement in any Court, and shall recover all its investigative and Court costs, including attorney fees, in any action to enforce this Limited License Agreement or any of its intellectual property rights relating to the kit and/or its components.



# Change index

| Handbook | Version | Change |
|---|---|---|
| HB-2703-EN-001 | December 2025 | Product launch |

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Technical Support: **support@indical.com**
Website: **www.indical.com**