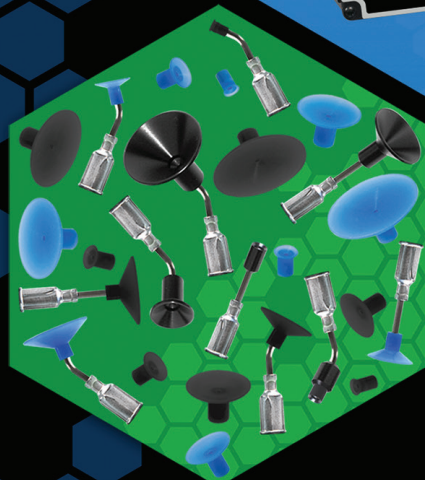
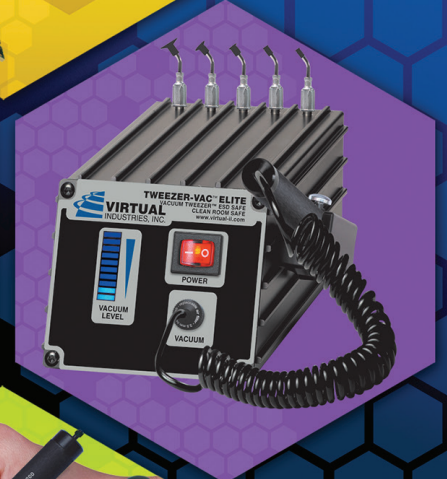
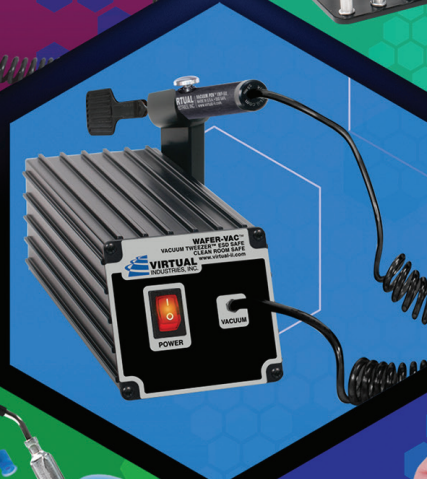
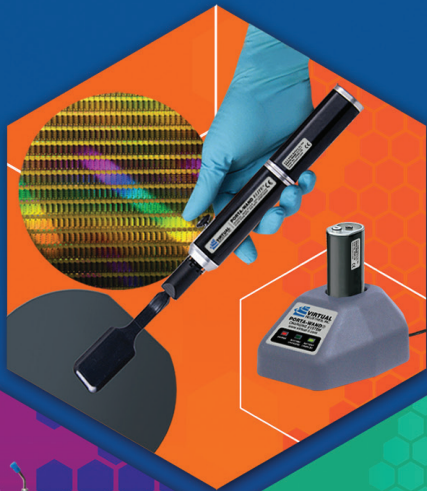


VIRTUAL INDUSTRIES, INC.

VACUUM TWEEZERS



TWEEZER-VAC™ ELITE VACUUM TWEEZER™ Kits

This VACUUM TWEEZER™ uses an integrated ten segment bar-graph-display that visibly shows the vacuum level present during operation. The bar graph will show minimum vacuum pressure until a part is grasped and then when a part is grasped the bar graph displays the vacuum level presented to the part being handled. Additionally, the vacuum port integrates a user replaceable inlet filter that protects operation of the tool from dust particles. This VACUUM TWEEZER™ is available in various kits depending on your handling application. Kits are available in 110 or 220 volt operation.

These ESD-SAFE kits feature:

- Five vacuum tip holders on top of tool.
- Bar graph power-on and vacuum-level indicator.
- Rubber no-skid feet.
- ESD ground connection is by three wire power cord.
- Produces vacuum up to ten inches of mercury.
- Long life pump.
- Side mounted handle holder.
- Replaceable inlet filter (additional spare intake filter included).
- Dimensions 8" X 3" X 3.5" (203mm X 76mm X 89mm).
- Class 100 Cleanroom Safe



TWEEZER VAC™ Elite ESD-SAFE Kit With Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes

This kit includes:

- COILED-VACUUM-HOSE-5 (VCH-1/16-5)
- PUSH-BUTTON-VACUUM-PEN (VVP-200-1/16)
- VACUUM-CUP-KIT-9 (VCS-9-B)
- 3 WIRE POWER CORD
- NO FOOT SWITCH OPTION AVAILABLE



TV-1500-ELITE-110

TV-1500-ELITE-220

TWEEZER VAC™ Elite ESD-SAFE Kit With ESD-SAFE Delrin Small Parts Tips And Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes

This kit includes:

- COILED-VACUUM-HOSE-5 (VCH-1/16-5)
- PUSH-BUTTON-VACUUM-PEN (VVP-200-1/16)
- VACUUM-CUP-KIT-9 (VCS-9-B)
- ESD-SAFE DELRIN SMALL PARTS TIPS (VSPT-TIPS-8-BD)
- 16 POSITION TIP ORGANIZER/HOLDER (VTH-16).
- 3 WIRE POWER CORD
- NO FOOT SWITCH OPTION AVAILABLE



TV-1500-ELITE-SP8-BD-110

TV-1500-ELITE-SP8-BD-220

TWEEZER VAC™ Elite ESD-SAFE Kit With Foot Switch, Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes

This kit includes:

- COILED-VACUUM-HOSE-5 (VCH-1/16-5)
- PUSH-BUTTON-VACUUM-PEN (VVP-200-1/16)
- FOOT SWITCH (VFS-X) WITH INTERNAL SOLENOID
- VACUUM-CUP-KIT-9 (VCS-9-B)
- 3 WIRE POWER CORD



TV-1500-ELITE-FS-110

TV-1500-ELITE-FS-220

TWEEZER VAC™ Elite ESD-SAFE Kit With Foot Switch, ESD-SAFE Delrin Small Parts Tips And Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes

This kit includes:

- COILED-VACUUM-HOSE-5 (VCH-1/16-6)
- PUSH-BUTTON-VACUUM-PEN (VVP-200-1/16)
- FOOT SWITCH (VFS-X) WITH INTERNAL SOLENOID
- VACUUM-CUP-KIT-9 (VCS-9-B)
- ESD-SAFE DELRIN SMALL PARTS TIPS (VSPT-TIPS-8-BD)
- 16 POSITION TIP ORGANIZER/HOLDER (VTH-16).
- 3 WIRE POWER CORD



TV-1500-ELITE-FS-SP8-BD-110

TV-1500-ELITE-FS-SP8-BD-220

Intake Replacement Filters

Replacement filter for TV-1500 and ADJUST-A-VAC™ units. Includes a set of five 40 micron replaceable filters.

VF-40M-5



ADJUST-A-VAC™ VACUUM TWEEZER™ Kits

This VACUUM TWEEZER™ allows the operator to adjust the vacuum level from just below atmospheric pressure to up to ten inches of mercury depending on the fragility of the part being handled. An integrated ten segment bar-graph-display visibly shows the vacuum level present during handling operations. The bar graph will show minimum vacuum pressure until a part is grasped and then the bar graph displays the vacuum level presented to the part being handled. Additionally, the vacuum port integrates a user replaceable inlet filter that protects operation of the tool from dust particles. Kits are available in 110 or 220 volt operation.

These ESD-SAFE kits feature:

- Five vacuum tip holders on top of tool.
- Bar graph power-on and vacuum-level indicator.
- Adjustment knob for vacuum level.
- Rubber no-skid feet.
- ESD ground connection is by three wire power cord.
- Produces vacuum up to ten inches of mercury.
- Long life pump.
- Side mounted handle holder.
- Replaceable inlet filter (additional spare intake filter included).
- Optional: Foot switch systems (FS models only).
- Dimensions 8" X 3" X 3.5" (203mm X 76mm X 89mm).
- Class 100 Cleanroom Safe



ADJUST-A-VAC™ ESD-SAFE Kit With Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes

This kit includes:

- COILED-VACUUM-HOSE-5 (VCH-1/16-6)
- PUSH-BUTTON-VACUUM-PEN (VVP-200-1/16)
- VACUUM-CUP-KIT-9 (VCS-9-B)
- 3 WIRE POWER CORD
- NO FOOT SWITCH OPTION AVAILABLE

AV-6000-110

AV-6000-220



ADJUST-A-VAC™ Elite ESD-SAFE Kit With ESD-SAFE Delrin Small Parts Tips And Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes

This kit includes:

- COILED-VACUUM-HOSE-5 (VCH-1/16-6)
- PUSH-BUTTON-VACUUM-PEN (VVP-200-1/16)
- VACUUM-CUP-KIT-9 (VCS-9-B)
- ESD-SAFE DELRIN SMALL PARTS TIPS (VSPT-TIPS-8-BD)
- 16 POSITION TIP ORGANIZER/HOLDER (VTH-16).
- 3 WIRE POWER CORD
- NO FOOT SWITCH OPTION AVAILABLE

AV-6000-SP8-BD-110

AV-6000-SP8-BD-220



ADJUST-A-VAC™ ESD-SAFE Kit With Foot Switch, Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes

This kit includes:

- COILED-VACUUM-HOSE-5 (VCH-1/16-6)
- PUSH-BUTTON-VACUUM-PEN (VVP-200-1/16)
- FOOT SWITCH (VFS-X) WITH INTERNAL SOLENOID
- VACUUM-CUP-KIT-9 (VCS-9-B)
- 3 WIRE POWER CORD

AV-6000-FS-110

AV-6000-FS-220



ADJUST-A-VAC™ Elite ESD-SAFE Kit With Foot Switch, ESD-SAFE Delrin Small Parts Tips And Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes

This kit includes:

- COILED-VACUUM-HOSE-5 (VCH-1/16-6)
- PUSH-BUTTON-VACUUM-PEN (VVP-200-1/16)
- FOOT SWITCH (VFS-X) WITH INTERNAL SOLENOID
- VACUUM-CUP-KIT-9 (VCS-9-B)
- ESD-SAFE DELRIN SMALL PARTS TIPS (VSPT-TIPS-8-BD)
- 16 POSITION TIP ORGANIZER/HOLDER (VTH-16).
- 3 WIRE POWER CORD

AV-6000-FS-SP8-BD-110

AV-6000-FS-SP8-BD-220



Optional VACUUM PEN™ With No Control Hole

Vacuum pen with no push button or control hole to get in the way, for use with foot switch.

V3021-1/16



ESD-SAFE BENCH TOP SYSTEMS

TV-1000 TWEEZER-VAC™ VACUUM TWEEZER™ Kits

A general purpose vacuum handling tool that plugs directly into your line voltage, Volt 50/60 Hz. This compact unit will handle a wide variety of parts used in industry today. The long-life diaphragm vacuum pump generates up to 10 inches of mercury with an open air flow of 2.3 lpm. The unit connects to ground automatically with a three-wire power cord. Optional tips that can be used include our small part tips, rigid delrin tips and our multiple cup tips. Kits are available in 110 or 220 volt operation.

These ESD-SAFE kits feature:

- Dimensions 7-1/4" X 3" X 2-1/2" (185mm X 76mm X 64mm).
- Lighted On/Off switch.
- Whisper-quiet operation.
- Long-life pump.
- Side mounted handle holder.
- Rubber no-skid feet.
- Class 100 Cleanroom Safe



TV-1000 TWEEZER-VAC™ ESD-SAFE Kit With Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes

This kit includes:

- COILED-VACUUM-HOSE-5 (VCH-1/16-5)
- PUSH-BUTTON-VACUUM-PEN (VVP-200-1/16)
- VACUUM-CUP-KIT-9 (VCS-9-B)
- 3 WIRE POWER CORD



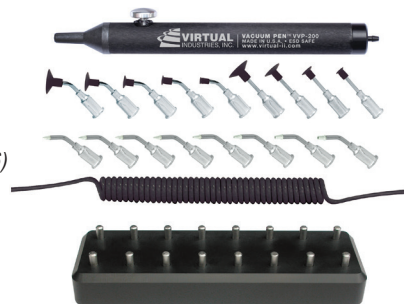
TV-1000-110

TV-1000-220

TV-1000 TWEEZER-VAC™ Kit With ESD-SAFE Delrin Small Parts Tips

This kit includes:

- COILED-VACUUM-HOSE-5 (VCH-1/16-5)
- PUSH-BUTTON-VACUUM-PEN (VVP-200-1/16)
- VACUUM-CUP-KIT-9 (VCS-9-B)
- ESD-SAFE DELRIN SMALL PARTS TIPS (VSPT-TIPS-8-BD)
- 16 POSITION TIP ORGANIZER/HOLDER (VTH-16)
- 3 WIRE POWER CORD



TV-1000-SP8-BD-110

TV-1000-SP8-BD-220

POPULAR ACCESSORIES

Deluxe Small Parts Kit With 8 Bent Delrin Tips For Handling Micro Parts - With Tips Holder

This kit contains eight bent ESD-SAFE delrin small parts tips in sizes 0.010" (0.25mm), 0.020" (0.51mm), 0.025" (0.64mm), 0.030" (0.76mm), 0.040" (1.02mm), 0.060" (1.52mm), 0.070" (1.78mm) and 0.080" (2.00mm).

NOTE: Must be used with a continuous vacuum source. **NOTE:** See page 8 for other small part tips material.

VSPT-KIT-8-BD



Deluxe Small Parts Kit With 8 Bent And 8 Straight Delrin Tips For Handling Micro Parts - With Tips Holder

This kit contains eight bent and eight straight ESD-SAFE delrin small parts tips in sizes 0.010" (0.25mm), 0.020" (0.51mm), 0.025" (0.64mm), 0.030" (0.76mm), 0.040" (1.02mm), 0.060" (1.52mm), 0.070" (1.78mm) and 0.080" (2.00mm).

NOTE: Must be used with a continuous vacuum source. **NOTE:** See page 8 for other small part tips material.

VSPT-KIT-16-D



PAC-VAC™ VACUUM TWEEZER™ Kit

PAC-VAC™ 9 Volt Battery Operated ESD-SAFE VACUUM TWEEZER™ Kit

PAC-VAC™ vacuum tool kit, battery operated. The PAC-VAC™ is battery operated and self-contained, runs up to eight hours continuously on one 9 volt alkaline battery. This versatile unit can be clipped to your belt or pocket for one-handed portable operation. The PAC-VAC™ is constructed with ESD-SAFE materials. Optional tips that can be used include our small part tips, rigid delrin tips and our multiple cup tips.

These ESD-SAFE kits feature:

- Power on LED indicator.
- A belt/pocket clip on the housing.
- Lightweight - only 6 oz. (156 grams).
- Produces vacuum up to 16 inches of mercury.
- Dimensions 4.6" X 2.4" X 1.1" (130mm X 61mm X 27mm).

V3200

V3200-CLN (Class 1 Cleanroom Safe)



IN-HOUSE VACUUM KITS

Push Button VACUUM PEN™ Kit With Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes

This kit can be used with any of our luer slip tips. This kit is for the users who have an in-house vacuum system. This kit includes 5 feet of coiled vacuum hose (VCH-1/16-5), a push button vacuum pick-up handle (VVP-200-1/16), adapter (V3015-1/8NPT), bent and straight probes with Buna-N Static Dissipative Non-Marking black vacuum cups (VCS-9-B). Optional tips that can be used include our small part tips, rigid delrin tips and our multiple cup tips. **NOTE:** Must be used with a continuous vacuum source.

VV-PEN-KIT-PB



POPULAR ACCESSORIES

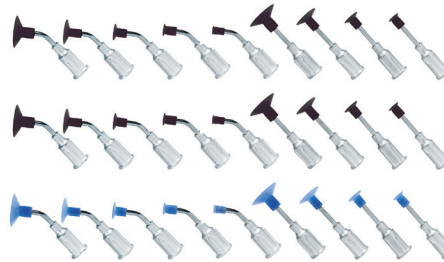
Replacement Vacuum Tip Kit - Includes 9 Probes With Vacuum Cups

This kit contains five bent probes with 3/32" (2.38mm), 1/8" (3.18mm), 3/16" (4.76mm), 1/4" (6.35mm), and 3/8" (9.53mm), as well as four straight probes with 1/8" (3.18mm), 1/4" (6.35mm), 3/8" (9.53mm) and 1/2" (12.70mm).

VCS-9-B (Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes)

VCS-9-ESD (High-Temp Conductive Silicone Vacuum Cups With Probes)

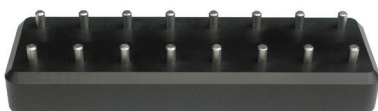
VCS-9-PUR (Blue, PUREACLEAN™ Non ESD-SAFE, Non-Marking Vacuum Cups With Probes)



Vacuum Tips Holder With 16 or 8 Locations

Table top luer slip vacuum tips holder with non-slip rubber feet. Posts will accommodate 16 or 8 of our luer slip vacuum tips. Vacuum tips not included.

VTH-16



VTH-8



PAC-VAC, IN-HOUSE VACUUM KITS AND ACCESSORIES ESD-SAFE

PEN-VAC™ VACUUM TWEEZER™ Kits

PEN-VAC™ ESD-SAFE Kit With 6 Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes

PEN-VAC™, ESD-SAFE, 5 3/4" (146mm) anodized aluminum body kit with three bent probes mounted with Non-marking Static Dissipative Buna-N Cup sizes 1/8" (3.18mm), 1/4" (6.35mm), 3/8" (9.53mm) diameter. Three straight probes mounted with Non-marking Static Dissipative Buna-N Cup sizes 1/8" (3.18mm), 1/4" (6.35mm), 3/8" (9.53mm) diameter. These vacuum pens are ideal for SMT assembly or for handling any parts that have a non-porous surface. No batteries or hoses to get in your way. Features a rear storage compartment for cups or probe. The vacuum pens are Static Dissipative and non-marking. The PEN-VAC™ is totally self-contained.



Rear storage compartment for probes and cups. Available on standard PEN-VAC™ only

V8901-LMS-B



PEN-VAC™ ESD-SAFE Kit With 6 Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes

PEN-VAC™, ESD-SAFE, 5 3/4" (146mm) black anodized aluminum laser marked body kit with three bent probes mounted with Non-marking Static Dissipative Buna-N Cup sizes 1/8" (3.18mm), 1/4" (6.35mm), 3/8" (9.53mm) diameter. Three straight probes mounted with Non-marking Static Dissipative Buna-N Cup sizes 1/8" (3.18mm), 1/4" (6.35mm), 3/8" (9.53mm) diameter. These vacuum pens are ideal for SMT assembly or for handling any parts that have a non-porous surface. No batteries or hoses to get in your way. Features a rear storage compartment for cups or probe. The vacuum cups are Static Dissipative and non-marking. The PEN-VAC™ is totally self-contained.

V8902-LMS-B



PEN-VAC™ JUNIOR ESD-SAFE Kit With 4 Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes

PEN-VAC™ Junior, ESD-SAFE, 5" (127mm) anodized aluminum body kit with three bent probes mounted with Non-marking Static Dissipative Buna-N Cup sizes 1/8" (3.18mm), 1/4" (6.35mm), 3/8" (9.53mm) diameter, one straight probe mounted with Non-marking Static Dissipative Buna-N Cup size 1/4" (6.35mm) diameter. These vacuum pens are ideal for SMT assembly or for handling any parts that have a non-porous surface. No batteries or hoses to get in your way. The PEN-VAC™ is totally self-contained.

V8920E-A-ESD



PRO-SERIES PEN-VAC™ ESD-SAFE Kit With 4 Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes

PEN-VAC™ PRO SERIES ESD-SAFE, 5" (127mm) black or gray plastic body kit with three bent probes mounted with Non-marking Static Dissipative Buna-N Cup sizes 1/8" (3.18mm), 1/4" (6.35mm), 3/8" (9.53mm) diameter, one straight probe mounted with Non-marking Static Dissipative Buna-N Cup size 1/4" (6.35mm) diameter. These vacuum pens are ideal for SMT assembly or for handling any parts that have a non-porous surface. No batteries or hoses to get in your way. The PEN-VAC™ is totally self-contained.

V8910-9GR-B



V8910-9BK-B



Applications for PEN-VAC™, BULB-VAC™ and HANDI-VAC™ include SMT parts, metal parts, plastic parts or any item having a smooth-nonporous-surface that the rubber VACUUM TWEEZER™ tip can seal against. This tool can be used with any of our rubber vacuum cups ranging in size from 3/32" (2.38mm) to 1" (25.4mm) in diameter. Use the larger cups to pick up larger and heavier parts. **NOTE:** These self contained tools work only with the rubber vacuum tips.

Holder For PEN-VAC™ And Up To 8 Vacuum Tip Probes with Cups

Bench mount holder with luer slip stainless steel posts to accommodate up to eight of our luer slip vacuum tips. Can be used with any of our vacuum handles or vacuum pens. Helps protect the vacuum tips when not in use.

VBM-3



LOW COST BULB-VAC™ VACUUM TWEEZER™

BULB-VAC™ ESD-SAFE Squeeze Bulb With ANTI-WOBBLE™ Cone And One 3/4" (19mm) Or 1" (25.4mm) Buna-N Static Dissipative Non-Marking Vacuum Cup

The ANTI-WOBBLE™ tool is designed for enhanced functionality when handling INTEL LGA CPU products. This tool improves placement accuracy when picking processor chips from a shipping tray and placing into precision sockets. The BULB-VAC™ features an ANTI-WOBBLE™ stiffener cone and a 3/4" (19mm) or 1" (25.4mm) diameter Non-marking Static Dissipative Buna-N vacuum cup. This ANTI-WOBBLE™ tip is designed to work only with a 3/4" (19mm) or 1" (25.4mm) diameter vacuum cup. The rubber vacuum cup is required for proper operation. These tools operate very similar to a tweezer. Simply squeeze the vacuum bulb, place the soft suction cup to the part to be handled, then relax your squeeze and the part is firmly gripped. A second squeeze releases the part.

BVJ-075-AW-B



BVJ-1.00-AW-B



BULB-VAC™ ESD-SAFE Squeeze Bulb Kit With 3 Buna-N Static Dissipative Non-Marking Vacuum Cups

BULB-VAC™ Kit with 3/8" (9.53mm), 1/2" (12.7mm) and 5/8" (15.88mm) diameter Non-marking Static Dissipative Buna-N vacuum cups. Our vacuum-bulb type tools are the lowest cost pick-and-place tools available.

BVJ-CUP-3-B



HANDI-VAC-2™ AND HANDI-VAC™ VACUUM TWEEZERS™ AND KITS

HANDI-VAC-2™ ESD-SAFE Squeeze Bulb With ANTI-WOBBLE™ Cone And One 3/4" (19mm) Or 1" (25.4mm) Buna-N Static Dissipative Non-Marking Vacuum Cup

HANDI-VAC-2™ with ANTI-WOBBLE™ Tip and 3/4" (19mm) or 1" (25.4mm) diameter Non-marking Static Dissipative Buna-N vacuum cup. This ANTI-WOBBLE™ tip is designed to work only with a 3/4" (19mm) or 1" (25.4mm) diameter vacuum cup. This improved HANDI-VAC-2™ has a new and improved tip designed for better lifting capacity utilizing larger vacuum cups. The entire tool is constructed with ESD-safe materials. These tools operate very similar to a tweezer. Simply squeeze the vacuum bulb, place the soft suction cup to the part to be handled, then relax your squeeze and the part is firmly gripped. A second squeeze releases the part.

HV2-075-AW-B



HV2-1.00-AW-B



HANDI-VAC-2™ ESD-SAFE Squeeze Bulb With Barbed Head With 4 Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes

HANDI-VAC-2™ KIT, with four Buna-N Static Dissipative Non-Marking vacuum cup sizes 1/4" (6.35mm), 3/8" (9.53mm), 1/2" (12.7mm) and 5/8" (15.88mm).

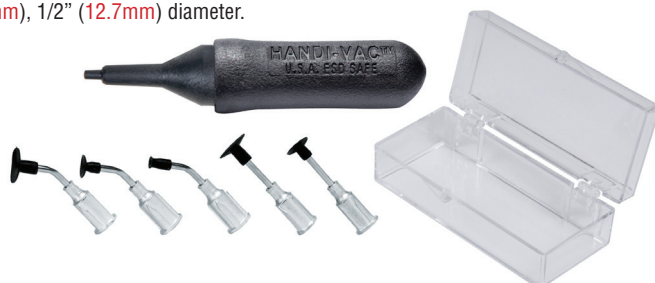
HV2-KIT-4-B



HANDI-VAC™ ESD-SAFE Squeeze Bulb Kit With 5 Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes

HANDI-VAC™ KIT, Static dissipative, with three bent probes mounted with Non-marking Static Dissipative Buna-N Cup sizes 1/8" (3.18mm), 3/16" (4.76mm), 1/4" (6.35mm) diameter, two straight probes mounted with Non-marking Static Dissipative Buna-N Cup sizes 3/8" (9.53mm), 1/2" (12.7mm) diameter.

HV-KIT-II-B



ESD-SAFE SQUEEZE BULB TOOLS

STEALTH-VAC™ VACUUM TWEEZER™ KIT

STEALTH-VAC™ ESD-SAFE Kit - Normally Open VACUUM PEN™ - Operates On Compressed Air Or Nitrogen

The STEALTH-VAC™ operates directly on 30 to 70 psi FILTERED compressed air or nitrogen. The vacuum is normally ON. The compressed air-powered tools are our most powerful VACUUM TWEEZER™ tools. The vacuum level can be controlled by adjusting the input pressure. At 10 psi input the vacuum level is 2 InHg with 1 lpm of free air flow, at 30 psi input the vacuum level is 10 InHg with 3 lpm of free air flow and at 70 psi input the vacuum level is 20 InHg with 4 lpm of free air flow. Includes five bent probes mounted with Non-marking Static Dissipative Buna-N Cup sizes 3/32" (2.38mm), 1/8" (3.18mm), 3/16" (4.76mm), 1/4" (6.35mm), and 3/8" (9.53mm), as well as four straight probes mounted with Non-marking Static Dissipative Buna-N Cup sizes 1/8" (3.18mm), 1/4" (6.35mm), 3/8" (9.53mm) and 1/2" (12.70mm).

The normally opened STEALTH-VAC™ Kit includes:

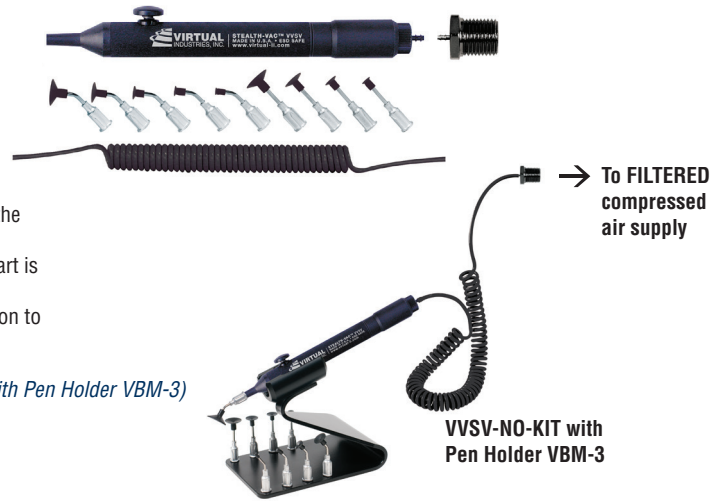
- STEALTH-VAC™ NORMALLY OPEN VACUUM PEN™
- COILED-VACUUM-HOSE-6 (VCH-1/16-6)
- SET OF NINE VACUUM TIPS (VCS-9-B)
- 1/8" NPT TO 1/16" BARB THREADED ADAPTER FOR SUPPLY LINE (V3014-1/8NPT)

STEALTH-VAC™ is ready for use as follows:

1. Attach a VACUUM TWEEZER™ tip slightly smaller than the part you need to handle.
2. Merely touch the vacuum tip squarely to the part. The part is now grasped.
3. Move the part to where you want it. Tap the control button to release the part.

VVSV-NO (normally open)

VVSV-NO-KIT (with Pen Holder VBM-3)



STEALTH-VAC™ ELITE VACUUM TWEEZER™ KIT

STEALTH-VAC™ ELITE ESD-SAFE Kit - Normally Closed VACUUM PEN™ - Operates On Compressed Air Or Nitrogen

The STEALTH-VAC™ ELITE operates directly on 30 to 50 psi FILTERED compressed air or nitrogen. The normally closed STEALTH-VAC™ Elite VACUUM PEN™ contains a whisper quiet venturi vacuum generator that is activated only when the control button is depressed. This helps conserve factory compressed air when the tool is not in use. The vacuum level can be controlled by adjusting the input pressure. At 10 psi input the vacuum level is 2 InHg with 1 lpm of free air flow, at 30 psi input the vacuum level is 10 InHg with 3 lpm of free air flow and at 70 psi input the vacuum level is 20 InHg with 4 lpm of free air flow. Includes five bent probes mounted with Non-marking Static Dissipative Buna-N Cup sizes 3/32" (2.38mm), 1/8" (3.18mm), 3/16" (4.76mm), 1/4" (6.35mm), and 3/8" (9.53mm), as well as four straight probes mounted with Non-marking Static Dissipative Buna-N Cup sizes 1/8" (3.18mm), 1/4" (6.35mm), 3/8" (9.53mm) and 1/2" (12.70mm).

The normally closed STEALTH-VAC™ ELITE Kit includes:

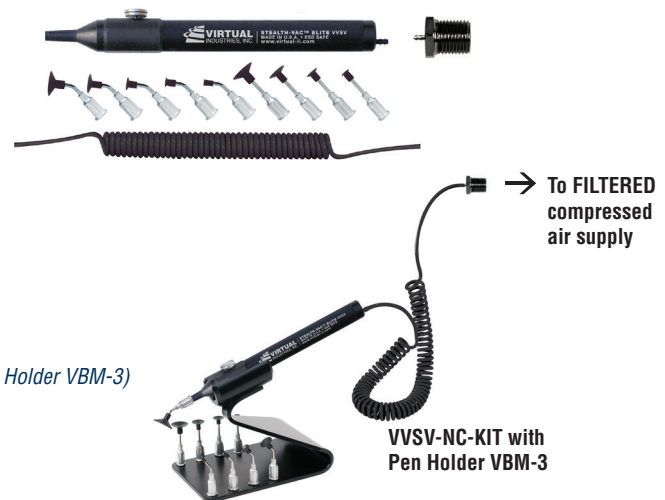
- STEALTH-VAC™ ELITE NORMALLY CLOSED VACUUM PEN™
- COILED-VACUUM-HOSE-6 (VCH-1/16-6)
- SET OF NINE VACUUM TIPS (VCS-9-B)
- 1/8" NPT TO 1/16" BARB THREADED ADAPTER FOR SUPPLY LINE (V3014-1/8NPT)

STEALTH-VAC™ ELITE is ready for use as follows:

1. Attach a VACUUM TWEEZER™ tip slightly smaller than the part you need to handle.
2. Touch the vacuum tip squarely to the part and depress and hold the button. The part is now grasped.
3. Move the part to where you want it. Release the control button to release the part.

VVSV-NC (normally closed)

VVSV-NC-KIT (with Pen Holder VBM-3)



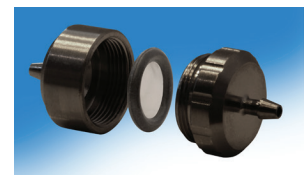
In-Line Hose Filters ESD Safe Black Nickel Plated Brass

Barbed hose filter – Inlet connection 1/16" (1.59mm) – Outlet connection 1/16" (1.59mm) ID hose. Recommended option to filter compressed air supply. These filters come with a replaceable 40 micron mesh o-ring filter.
NOTE: See page 1 for replacement filter VF-40M-5.

VFP-1616



Assembled

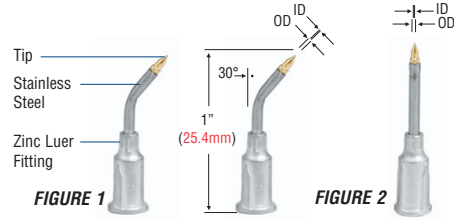


Unscrew to change filter

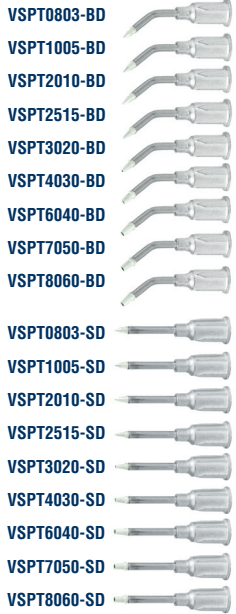
SMALL PARTS TIPS

Probes With Static Dissipative Non-Marking ESD-SAFE Delrin Or Gold Plated Brass Small Parts Tips

These tips are designed for handling very tiny parts. Tips are available in ESD-SAFE Delrin plastic so there is no chance of static or mechanical damage, temperature up to 212°F (100°C). Or Gold Plated Brass for general handling applications, temperatures up to 500°F (260°C). **NOTE:** This product requires a continuous vacuum source.



ESD-SAFE Delrin



Gold Plated Brass



Bent	0.008" (0.203mm) OD x 0.003" (0.076mm) ID
Bent	0.010" (0.254mm) OD x 0.005" (0.127mm) ID
Bent	0.020" (0.51mm) OD x 0.010" (0.254mm) ID
Bent	0.025" (0.64mm) OD x 0.015" (0.381mm) ID
Bent	0.030" (0.76mm) OD x 0.020" (0.508mm) ID
Bent	0.040" (1.02mm) OD x 0.030" (0.762mm) ID
Bent	0.060" (1.52mm) OD x 0.040" (1.016mm) ID
Bent	0.070" (1.78mm) OD x 0.050" (1.27mm) ID
Bent	0.080" (2.00mm) OD x 0.060" (1.524mm) ID
Straight	0.008" (0.203mm) OD x 0.003" (0.076mm) ID
Straight	0.010" (0.254mm) OD x 0.005" (0.127mm) ID
Straight	0.020" (0.51mm) OD x 0.010" (0.254mm) ID
Straight	0.025" (0.64mm) OD x 0.015" (0.381mm) ID
Straight	0.030" (0.76mm) OD x 0.020" (0.508mm) ID
Straight	0.040" (1.02mm) OD x 0.030" (0.762mm) ID
Straight	0.060" (1.52mm) OD x 0.040" (1.016mm) ID
Straight	0.070" (1.78mm) OD x 0.050" (1.27mm) ID
Straight	0.080" (2.00mm) OD x 0.060" (1.524mm) ID

Vacuum Tips Holder With 16 or 8 Locations

Table top luer slip vacuum tips holder with non-slip rubber feet. Posts will accommodate 16 or 8 of our luer slip vacuum tips. Vacuum tips not included.

VTH-16



VTH-8



Small Parts Tips Specifications

Material	Static Dissipative Delrin		Gold Plated Brass		Recommended for handling parts larger than the tip ID size up to size of:
ESD Properties	10 ⁹ - 10 ¹¹ ohms		Less than 1ohm		
Operating Temp	212 ^o F (100 ^o C)		500 ^o F (260 ^o C)		
PART #	OD	ID	OD	ID	INCHES (MM)
VSPT0803 -*#	0.008" (0.203mm)	0.003" (0.076mm)	N/A	N/A	0.015" X 0.015" X 0.015" (0.38mm X 0.38mm X 0.38mm)
VSPT1005 -*#	0.010" (0.254mm)	0.005" (0.127mm)	0.010" (0.254mm)	0.005" (0.127mm)	0.03" X 0.03" X 0.03" (0.76mm X 0.76mm X 0.76mm)
VSPT2010 -*#	0.020" (0.508mm)	0.010" (0.254mm)	0.020" (0.508mm)	0.010" (0.254mm)	0.06" X 0.06" X 0.06" (1.52mm X 1.52mm X 1.52mm)
VSPT2515 -*#	0.025" (0.635mm)	0.015" (0.381mm)	0.025" (0.635mm)	0.015" (0.381mm)	0.07" X 0.07" X 0.07" (1.78mm X 1.78mm X 1.78mm)
VSPT3020 -*#	0.030" (0.762mm)	0.020" (0.508mm)	0.030" (0.762mm)	0.020" (0.508mm)	0.90" X 0.90" X 0.90" (2.29mm X 2.29mm X 2.29mm)
VSPT4030 -*#	0.040" (1.016mm)	0.030" (0.762mm)	0.040" (1.016mm)	0.030" (0.762mm)	0.12" X 0.12" X 0.12" (3.05mm X 3.05mm X 3.05mm)
VSPT6040 -*#	0.060" (1.524mm)	0.040" (1.016mm)	0.060" (1.524mm)	0.040" (1.016mm)	0.18" X 0.18" X 0.18" (4.57mm X 4.57mm X 4.57mm)
VSPT7050 -*#	0.070" (1.778mm)	0.050" (1.27mm)	0.070" (1.778mm)	0.050" (1.27mm)	0.21" X 0.21" X 0.21" (5.33mm X 5.33mm X 5.33mm)
VSPT8060 -*#	0.080" (2.032mm)	0.060" (1.524mm)	0.080" (2.032mm)	0.060" (1.524mm)	0.24" X 0.24" X 0.24" (6.10mm X 6.10mm X 6.10mm)

* = dash "B" specifies an angled probe, FIGURE 1 (at top). dash "S" specifies an straight probe, FIGURE 2 (at top). # = dash "D" selects the delrin plastic material. dash "B" selects the gold plated brass material.

ORDERING EXAMPLE: Part number "VSPT2010-B-D selects a small part angled tip as in FIGURE 1 with an OD of 0.020" (0.508mm), an ID of 0.010" (0.254mm) and the Static Dissipative Delrin material.

NOTE: These tips are to be used with continuous source vacuum handling tools. These tips will not work with self-contained tools such as the PEN-VAC™ tool.

ESD-SAFE SMALL PARTS TIPS

BUNA-N STATIC DISSIPATIVE NON-MARKING VACUUM CUPS

Buna-N Static Dissipative Non-Marking Black Vacuum Cups

Black, static dissipative Buna-N. Operating temperature limits -5°F + 250°F (-20°C + 120°C).

V9009-B	3/32" (2.38mm) diameter vacuum cup
V9013-B	1/8" (3.18mm) diameter vacuum cup
V9018-B	3/16" (4.76mm) diameter vacuum cup
V9025-B	1/4" (6.35mm) diameter vacuum cup
V9038-B	3/8" (9.53mm) diameter vacuum cup
V9050-B	1/2" (12.70mm) diameter vacuum cup
V9062-B	5/8" (15.88mm) diameter vacuum cup
V9075-B	3/4" (19.05mm) diameter vacuum cup
V9100-B	1" (25.4mm) diameter vacuum cup



Kit of 8 Buna-N Static Dissipative Non-Marking Black Vacuum Cups

Kit of (8) vacuum cups (1) 3/32" (2.38mm), (1) 1/8" (3.18mm), (1) 3/16" (4.76mm), (1) 1/4" (6.35mm), (1) 3/8" (9.53mm), (1) 1/2" (12.70mm), (1) 5/8" (15.88mm) and (1) 3/4" (19.05mm), black, static dissipative Buna-N.

V9000K8-B



25 Pack of Replacement Buna-N Static Dissipative Non-Marking Black Vacuum Cups

V9009-B-25PK	3/32" (2.38mm) diameter vacuum cups
V9013-B-25PK	1/8" (3.18mm) diameter vacuum cups
V9018-B-25PK	3/16" (4.76mm) diameter vacuum cups
V9025-B-25PK	1/4" (6.35mm) diameter vacuum cups
V9038-B-25PK	3/8" (9.53mm) diameter vacuum cups
V9050-B-25PK	1/2" (12.70mm) diameter vacuum cups
V9062-B-25PK	5/8" (15.88mm) diameter vacuum cups
V9075-B-25PK	3/4" (19.05mm) diameter vacuum cups
V9100-B-25PK	1" (25.4mm) diameter vacuum cups

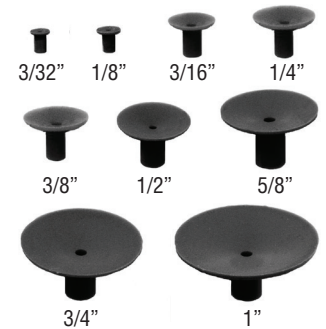


ESD-SAFE HIGH-TEMP CONDUCTIVE SILICONE VACUUM CUPS

ESD-SAFE High-Temp Conductive Silicone Black Vacuum Cups

ESD-SAFE High-Temp conductive silicone. Operating temperature limits (-55°F + 445°F) (-55°C + 230°C) 10⁴ to 10⁶ OHMS.

V9009-ESD	3/32" (2.38mm) diameter vacuum cup
V9013-ESD	1/8" (3.18mm) diameter vacuum cup
V9018-ESD	3/16" (4.76mm) diameter vacuum cup
V9025-ESD	1/4" (6.35mm) diameter vacuum cup
V9038-ESD	3/8" (9.53mm) diameter vacuum cup
V9050-ESD	1/2" (12.70mm) diameter vacuum cup
V9062-ESD	5/8" (15.88mm) diameter vacuum cup
V9075-ESD	3/4" (19.05mm) diameter vacuum cup
V9100-ESD	1" (25.4mm) diameter vacuum cup



Kit of 8 ESD-SAFE High-Temp Conductive Silicone Black Vacuum Cups

Kit of (8) vacuum cups (1) 3/32" (2.38mm), (1) 1/8" (3.18mm), (1) 3/16" (4.76mm), (1) 1/4" (6.35mm), (1) 3/8" (9.53mm), (1) 1/2" (12.70mm), (1) 5/8" (15.88mm) and (1) 3/4" (19.05mm), black, static dissipative Buna-N.

V9000K8-ESD



25 Pack of Replacement ESD-SAFE High-Temp Conductive Silicone Black Vacuum Cups

V9009-ESD-25PK	3/32" (2.38mm) diameter vacuum cups
V9013-ESD-25PK	1/8" (3.18mm) diameter vacuum cups
V9018-ESD-25PK	3/16" (4.76mm) diameter vacuum cups
V9025-ESD-25PK	1/4" (6.35mm) diameter vacuum cups
V9038-ESD-25PK	3/8" (9.53mm) diameter vacuum cups
V9050-ESD-25PK	1/2" (12.70mm) diameter vacuum cups
V9062-ESD-25PK	5/8" (15.88mm) diameter vacuum cups
V9075-ESD-25PK	3/4" (19.05mm) diameter vacuum cups
V9100-ESD-25PK	1" (25.4mm) diameter vacuum cups

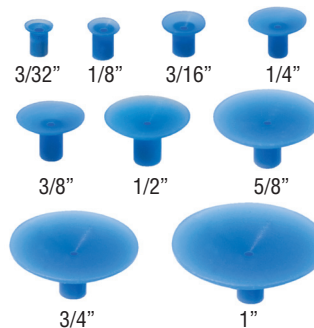


ULTRA-NON-MARKING BLUE PUREACLEAN™ VACUUM CUPS

Ultra-non-marking Non-ESD-SAFE PUREACLEAN™ Vacuum Cups

The vacuum cup material is PUREACLEAN™, a catalytically cured proprietary rubber compound. This cup material is ideally suited for handling residue sensitive items such as lenses or optical filters. Operating temperature limits (-65°F - 480°F) (-55°C - 250°C). Electrical properties: Greater than 10¹³ Ohms.

- V9009-PUR 3/32" (2.38mm) diameter vacuum cup
- V9013-PUR 1/8" (3.18mm) diameter vacuum cup
- V9018-PUR 3/16" (4.76mm) diameter vacuum cup
- V9025-PUR 1/4" (6.35mm) diameter vacuum cup
- V9038-PUR 3/8" (9.53mm) diameter vacuum cup
- V9050-PUR 1/2" (12.70mm) diameter vacuum cup
- V9062-PUR 5/8" (15.88mm) diameter vacuum cup
- V9075-PUR 3/4" (19.05mm) diameter vacuum cup
- V9100-PUR 1" (25.4mm) diameter vacuum cup



Kit of 8 Ultra-non-marking Non-ESD-SAFE PUREACLEAN™ Vacuum Cups

Kit of eight vacuum cups 3/32" (2.38mm), 1/8" (3.18mm), 3/16" (4.76mm), 1/4" (6.35mm), 3/8" (9.53mm), 1/2" (12.70mm), 5/8" (15.88mm), and 3/4" (19.05mm). The vacuum cup material is PUREACLEAN™, a catalytically cured proprietary rubber compound. This cup material is ideally suited for handling residue sensitive items such as lenses or optical filters. Operating temperature limits (-65°F - 480°F) (-55°C - 250°C). Electrical properties: Greater than 10¹³ Ohms.

V9000K8-PUR



25 Pack of Replacement Ultra-non-marking Non-ESD-SAFE PUREACLEAN™ Vacuum Cups

- V9009-PUR-25PK 3/32" (2.38mm) diameter vacuum cups
- V9013-PUR-25PK 1/8" (3.18mm) diameter vacuum cups
- V9018-PUR-25PK 3/16" (4.76mm) diameter vacuum cups
- V9025-PUR-25PK 1/4" (6.35mm) diameter vacuum cups
- V9038-PUR-25PK 3/8" (9.53mm) diameter vacuum cups
- V9050-PUR-25PK 1/2" (12.70mm) diameter vacuum cups
- V9062-PUR-25PK 5/8" (15.88mm) diameter vacuum cups
- V9075-PUR-25PK 3/4" (19.05mm) diameter vacuum cups
- V9100-PUR-25PK 1" (25.4mm) diameter vacuum cups



Here's a tip...

Cups can be cleaned easily with clean water or Isopropyl Alcohol.

VACUUM CUPS SPECIFICATIONS

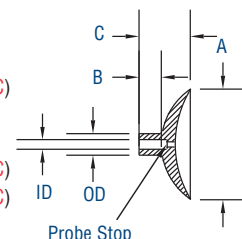
Part #	Cup Size	A Inch (mm)	B Inch (mm)	C Inch (mm)	OD Inch (mm)	ID Inch (mm)	Cup Lifting Capacity @ 10" Hg @ 5" Hg	
V9009-*	3/32" (2.38mm)	0.094 (2.38)	0.140 (3.56)	0.160 (4.06)	0.078 (1.98)	0.040 (1.02)	0.07 oz (2 grams)	0.03 oz (1 grams)
V9013-*	1/8" (3.18mm)	0.125 (3.18)	0.160 (4.06)	0.180 (4.57)	0.100 (2.54)	0.060 (1.52)	0.35 oz (10 grams)	0.17 oz (5 grams)
V9018-*	3/16" (4.76mm)	0.188 (4.76)	0.175 (4.45)	0.200 (5.08)	0.130 (3.30)	0.060 (1.52)	0.88 oz (25 grams)	0.42 oz (12 grams)
V9025-*	1/4" (6.35mm)	0.250 (6.35)	0.160 (4.06)	0.200 (5.08)	0.120 (3.04)	0.060 (1.52)	1.76 oz (50 grams)	0.88 oz (25 grams)
V9038-*	3/8" (9.53mm)	0.375 (9.53)	0.190 (4.83)	0.250 (6.35)	0.125 (3.18)	0.060 (1.52)	3.52 oz (100 grams)	1.76 oz (50 grams)
V9050-*	1/2" (12.70mm)	0.500 (12.7)	0.190 (4.83)	0.300 (7.62)	0.160 (4.06)	0.060 (1.52)	6.34 oz (180 grams)	3.17 oz (90 grams)
V9062-*	5/8" (15.88mm)	0.625 (15.88)	0.175 (4.45)	0.315 (8.00)	0.160 (4.06)	0.060 (1.52)	8.81 oz (250 grams)	4.40 oz (125 grams)
V9075-*	3/4" (19.05mm)	0.750 (19.05)	0.140 (3.56)	0.320 (8.13)	0.160 (4.06)	0.060 (1.52)	17.63 oz (500 grams)	8.81 oz (250 grams)
V9100-*	1" (25.4mm)	1.000 (25.4)	0.140 (3.56)	0.160 (4.06)	0.160 (4.06)	0.060 (1.52)	26.45 oz (750 grams)	13.22 oz (375 grams)

ESD-SAFE

- *=B Buna-N Rubber 10⁸ to 10¹¹ ohms Cup temperature range -5°F + 250°F (-20°C + 120°C)
- *=ESD Conductive Silicone 10² to 10⁵ ohms Cup temperature range -67°F + 446°F (-55°C + 230°C)

NON ESD-SAFE

- *=PUR Blue Ultra Non Marking Greater than 10¹³ ohms Cup temperature range -67°F + 482°F (-55°C + 250°C)
- *=C Clear Silicone Rubber Greater than 10¹³ ohms Cup temperature range -67°F + 482°F (-55°C + 250°C)



VACUUM CUPS & CUPS SPECIFICATIONS
NON-ESD-SAFE

PROBES WITH BUNA-N STATIC DISSIPATIVE NON-MARKING VACUUM CUPS

Bent & Straight Probes with Vacuum Cups

The vacuum cup material is black, Buna-N, static dissipative rubber compound. Our vacuum cups can handle electronic components. Operating temperature limits -5°F + 250°F (-20°C + 120°C).

Bent Probes with Vacuum Cups

V8903-D-B	Bent	1/2" (12.7mm) probe with 3/32" (2.38mm) vacuum cup
V8903-S-B	Bent	1/2" (12.7mm) probe with 1/8" (3.18mm) vacuum cup
V8903-P-B	Bent	1/2" (12.7mm) probe with 3/16" (4.76mm) vacuum cup
V8903-M-B	Bent	1/2" (12.7mm) probe with 1/4" (6.35mm) vacuum cup
V8903-L-B	Bent	1/2" (12.7mm) probe with 3/8" (9.53mm) vacuum cup
V8903-H-B	Bent	1/2" (12.7mm) probe with 1/2" (12.7mm) vacuum cup
V8903-J-B	Bent	1/2" (12.7mm) probe with 5/8" (15.88mm) vacuum cup
V8903-K-B	Bent	1/2" (12.7mm) probe with 3/4" (19.05mm) vacuum cup
V8903-O-B	Bent	1/2" (12.7mm) probe with 1" (25.4mm) vacuum cup



Straight Probes with Vacuum Cups

V8903-D-S	Straight	1/2" (12.7mm) probe with 3/32" (2.38mm) vacuum cup
V8903-S-S	Straight	1/2" (12.7mm) probe with 1/8" (3.18mm) vacuum cup
V8903-P-S	Straight	1/2" (12.7mm) probe with 3/16" (4.76mm) vacuum cup
V8903-M-S	Straight	1/2" (12.7mm) probe with 1/4" (6.35mm) vacuum cup
V8903-L-S	Straight	1/2" (12.7mm) probe with 3/8" (9.53mm) vacuum cup
V8903-H-S	Straight	1/2" (12.7mm) probe with 1/2" (12.7mm) vacuum cup
V8903-J-S	Straight	1/2" (12.7mm) probe with 5/8" (15.88mm) vacuum cup
V8903-K-S	Straight	1/2" (12.7mm) probe with 3/4" (19.05mm) vacuum cup
V8903-O-S	Straight	1/2" (12.7mm) probe with 1" (25.4mm) vacuum cup



PROBES WITH ESD-SAFE HIGH-TEMP CONDUCTIVE SILICONE VACUUM CUPS

Bent & Straight Probes With Vacuum Cups

The vacuum cup material ESD-SAFE High-Temp conductive silicone. Operating temperature limits -65°F + 445°F (-55°C + 230°C) 10⁴ to 10⁶ OHMS.

Bent Probes with Vacuum Cups

V8904-D-B	Bent	1/2" (12.7mm) probe with 3/32" (2.38mm) vacuum cup
V8904-S-B	Bent	1/2" (12.7mm) probe with 1/8" (3.18mm) vacuum cup
V8904-P-B	Bent	1/2" (12.7mm) probe with 3/16" (4.76mm) vacuum cup
V8904-M-B	Bent	1/2" (12.7mm) probe with 1/4" (6.35mm) vacuum cup
V8904-L-B	Bent	1/2" (12.7mm) probe with 3/8" (9.53mm) vacuum cup
V8904-H-B	Bent	1/2" (12.7mm) probe with 1/2" (12.7mm) vacuum cup
V8904-J-B	Bent	1/2" (12.7mm) probe with 5/8" (15.88mm) vacuum cup
V8904-K-B	Bent	1/2" (12.7mm) probe with 3/4" (19.05mm) vacuum cup
V8904-O-B	Bent	1/2" (12.7mm) probe with 1" (25.4mm) vacuum cup



Straight Probes with Vacuum Cups

V8904-D-S	Straight	1/2" (12.7mm) probe with 3/32" (2.38mm) vacuum cup
V8904-S-S	Straight	1/2" (12.7mm) probe with 1/8" (3.18mm) vacuum cup
V8904-P-S	Straight	1/2" (12.7mm) probe with 3/16" (4.76mm) vacuum cup
V8904-M-S	Straight	1/2" (12.7mm) probe with 1/4" (6.35mm) vacuum cup
V8904-L-S	Straight	1/2" (12.7mm) probe with 3/8" (9.53mm) vacuum cup
V8904-H-S	Straight	1/2" (12.7mm) probe with 1/2" (12.7mm) vacuum cup
V8904-J-S	Straight	1/2" (12.7mm) probe with 5/8" (15.88mm) vacuum cup
V8904-K-S	Straight	1/2" (12.7mm) probe with 3/4" (19.05mm) vacuum cup
V8904-O-S	Straight	1/2" (12.7mm) probe with 1" (25.4mm) vacuum cup



ESD-SAFE
PROBES WITH CUPS

PROBES WITH ULTRA NON-MARKING BLUE PUREACLEAN™ VACUUM CUPS

PROBES WITH CUPS AND ACCESSORIES

Ultra-non-marking Non-ESD-SAFE PUREACLEAN™ Bent & Straight Probes With Vacuum Cups

The vacuum cup material is PUREACLEAN™, a catalytically cured proprietary rubber compound. This Non-ESD-SAFE cup material is ideally suited for handling residue sensitive items such as lenses or optical filters. Operating temperature limits (-65°F - 480°F) (-55°C - 250°C). Electrical properties: Greater than 10¹³ Ohms.

Bent Probes with Vacuum Cups

V8908-D-B	Bent	1/2" (12.7mm) probe with 3/32" (2.38mm) vacuum cup
V8908-S-B	Bent	1/2" (12.7mm) probe with 1/8" (3.18mm) vacuum cup
V8908-P-B	Bent	1/2" (12.7mm) probe with 3/16" (4.76mm) vacuum cup
V8908-M-B	Bent	1/2" (12.7mm) probe with 1/4" (6.35mm) vacuum cup
V8908-L-B	Bent	1/2" (12.7mm) probe with 3/8" (9.53mm) vacuum cup
V8908-H-B	Bent	1/2" (12.7mm) probe with 1/2" (12.7mm) vacuum cup
V8908-J-B	Bent	1/2" (12.7mm) probe with 5/8" (15.88mm) vacuum cup
V8908-K-B	Bent	1/2" (12.7mm) probe with 3/4" (19.05mm) vacuum cup
V8908-O-B	Bent	1/2" (12.7mm) probe with 1" (25.4mm) vacuum cup



Straight Probes with Vacuum Cups

V8908-D-S	Straight	1/2" (12.7mm) probe with 3/32" (2.38mm) vacuum cup
V8908-S-S	Straight	1/2" (12.7mm) probe with 1/8" (3.18mm) vacuum cup
V8908-P-S	Straight	1/2" (12.7mm) probe with 3/16" (4.76mm) vacuum cup
V8908-M-S	Straight	1/2" (12.7mm) probe with 1/4" (6.35mm) vacuum cup
V8908-L-S	Straight	1/2" (12.7mm) probe with 3/8" (9.53mm) vacuum cup
V8908-H-S	Straight	1/2" (12.7mm) probe with 1/2" (12.7mm) vacuum cup
V8908-J-S	Straight	1/2" (12.7mm) probe with 5/8" (15.88mm) vacuum cup
V8908-K-S	Straight	1/2" (12.7mm) probe with 3/4" (19.05mm) vacuum cup
V8908-O-S	Straight	1/2" (12.7mm) probe with 1" (25.4mm) vacuum cup



VACUUM TIP KITS

Replacement Vacuum Tip Kit - Includes 9 Probes With Vacuum Cups

This kit contains five bent probes with 3/32" (2.38mm), 1/8" (3.18mm), 3/16" (4.76mm), 1/4" (6.35mm), and 3/8" (9.53mm), as well as four straight probes with 1/8" (3.18mm), 1/4" (6.35mm), 3/8" (9.53mm) and 1/2" (12.70mm).

VCS-9-B (Buna-N Static Dissipative Non-Marking Vacuum Cups With Probes)



VCS-9-ESD (High-Temp Conductive Silicone ESD-SAFE, Vacuum Cups With Probes)



VCS-9-PUR (Blue, Ultra-non-marking Non ESD-SAFE, Vacuum Cups With Probes)

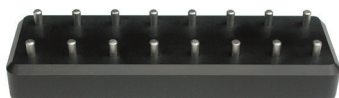


POPULAR ACCESSORIES

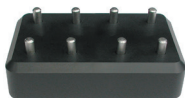
Vacuum Tips Holder With 16 or 8 Locations

Table top luer slip vacuum tips holder with non-slip rubber feet. Posts will accommodate 16 or 8 of our luer slip vacuum tips. Vacuum tips not included.

VTH-16



VTH-8



RIGID DELRIN AND TEFLON TIPS

Bent And Straight Rigid Handling Tips

These tips are designed for easy handling of optic lenses of all shapes and sizes. The deep cupped circular design will accommodate concave, convex and flat surfaces. Precision machined from Delrin or Teflon insures contamination free lens handling. For objects that are smaller than 1/8" (3.18mm) see our small parts tips on page 8. The following tips are mounted on a straight or bent 30° 1" (25.4mm) stainless steel probe with a luer slip hub. **NOTE:** This product requires a continuous vacuum source.

Delrin Bent

VRT-125-B 1/8" (3.18mm)
VRT-188-B 3/16" (4.76mm)
VRT-250-B 1/4" (6.35mm)
VRT-375-B 3/8" (9.53mm)
VRT-500-B 1/2" (12.7mm)
VRT-750-B 3/4" (19.05mm)
VRT-1000-B 1" (25.4mm)

Delrin Straight

VRT-125-S 1/8" (3.18mm)
VRT-188-S 3/16" (4.76mm)
VRT-250-S 1/4" (6.35mm)
VRT-375-S 3/8" (9.53mm)
VRT-500-S 1/2" (12.7mm)
VRT-750-S 3/4" (19.05mm)
VRT-1000-S 1" (25.4mm)



Teflon Bent

VTT-125-B 1/8" (3.18mm)
VTT-188-B 3/16" (4.76mm)
VTT-250-B 1/4" (6.35mm)
VTT-375-B 3/8" (9.53mm)
VTT-500-B 1/2" (12.7mm)
VTT-750-B 3/4" (19.05mm)
VTT-1000-B 1" (25.4mm)

Teflon Straight

VTT-125-S 1/8" (3.18mm)
VTT-188-S 3/16" (4.76mm)
VTT-250-S 1/4" (6.35mm)
VTT-375-S 3/8" (9.53mm)
VTT-500-S 1/2" (12.7mm)
VTT-750-S 3/4" (19.05mm)
VTT-1000-S 1" (25.4mm)



RIGID DELRIN AND TEFLON TIP KITS

Set Of Eight Non-Marking Rigid Delrin Vacuum Tips Kit

These tips are designed for easy handling of optic lenses of all shapes and sizes. The deep cupped circular design will accommodate concave, convex and flat surfaces. Precision machined from Delrin insures contamination free handling. Kit includes four bent 30° 1" (25.4mm) stainless steel probes with luer slip hub and four straight 1" (25.4mm) stainless steel probes with a luer slip hub with Non-marking Rigid Teflon tips sizes 1/4" (6.35mm), 3/8" (9.53mm), 1/2" (12.7mm) and 3/4" (19.05mm) diameter, and 8 position Tip Organizer/Holder (VTH-8).

NOTE: This product requires a continuous vacuum source.

VRT-8

VRT-KIT-8 (with Vacuum Tips Holder VTH-8)



Set Of Eight Non-Marking High-Temp Rigid Teflon Vacuum Tips Kit

These tips are designed for easy handling of optic lenses of all shapes and sizes. The deep cupped circular design will accommodate concave, convex and flat surfaces. Precision machined from Teflon insures contamination free handling. Kit includes four bent 30° 1" (25.4mm) stainless steel probes with luer slip hub and four straight 1" (25.4mm) stainless steel probes with a luer slip hub with Non-marking Rigid Teflon tips sizes 1/4" (6.35mm), 3/8" (9.53mm), 1/2" (12.7mm) and 3/4" (19.05mm) diameter, and 8 position Tip Organizer/Holder (VTH-8).

NOTE: This product requires a continuous vacuum source.

VTT-8

VTT-KIT-8 (with Vacuum Tips Holder VTH-8)



Vacuum Tips Holder With 16 or 8 Locations

Table top luer slip vacuum tips holder with non-slip rubber feet. Posts will accommodate 16 or 8 of our luer slip vacuum tips. Vacuum tips not included.

VTH-16



VTH-8



RIGID TIPS FOR OPTICS AND ULTRA CLEAN APPLICATIONS NON ESD-SAFE

WAFER-VAC™ ELITE VACUUM TWEEZER™ KITS

WAFER-VAC™ ELITE ESD-SAFE Kit With 8 Inch Molded PEEK™ Wafer Tip

The WAFER-VAC™ ELITE was developed as a result of customer concerns about firmly grasping critical components and not dropping them due to a vacuum leak. This VACUUM TWEEZER™ uses an integrated ten segment bar-graph-display visibly shows the vacuum level present during operation. The bar graph will show minimum vacuum pressure until a part is grasped and then when a part is grasped the bar graph displays the vacuum level presented to the part being handled. Additionally, the vacuum port integrates a user replaceable inlet filter that protects operation of the tool from dust particles. This VACUUM TWEEZER™ is available in various kits depending on your handling application.

NOTE: This item will not function properly without filter, see below for replacement intake filters (VF-40M-5). **NOTE:** Other Molded PEEK™ Wafer Tip sizes available, please see page 17, and our website.

These ESD-SAFE kits feature:

- Dimensions 8" X 3" X 3.5" (203mm X 76mm X 89mm).
- Bar graph power-on and vacuum-level indicator.
- Class 100 Cleanroom Safe.
- Whisper-quiet operation.
- Long-life pump.
- Side mounted handle holder.
- Rubber no-skid feet.
- ESD ground connection is by three wire power cord.
- Produces vacuum of up to ten inches of mercury.
- Replaceable inlet filter (additional filter included).

This kit includes:

- COILED-VACUUM-HOSE-6 (VCH-1/16-5)
- PUSH-BUTTON-WAFER-PEN (VWP-500-1/16)
- Molded PEEK™ WAFER TIP (VMWT-C)
- 3 WIRE POWER CORD



VVE-9000-MW8-110

VVE-9000-MW8-220

WAFER ADJUST-A-VAC™ VACUUM TWEEZER™ KITS

WAFER ADJUST-A-VAC™ ESD-SAFE Kit With 8 Inch Molded PEEK™ Wafer Tip

The WAFER ADJUST-A-VAC™ was developed as a result of customer concerns about manual handling of very thin/delicate substrates, wafers, MEMS devices and other very fragile components. This vacuum-tweezer allows the operator to adjust the vacuum level from just below atmospheric pressure to up to ten inches of mercury depending on the fragility of the part being handled. An integrated ten segment bar-graph display visibly shows the vacuum level present during handling operations. The bar graph will show minimum vacuum pressure until a part is grasped and then the bar graph displays the vacuum level presented to the part being handled. Additionally, the vacuum port integrates a user replaceable inlet filter that protects operation of the tool from dust particles. This VACUUM TWEEZER™ is available in various kits depending on your handling application. Kits are available in 110 or 220 volt operation. **NOTE:** This item will not function properly without filter, see below for replacement intake filters (VF-40M-5). **NOTE:** Other Molded PEEK™ Wafer Tip sizes available, please see page 17, and our website.

This ESD-SAFE kit features:

- Dimensions 8" X 3" X 3.5" (203mm X 76mm X 89mm).
- Bar graph power-on and vacuum-level indicator.
- Adjustment knob for vacuum level.
- Class 100 Cleanroom Safe.
- Rubber no-skid feet.
- ESD ground connection is by three wire power cord.
- Produces vacuum of up to ten inches of mercury.
- Replaceable inlet filter (additional filter included).
- Side mounted handle holder.

This kit includes:

- COILED-VACUUM-HOSE-6 (VCH-1/16-5)
- PUSH-BUTTON-WAFER-PEN (VWP-500-1/16)
- Molded PEEK™ WAFER TIP (VMWT-C)
- 3 WIRE POWER CORD



AV-5000-MW8-110

AV-5000-MW8-220

Intake Replacement Filters

Replacement filter for TV-1500 and ADJUST-A-VAC™ units. Includes a set of five 40 micron replaceable filters.

VF-40M-5



WAFER HANDLING SYSTEMS
CLEANROOM AND ESD-SAFE

WAFER PAC-VAC™ KITS

WAFER PAC-VAC™ 9 Volt Battery Operated ESD-SAFE Cleanroom Safe VACUUM TWEEZER™ Kit

WAFER PAC-VAC™ vacuum tool kit, battery operated. The PAC-VAC™ is battery operated and self-contained, runs up to eight hours continuously on one 9 volt alkaline battery. This versatile unit can be clipped to your belt or pocket for one-handed portable operation. The PAC-VAC™ is constructed with ESD-SAFE materials.

This ESD-SAFE kit features:

- * Power on LED indicator.
- * A belt/pocket clip on the housing.
- * Lightweight - only 156 grams.
- * Produces vacuum up to 16 inches of mercury.

This kit includes:

- COILED-VACUUM-HOSE-6 (VCH-1/16-6)
- PUSH-BUTTON-WAFER-PEN (VWP-500-1/16)
- Molded PEEK™ WAFER TIP
- 9 VOLT BATTERY

- V3200-CLN-MW4-1/16** Handling up to 4" (100mm) wafer
- V3200-CLN-MW6-1/16** Handling up to 6" (150mm) wafer
- V3200-CLN-MW8-1/16** Handling up to 8" (200mm) wafer



PUSH-BUTTON WAFER WAND™ KITS

PUSH-BUTTON WAFER WAND™ Kits

The lightweight push-button WAFER WAND™ is designed for connection to continuous vacuum systems. Operation is controlled by pushing the button. This tool can be used with an in-house vacuum system or with one of Virtual Industries high performance continuous vacuum systems. Can be used with all of our press-fit tips, adapters and vacuum hoses. Vacuum normally on – Push button to shut off vacuum and to release the wafer. Handling tool constructed from Static Dissipative Delrin. The source vacuum is shut off when the handle is placed in the holder. Kits include a wafer wand, 6' of coiled vacuum hose, barb threaded adapter, a VBM-2 holder for the wafer wand and a wafer tip.

NOTE: Requires continuous vacuum source.



- VWVB-2A-MW4-1/16** With 1/16" (1.6mm) ID black vacuum hose - Wafer Tip (VMWT-A) handles wafers up to 4"
- VWVB-2A-MW6-1/16** With 1/16" (1.6mm) ID black vacuum hose - Wafer Tip (VMWT-B) handles wafers up to 6"
- VWVB-2A-MW8-1/16** With 1/16" (1.6mm) ID black vacuum hose - Wafer Tip (VMWT-C) handles wafers up to 8"
- VWVB-2A-MW12-1/16** With 1/16" (1.6mm) ID black vacuum hose - Wafer Tip (VMWT-D) handles wafers up to 12"

SLIDE SWITCH WAFER WAND™ KITS

SLIDE SWITCH WAFER WAND™ Kits

The lightweight, slide switch WAFER-WAND™ is designed for connection to continuous vacuum systems. Operation is controlled by sliding the switch forward to pick up a wafer and sliding the switch back which turns off the vacuum and releases the wafer. With the switch in the back position, vacuum is also blocked so that excess demand is not placed on the vacuum line system. This tool can be used with an in-house vacuum system or with one of Virtual Industries high performance continuous vacuum systems. Can also be used with all of our press-fit tips, adapters and vacuum hoses. Handling tool constructed from Static Dissipative Delrin. Kits include a wafer wand, 6' of coiled vacuum hose, barb threaded adapter, a VBM-5 holder for the WAFER-WAND™ and a wafer tip. **NOTE:** Requires continuous vacuum source.



- VWW-2-SD-MW4-1/16** With 1/16" (1.6mm) ID black vacuum hose - Wafer Tip (VMWT-A) handles wafers up to 4"
- VWW-2-SD-MW6-1/16** With 1/16" (1.6mm) ID black vacuum hose - Wafer Tip (VMWT-B) handles wafers up to 6"
- VWW-2-SD-MW8-1/16** With 1/16" (1.6mm) ID black vacuum hose - Wafer Tip (VMWT-C) handles wafers up to 8"
- VWW-2-SD-MW12-1/16** With 1/16" (1.6mm) ID black vacuum hose - Wafer Tip (VMWT-D) handles wafers up to 12"

PORTA-WAND™ ELITE ESD-SAFE Kit With 8 Inch Molded PEEK™ Wafer Tip

The PORTA-WAND™ ELITE kit comes with a detachable 9.6V NiMH rechargeable battery pack, an in-stand charger and one wafer tip. The detachable battery pack (VPWE-150) contains the rear exhaust filter for the entire tool to ensure better than Class 1 performance. Produces vacuum up to 16 inches of mercury. The battery pack can be recharged when attached to the tool or when separated from the tool. Ideal for handling wafers, solar cells, disk media, flat panels, or any item that has a flat hard surface. A power on indicator flashes when the battery pack needs to be recharged or interchanged with a fully charged battery pack. A PUSH-BUTTON provides easy on/off control with a lock to on position. An internal air filter (VF-40M-5) is replaceable from the front of the tool. Tool measurement 8" X 1" (203.2mm X 25.4mm).

NOTE: Other Molded PEEK™ Wafer Tip sizes available, please see page 17 and our website.

This kit includes:

- IN-STAND CHARGER
- Molded PEEK™ WAFER TIP (VMWT-C)
- DETACHABLE 9.6V NiMH RECHARGEABLE BATTERY PACK (VPWE-150)
- INTERNAL AIR FILTER (VF-40M-5) IS REPLACEABLE
- 110/220 AUTO SWITCHABLE POWER SUPPLY



VPWE7000AR-MW8

SERIES 3 PORTA-WAND™ ELITE ESD-SAFE Kit With 8 Inch Molded PEEK™ Wafer Tip

The SERIES 3 PORTA-WAND™ ELITE kit comes with a detachable 9.6V NiMH rechargeable battery pack, an in-stand charger and one Molded PEEK™ Wafer Tip. The detachable battery pack (VPWE-150) contains the rear exhaust filter for the entire tool to ensure better than Class 1 performance. Produces vacuum up to 16 inches of mercury. The battery pack can be recharged when attached to the tool or when separated from the tool. Ideal for handling wafers, disk media, flat panels, or any item that has a flat hard surface. The OPERATION INDICATOR turns on only when proper vacuum has been established to firmly grip the wafer. The same light flashes when the battery pack needs to be recharged or interchanged with a fully charged battery pack. A PUSH-BUTTON provides easy on/off control with a lock to on position. An internal air filter (VF-40M-5) is replaceable from the front of the tool. Tool measurement 9" X 1" (228.6mm X 25.4mm). **NOTE:** Other Molded PEEK™ Wafer Tip sizes available, please see page 17 and our website.

This kit includes:

- IN-STAND CHARGER
- Molded PEEK™ WAFER TIP (VMWT-C)
- DETACHABLE 9.6V NiMH RECHARGEABLE BATTERY PACK (VPWE-150)
- INTERNAL AIR FILTER (VF-40M-5) IS REPLACEABLE
- 110/220 AUTO SWITCHABLE POWER SUPPLY

Operational indicator light



VPWE7300AR-MW8

Spare Battery Pack

Purchase a spare battery pack for your PORTA-WAND™ ELITE hand tool so you can charge one while using another. This 9.6V NiMH rechargeable battery pack (VPWE-150) also contains the rear exhaust filter for the entire tool to ensure Class 1 performance. The battery pack can be recharged either separately or attached to the tool.



VPWE-150-SILVER

PORTA-WAND™ ESD-SAFE Kit With 8 Inch Molded PEEK™ Wafer Tip

PORTA-WAND™ with Molded PEEK™ wafer tip and charger stand, push button control. The PORTA-WAND™ kit comes with a fixed internal 9.6V NiMH (factory replaceable) rechargeable battery, in-stand charger (VPW-CHARGER-110-220) and one wafer tip. Ideal for handling wafers, disk media or any item that has a flat, hard surface. Rear exhaust of the pump air is standard on these units. The battery low indicator flashes red when the battery needs to be recharged. A PUSH-BUTTON provides easy on/off control. An internal air filter (VF-40M-5) is replaceable from the front of the tool. Tool measurement 7" X 1" (177.8mm X 25.4mm). **NOTE:** Other Molded PEEK™ Wafer Tip sizes available, please see page 17 and our website.

This kit includes:

- IN-STAND CHARGER
- Molded PEEK™ WAFER TIP (VMWT-C)
- INTERNAL AIR FILTER (VF-40M-5) IS REPLACEABLE
- 110/220 AUTO SWITCHABLE POWER SUPPLY



VPW6000AR-MW8

PORTA-VAC™ II 9 VOLT BATTERY OPERATED VACUUM TWEEZER™ KIT

PORTA-VAC™ II Kit With 8 Inch Molded PEEK™ Wafer Tip

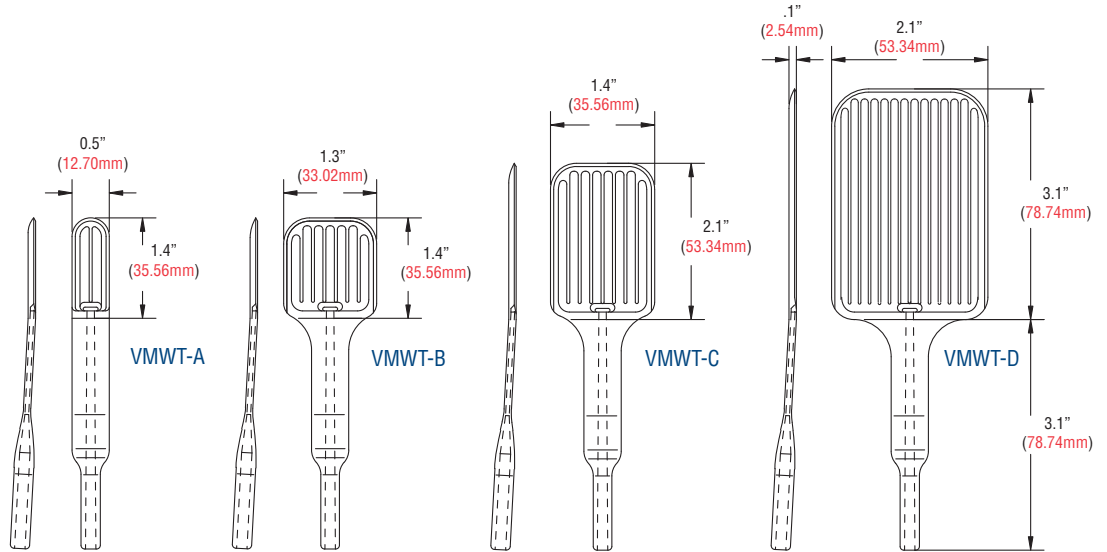
This wafer handling tool kit comes with one Molded PEEK™ wafer tip (VMWT-C). Ideal for handling wafers, disk media or any item that has a flat, hard surface. A disposable 9V battery is included. Rear exhaust of the pump air is standard on these units. The battery low indicator flashes red when the battery needs to be changed or recharged. A switch setting on the bottom of the tool allows selection of alkaline battery or NiMH battery discharge characteristics for the battery low indicator. A large on/off switch provides easy on/off control. An internal air filter (VF-40M-5) is replaceable from the front of the tool. Tool measurement 7 1/2" X 1" (190.5mm X 25.4mm). **NOTE:** Other Molded PEEK™ Wafer Tip sizes available, please see page 17 and our website. **NOTE:** Optional battery pack and charger system available.

PV4000A-MW8



WAFER HANDLING TIPS CLEANROOM AND ESD-SAFE

PRESS-FIT MOLDED PEEK™



Molded PEEK™ Wafer Tips

These Wafer Tips are molded from ESD-SAFE Molded PEEK™ plastic to handle wafers up to 100°C. The low profile of the wafer tip head provides easy access to wafers in industry standard boats. These tips attach to all of our wafer handling tools as well as competitive systems.

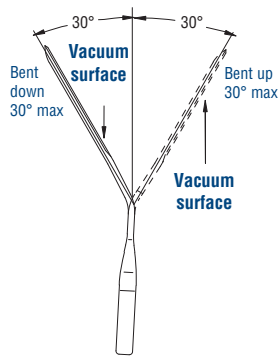
NOTE: For High-Temperature Hard Anodized Wafer Tips (VHT series), visit our online store at www.virtual-ii.com

VMWT-A Recommended for handling up to 4" (100mm) wafers

VMWT-B Recommended for handling up to 6" (150mm) wafers

VMWT-C Recommended for handling up to 8" (200mm) wafers

VMWT-D Recommended for handling larger sized wafers (maximum 20° up or down bend)



Molded PEEK™ Wafer Tips VMWT-A, VMWT-B and VMWT-C are available with a 10°, 20° or 30° bend in the up or down direction as shown in the left drawing. To order a tip with the up or down bend, add the angle plus a "U" for up or a "D" for down to the part number.

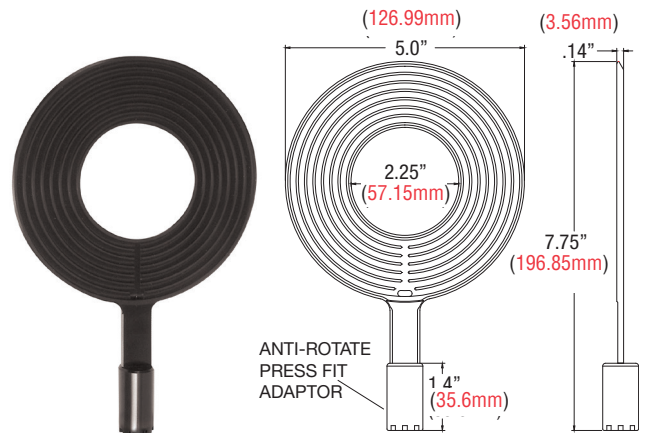
EXAMPLE: Part number VMWT-A20D is a VMWT-A Wafer Tip with a 20 degree bend in the down direction. Custom angles are available upon request. Pricing is as above.

300mm Wafer Handling Tip

Designed for safely handling 300mm wafers. The large hard anodized aluminum five inch (127mm) outside diameter provides the support required to securely hold the large wafer. The center hole helps reduce the wafer tip weight and minimizes contact area. The dual press fit adapter provides both inner and outer o-ring gripping areas for added handling security. Now with anti-rotate tip.

NOTE: Straight direction only, no bends available.

VWT-5R-AR



CUSTOM VACUUM TIPS FOR MULTIPLE APPLICATIONS

Custom And Semi-Custom Vacuum Handling Tips

Many of our customers' special handling needs can be solved with our semi-custom or custom handling tip. Some of the custom tips developed in the past are shown on the right side bar.

Dual Cup Handling Tips

These tips are application specific. You specify the end to end spacing, as well as the size and material of the vacuum cups to be used. Typical applications are for items that are elongated or where an opening needs to be bridged. These tips can typically be used with all of our vacuum handling tools.

Three Cup Tips

These tips are application specific. You specify the triangular area to be formed, as well as the size and material of the vacuum cups used. Typical applications are for items that are large odd shaped or where an opening needs to be bridged. These tips can typically be used with all of our vacuum handling tools.

Extended Reach Tips

We can make vacuum tips with extended reaches up to 18 inches in length.

Right Angle Tips

We can form the metal probe section to any angle up to 90 degrees.

Custom Handling tips

Custom handling tips typically require drawing or parts from the customer describing the exact dimensions of the part to be handled or the vacuum tip to be manufactured. Our manufacturing department will then work with your engineers to determine the feasibility and cost of the vacuum tip.

Procedure of Semi-Custom and Custom Tips

Semi-Custom Tips require you to specify the end to end spacing as well as the size and material of the vacuum cups to be used.

Custom Tips require you to send samples of your part(s), and or drawings, along with exact dimensions and description of your application to our Technical Applications Department at: **Virtual Industries, Inc., Attn: Technical Applications Department, 2130 Victor Place, Colorado Springs, CO 80915**

Virtual Industries, Inc. will respond with a detailed recommendation and quote for your order. Please allow up to two weeks.

Requirements

1. A valid credit card OR purchase order number with a hard copy must be submitted showing the full value and payment of the custom order.
2. Full name and phone number of person(s) testing the unit(s).
3. If not a current customer, credit references must be provided (unless a credit card number is provided).

Conditions

There are no returns or refunds on custom orders.



CUSTOM VACUUM TIPS & 10 DAY TRIAL

10 DAY TRIAL DEMO PROGRAM (U.S.A. CUSTOMERS ONLY)

Vacuum Handling Solutions

We offer several methods for our customers to evaluate our products before purchasing them for your application:

1. The first option is to send samples of your part(s), along with a brief description of your application to our Technical Applications Department at: **Virtual Industries, Inc., Attn: Technical Applications Department, 2130 Victor Place, Colorado Springs, CO 80915**

Virtual Industries, Inc. will respond with a detailed recommendation for your personal application. Most applications can be accomplished with our wide selection of vacuum tools and tips, and occasionally we will need to fashion a custom tip for an application.

2. The second option and most popular method is to request a "Trial Unit" to be sent to your location. This will give your technical staff **10 DAYS** to determine if our tools will work in your application. A new unit will be sent to you for the trial so it is easy to purchase if it will work in your application. Below are the requirements.

Requirements

1. A purchase order must be submitted showing the full value of the custom order.
2. Include the contact information of the person placing the custom order.
3. If not a current customer, credit references must be provided (unless a credit card number is provided).

Conditions

1. The trial period will begin once the unit has been physically received at your location as noted by carrier receipt.
2. Virtual Industries' MUST receive a phone call, fax or e-mail stating whether the unit(s) will be purchased or returned within the ten day trial. (RMA # Required for ALL returns, return shipping is paid by customer)
3. If the unit(s) is not returned in an acceptable amount of time, the customer will be billed for the full value of the order including shipping charges.
4. If the unit(s) is damaged or abused in any way, the cost for the repair of the unit(s) will be the sole responsibility of the customer.
5. If an extension is needed, please notify Virtual Industries prior to shipment or before the end of the trial period for approval.

For over thirty-five years we have been a leading supplier of vacuum handling solutions to the world's high technology firms. Our patented ESD safe products are used by clean room personnel, electronic assemblers, semiconductor manufacturers, the optics industry and universities around the world. Virtual Industries success has come from developing innovative vacuum tweezer tools to eliminate part damage and increase productivity in pick and place operations throughout high tech industries. These tools provide customer specific solutions that make assembly and processing operations more productive and ergonomic. Parts range in size from 0.004" (0.1mm) up to 12.0" (300mm) for easy handling.



VIRTUAL
INDUSTRIES, INC.

2130 Victor Place
Colorado Springs, CO 80915 USA
Phone: (719) 572-5566
Fax: (719) 572-5504
Online Store: www.virtual-ii.com
E-mail: info@virtual-ii.com



MADE IN USA

Catalog 45 C

