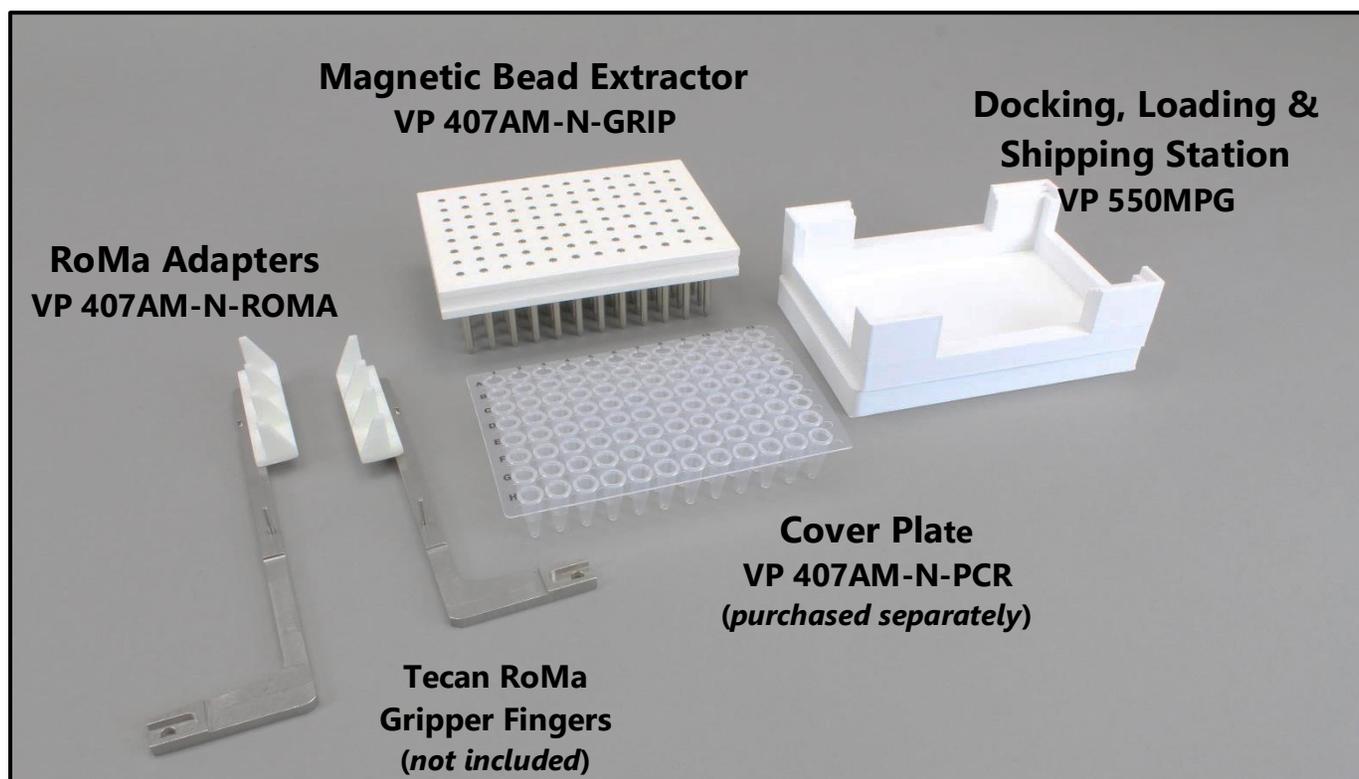


Care and Use of the
96 Pin Magnetic Bead Extractor
VP 407AM-N-GRIP with VP 407AM-N-ROMA Adapters



WARNING!!!!

- Be advised that the Magnetic Bead Extractor has strong 48 MGO Neodymium Iron Boron magnetic fields coming from 96 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-N-GRIP, is designed for use with a robotic liquid handler gripper arm 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 pipetting steps. The VP 407AM-N-ROMA attaches to the fingers of the Tecan RoMa gripper and is used to pick up the VP 407AM-N-GRIP and/or pick up the standard non-skirted PCR plate or "Cover Plate" over its 96 magnetic pins. The Cover Plate VP 407AM-N-PCR 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 tight bead binding and very fast bead extraction with 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-N-GRIP with Cover Plate from the source microplate and placing it into a destination microplate containing wash or elution buffer. The beads are then released into the liquid in the wells of the destination microplate by removing the Cover Plate from the magnetic pins by robotically sliding the angled VP 407AM-N-ROMA adapter in between the Cover Plate and the VP 407AM-N-GRIP.

Accessories (Sold Separately)

PCR plates to use with the VP 407AM-N-GRIP:

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

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

- Corning/Costar 3797, 150 ul working volume
- VP 416S Square well plates, 450 ul working volume (see page 6)
- VP 416S-1 Square well plates, 550 ul working volume (see page 6)

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

- VP 771RWAM-1 (see page 6)

Assembly

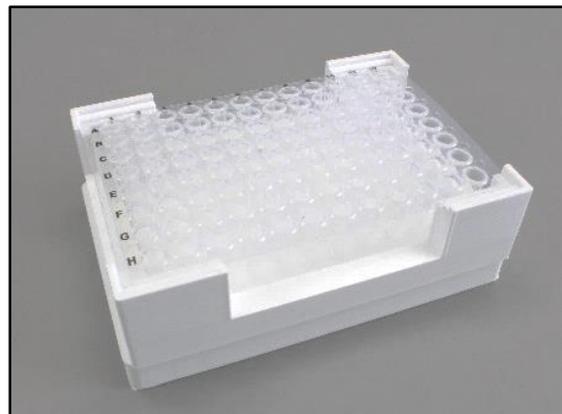
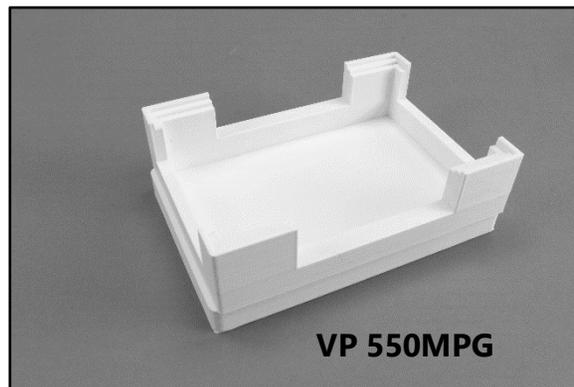
Attach Adapters to Tecan RoMa arms with the 4 provided screws (Philips flat head M2.5 X 8).



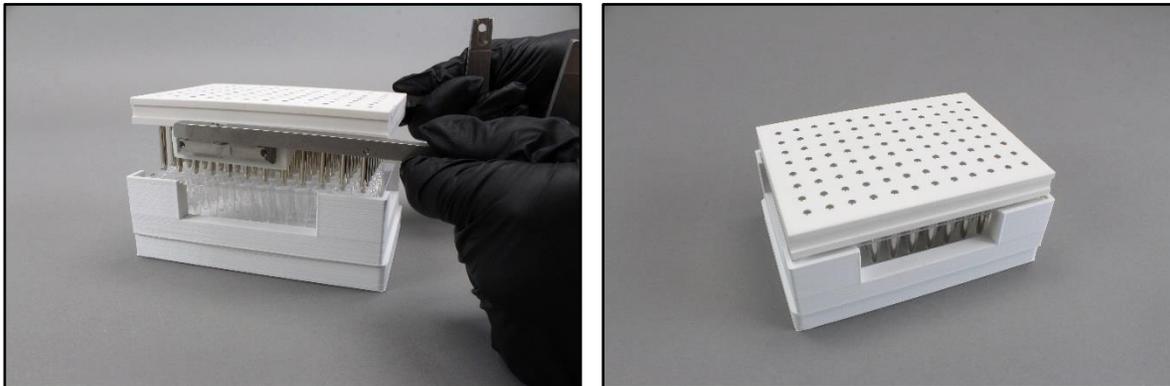
Operation

Loading the Cover Plate onto Magnetic Bead Extractor

To Load a Cover Plate (such as VP 407AM-N1-PCR) onto the Magnetic Bead Extractor (VP 407AM-N-GRIP) first use the ROMA gripper, with the Adapters attached, to place the Cover Plate into the VP 550MPG multi-purpose docking and loading station.

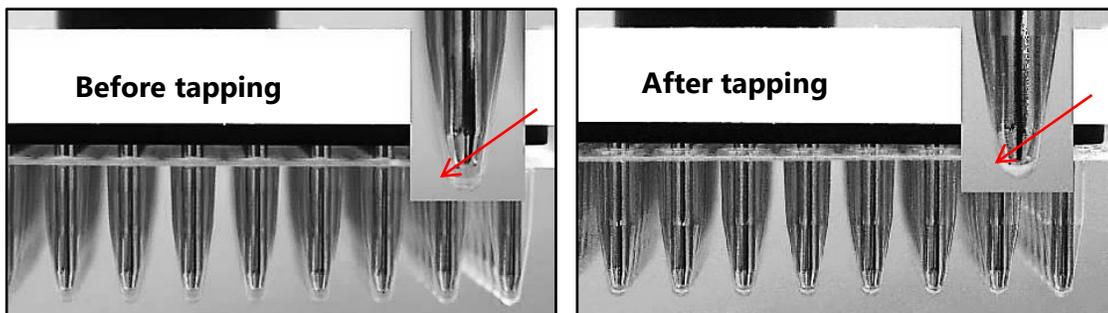


Then, also using the ROMA gripper, with the Adapters, position the VP 407AM-N-GRIP over the Cover Plate. With pins aligned to the 96 wells, lower the VP 407AM-N-GRIP onto the Cover Plate.



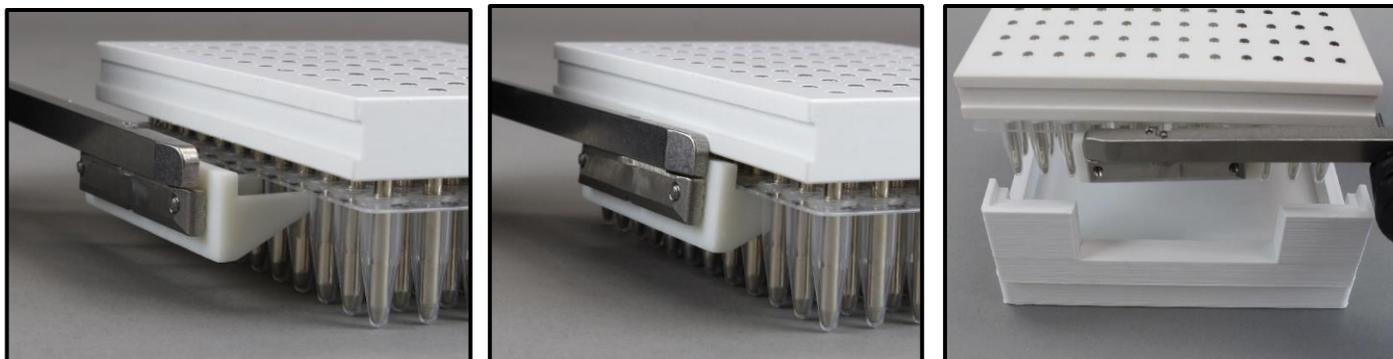
It is important that there is not a gap between the magnetic pins and the end of the Cover Plate's pointed wells. V&P's Cover Plate VP 407AM-N-PCR is designed to make sure there is no gap between the bottom of the well and the tip of the magnet, ensuring maximum bead capture.

To accomplish this, with gripper fingers closed and the gripper positioned above the VP 407AM-N-GRIP, gently move down to tap the top of the VP 407AM-N-GRIP to seat the magnetic pins into the wells as shown below.



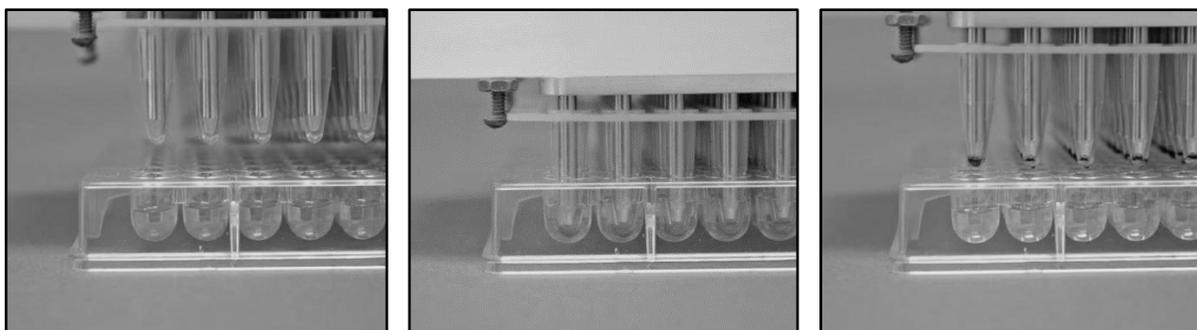
Moving the Magnetic Bead Extractor and Cover Plate with Gripper and Adapters

To move the VP 407AM-N-GRIP with Cover Plate in place, position the tops of the Adapters just below the top of the Cover Plate. With the Adapter fingers between the wells/pins move the Gripper arms together to bring them to the sides of the VP 407AM-N-GRIP with Cover Plate and then lift the VP 407AM-N-GRIP with Cover Plate.



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-N-GRIP Magnetic Bead Extractor, loaded with a Cover Plate, into the source microplate wells where the beads are in suspension. The 407AM-N-GRIP 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 are properly positioned inside the wells of the Cover Plate, with no gap (see page 4). This process should take 30-60 seconds.

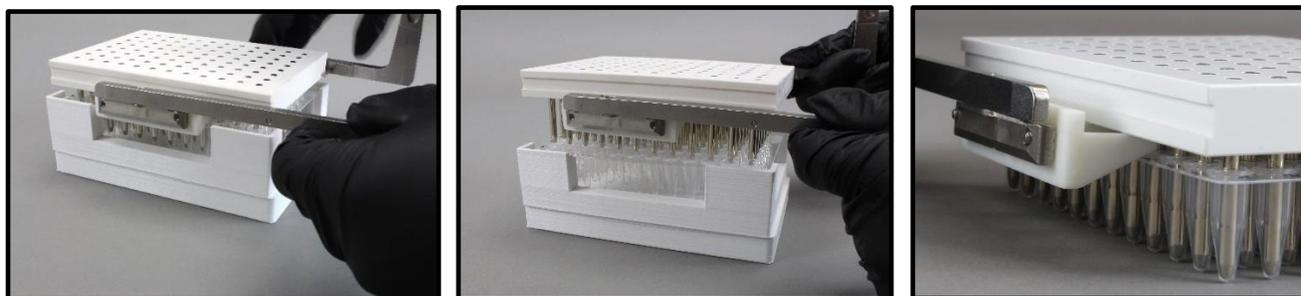


The beads are then transferred by placing the 407AM-N-GRIP and Cover Plate with the magnetic beads collected on the tips of the Cover Plate into the destination microplate with the appropriate wash or elution buffer. The cover plate is then detached from the VP 407AM-N-GRIP as described in the 'Removing the Cover Plate from the Magnetic Bead Extractor' section below. Repeat the slow and gentle circulation of the Cover Plate to dislodge the bead pellet from the Cover Plate to resuspend the beads into solution.

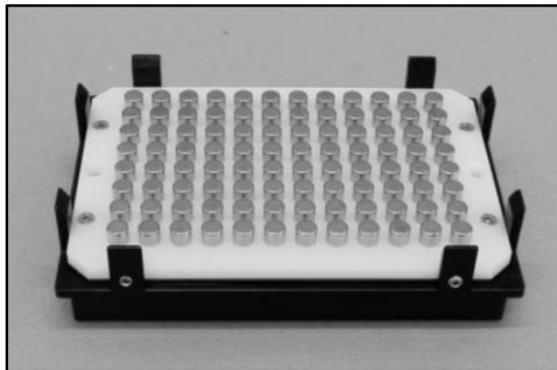
Removing the Cover Plate from the Magnetic Bead Extractor

Detachment of the Cover Plate is done by robotically pressing the angled VP 407AM-N-ROMA adapter in between the VP 407AM-N-GRIP and the Cover Plate.

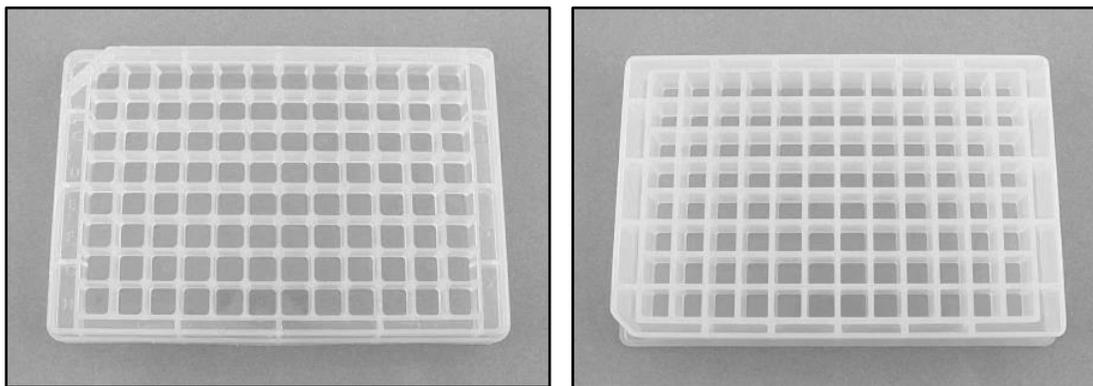
NOTE: It is important to press the Adapters in and move the Adapters up in a stepwise function to avoid pressing the Cover Plate into the Docking Station and potentially damaging either the Magnetic Bead Extractor or the Docking Station.



Optional Magnetic Separation Block to use with the VP 407AM-N-GRIP: 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 μ l, then it is best to use these square well microplates. Square well microplates such as VP 416S (below left), VP 416S-1 (below right) can hold volumes larger than 150 μ l without overflowing when the Magnetic Bead Extractor's covered pins are placed in the wells.



Magnet Safety

The neodymium magnets in the VP 407AM-N-GRIP 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 the VP 407AM-N-GRIP Magnetic Bead Extractor.

Eye protection should be worn when handling the VP 407AM-N-GRIPs 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 damages of any kind.

If assistance is required, contact: Ph: 858-455-0643 Email: sales@vp-sci.com