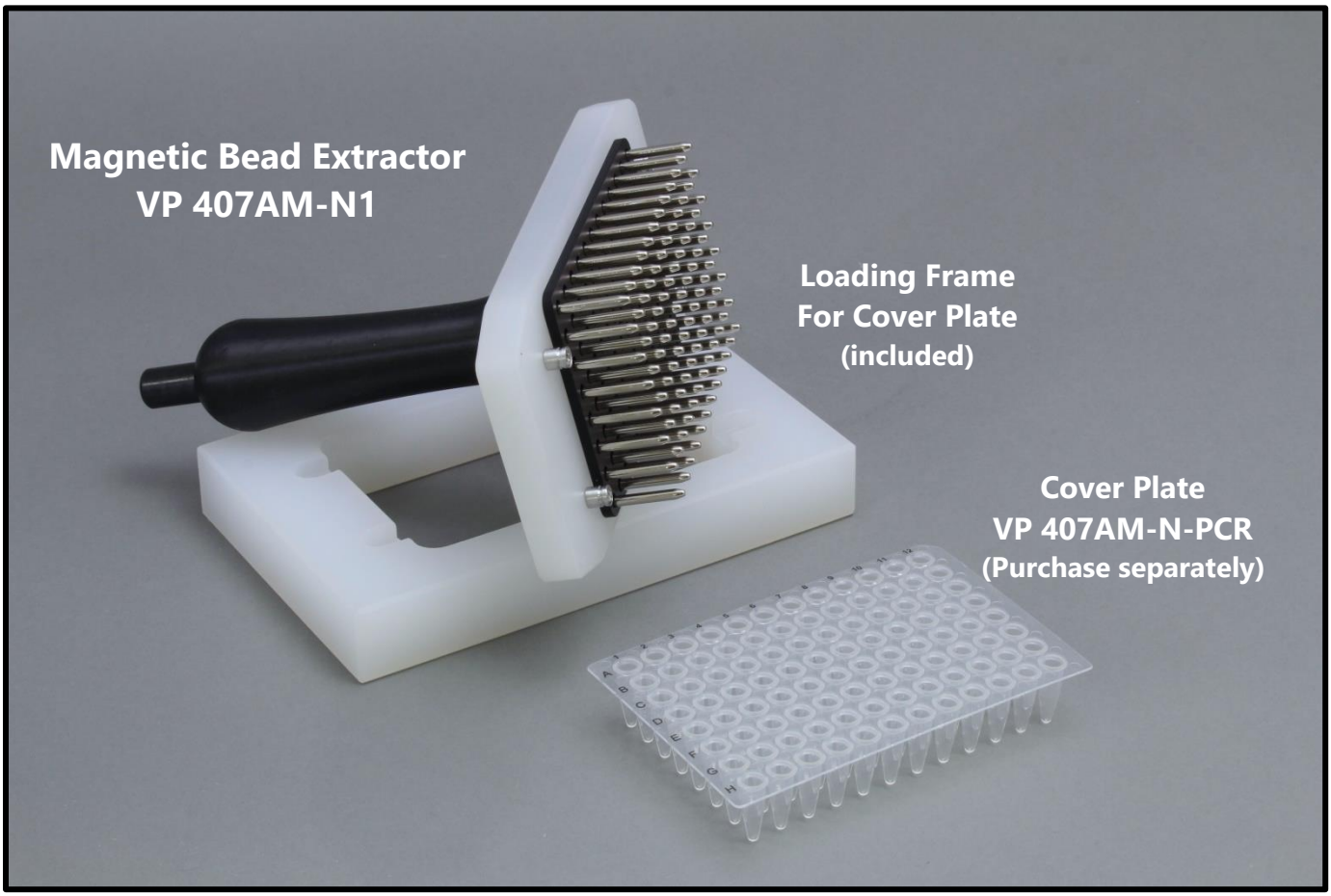
Care and Use of the VP 407AM-N1
96 Pin Magnetic Bead Extractor



WARNING!!!!!

- **Be advised that the Magnetic Bead Extractor has very strong magnetic fields coming from 48 MGO Neodymium Iron Boron magnetic pins.**
- **People with pacemakers should not get closer than 24 inches.**
- **Remove all magnetic influenced tools and objects from the immediate area to prevent them from being pulled onto the magnet or from striking anyone as the objects are pulled towards the magnet.**
- **Keep credit cards, watches, and other magnetic field sensitive items at least 24 inches from the magnetic field.**

Introduction

The Magnetic Bead Extractor, VP 407AM-N1, was designed to transfer paramagnetic beads between source and destination microplates to simplify the bead washing and elution process. This process improves magnetic bead assays such as Next Generation Sequencing sample preparation by eliminating the need for using plastic disposable pipet tips and eliminating the need for multiple tedious pipetting steps. The VP 407AM-N1 Extractor works by clipping a standard non-skirted PCR plate or "Cover Plate" over its 96 magnetic pins, the Cover Plate acts as a sterile barrier between the magnetic beads and the magnetic pins. When dipped into a source microplate containing magnetic beads in suspension, the beads are quickly attracted to the magnetic pins and bound to the outside of the Cover Plate's pointed wells. The large surface area and strong 48 MGO NdFeB magnetic pins ensure very fast bead extraction and minimal bead loss. Once bound to the outside of the microplate, the beads can be easily transferred from the source microplate to the destination microplate by removing the VP 407AM-N1 with Cover Plate from the source microplate and into the destination microplate. The beads are then released into the liquid in the wells of the destination microplate by removing the Cover Plate from the pins of the VP 407AM-N1 Extractor using the Stripper Plate.

Accessories
(Sold Separately)

PCR plates to use with the VP 407AM-N1:

- VP 407AM-N1-PCR(Pack of 10)
- VP 407AM-N1-PCR-100(Case of 100)

Other brands will work as long as they have the following criteria:

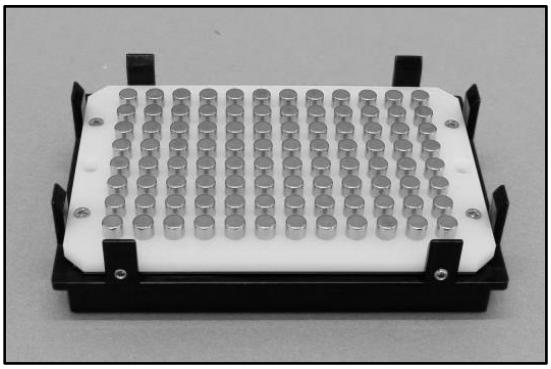
- Flat top
- Full height (not low profile)
- No skirt
- They match the contour of the pin leaving a very minimal gap between pin and plate tip
- Minimum length across top of plate of 119mm

Source/Destination microplates to use with the VP 407AM-N1:

- Corning/Costar 3797, 150 ul working volume
- VP 416S Square well plates, 450 ul working volume
- VP 416S-1 Square well plates, 550 ul working volume

Optional Magnetic Separation Block to use with the VP 407AM-N1:

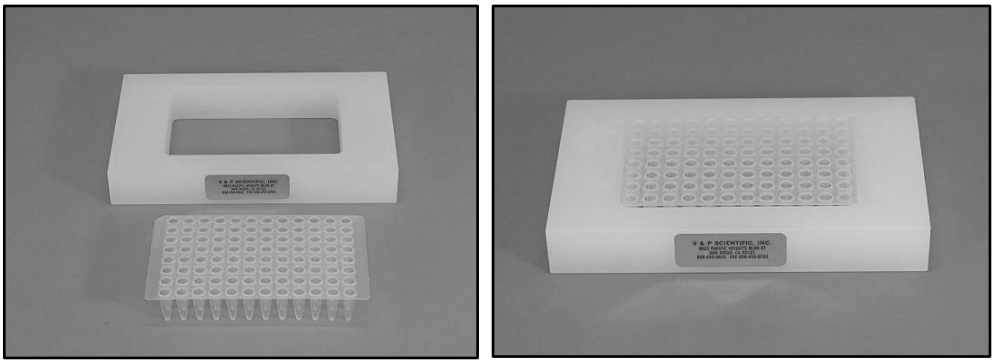
- VP 771RWAM-1 (see in photo below)



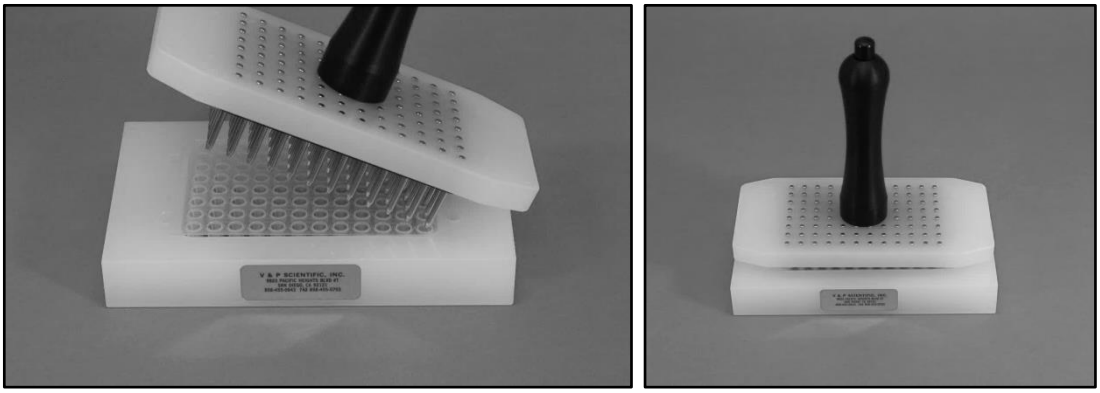
Operation

Loading the Cover Plate

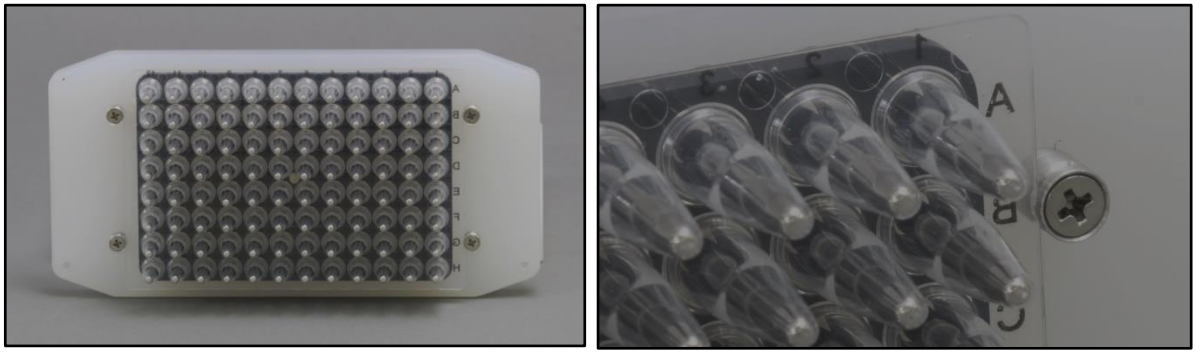
The Cover Plate (such as VP 407AM-N1-PCR) loaded onto the Magnetic Bead Extractor (VP 407AM-N1) by first inserting the Cover Plate into the polypropylene Cover Plate Loading Frame.



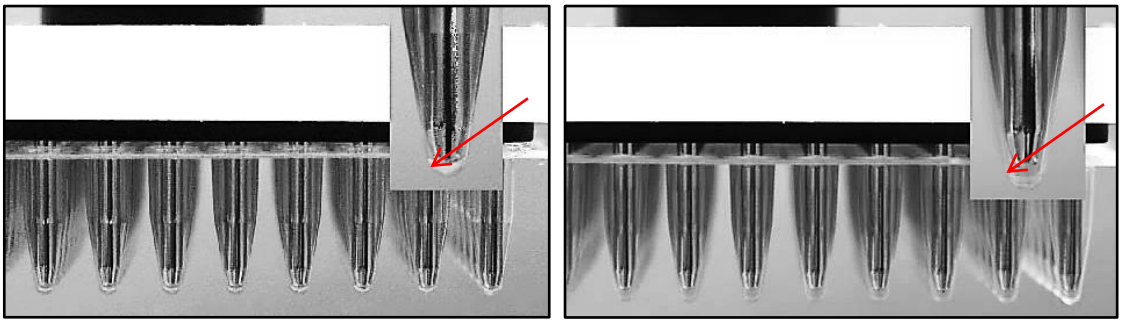
The VP 407AM-N1 is then positioned over the Cover Plate and firmly lowered until it clicks into place.



The short edges of the Cover Plate must be held in place by all 4 of the clips for proper positioning.

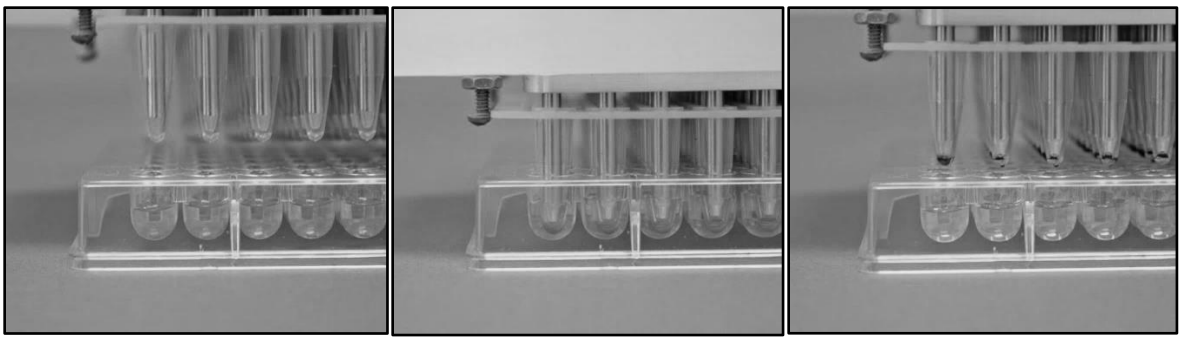


It is important that there is not a gap between the magnetic pins and the end of the Cover Plate's pointed wells. V&P's Cover Plate VP 407AM-N1-PCR is designed to make sure there is no gap.

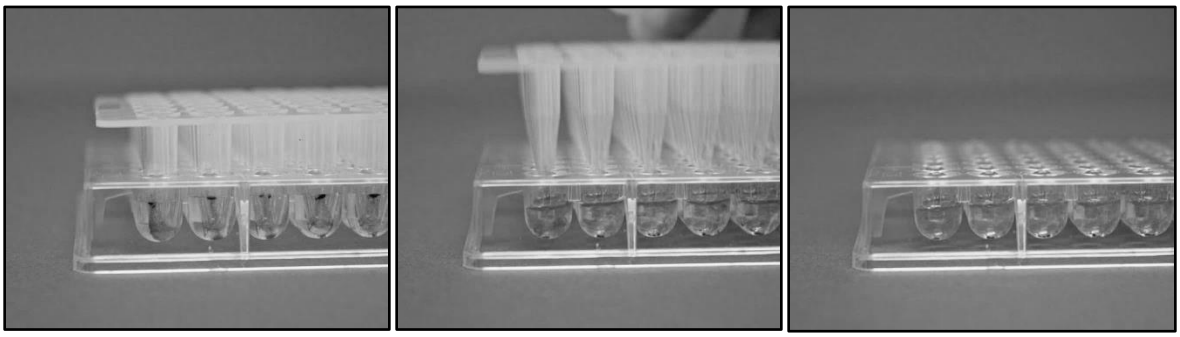


Moving the Magnetic Beads from Source to Destination Plate

The magnetic beads are extracted from the source microplate by placing the pins of the 407AM-N1 Magnetic Bead Extractor, loaded with a Cover Plate, into the source microplate wells where the beads are in suspension. The 407AM-N1 with Cover Plate should be moved in a slow and gentle circular motion until all the beads are bound to the outside tips of Cover Plate's conical wells. The beads should collect very close to the tips of the conical wells as long as the magnetic pins fit inside the wells of the Cover Plate properly, with no gap (see bottom of page 3). This process should take 30-60 seconds.

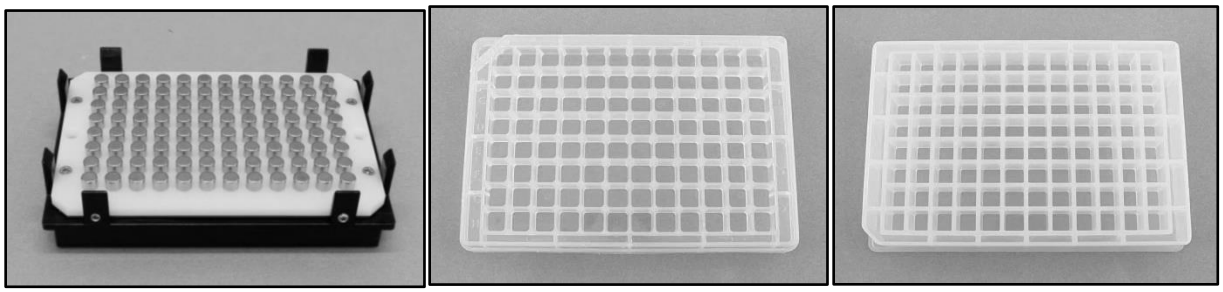


The beads are then transferred to a destination microplate by inserting the 407AM-N1 with Cover Plate with the magnetic beads collected on the tips of the Cover Plate into the destination microplate with the appropriate wash or elution buffer. Detachment of the Cover Plate is done by pushing the button at the top of the VP 407AM-N1's handle. The detachment of the Cover Plate must be done in a very quick snapping motion to prevent the paramagnetic beads from following the magnetic pins up the sides of the Cover Plate's conical wells.



Optional Magnetic Separation Block to use with the VP 407AM-N1: The destination microplate with the detached Cover Plate can then be placed on a magnetic separation block, such as VP 771RWAM-1 (below left) to ensure all the beads are removed from the Cover Plate before discarding.

***Optional* Square Well Microplates VP 416S, VP 416S-1:** If either the source or destination microplate contains a volume larger than 150 µl, then it is best to use square well microplates. Square well microplates such as VP 416S (below center), VP 416S-1 (below left) can hold volumes larger than 150 µl without overflowing when the Magnetic Bead Extractor's covered pins are placed in the wells.



Care

Cleaning and Disinfecting

The VP 407AM-N1 Magnetic Bead Extractor may be cleaned as follows:

Dried Aqueous Solutions:

1. Rinse with water and dry thoroughly with towels (paper or cloth). If possible, dry with forced air to eliminate as much water as possible. Follow with a brief wipe of surfaces with 60-90% isopropyl alcohol or 60-90% ethanol and dry thoroughly, preferably with forced ambient air.
2. If water does not clean the dried material adequately or a more thorough cleaning is desired, use a mild liquid detergent (e.g., Joy) diluted to 1:20 to 1:100 with water. Rinse thoroughly with water and then alcohol as described in Option 1 above.

Wet or Dried Infectious Agents, or Nucleic Acid:

1. Isopropyl alcohol and ethanol (either 60-90% in water) can also be used to disinfect the surfaces of the VP 407AM-N1 Magnetic Bead Extractor. Allow the alcohol to be in contact with the surfaces for up to 1 minute. Follow by drying, preferably with forced ambient air.
2. For a more extensive cleaning or disinfection, dilute household bleach (5.25-6.15% hypochlorite) 1:10 with water.
    a. Wet all exposed surfaces of the VP 407AM-N1 Magnetic Bead Extractor with paper towels saturated with the diluted bleach. If infectious agents or nucleic acid are believed to be under the stripper plate, contact V&P Scientific Technical Service on how to remove and replace plate safely. The magnetic pins cans be easily broken when performing this operation.
    b. Allow the diluted bleach to be in contact with the VP 407AM-N1 Magnetic Bead Extractor parts for a maximum of 5 minutes.
    c. Rinse with water and treat with alcohol as described above in Option 1, Dried Aqueous Solutions.

Organic Solvents

1. Wipe solvent away with towels (paper or cloth) as soon as possible and wipe with 60-90% isopropyl alcohol or 60-90%% ethanol. Dry thoroughly, preferably with forced ambient air.

Note: The ends of the VP 407AM-N1 Magnetic Bead Extractor magnetic pins can be submerged briefly in any of the cleaning solutions described above. But do not submerge the entire device.

Magnet Safety

The neodymium magnets in the VP 407AM-N1 Magnetic Bead Extractor are extremely strong and must be handled with care to avoid personal injury and damage to the magnets. Fingers and other body parts can get severely pinched between two attracting magnetic pins and metal surfaces. Neodymium magnets are brittle, and can peel, crack or shatter if allowed to slam together or onto metal surfaces. Metal tools such as screw drivers and scissors should be kept at a distance. Other sharps such as razor blades, scalpels, needles, and knives should never be near VP 407AM-N1 Magnetic Bead Extractor.

Eye protection should be worn when handling the VP 407AM-N1 Magnetic Bead Extractor.

The strong magnetic fields of neodymium magnets can also damage magnetic media such as floppy disks, credit cards, magnetic I.D. cards, cassette tapes, video tapes or other such devices. Neodymium magnets can also damage televisions, VCRs, computer monitors and other CRT displays. Never place neodymium magnets near electronic appliances.

People with pacemakers or similar medical aides should never be **closer than 24 inches** to neodymium magnets. The strong magnetic fields of the magnet can affect the operation of such devices.

Neodymium magnets will lose their magnetic properties if heated above 175°F (80°C).

Neodymium magnets should never be burned, as this creates toxic fumes.

V&P Scientific assumes no liability for the customer's failure to comply with safety requirements and practices.

WARRANTY

V&P Scientific, Inc. warrants this product to be free from defects in material and workmanship when used under normal laboratory conditions for one year. This warranty begins from the date of delivery by V&P Scientific.

In the event this product fails under normal laboratory conditions within the specified period of time because of a defect in material or workmanship, V&P Scientific will, at its option, repair or replace the product. Damage to the product caused by user negligence is not covered.
Please contact V&P Scientific at the address below for return authorization and shipping instructions.

This warranty is made in lieu of other warranties expressed or implied including the warranties of merchantability and fitness for a particular purpose. V&P Scientific shall not be liable for loss or damages arising from the use of these products nor for consequential damages of any kind.

If assistance is required, contact V&P Scientific, Inc. at 858-455-0643 or sales@vp-sci.com.