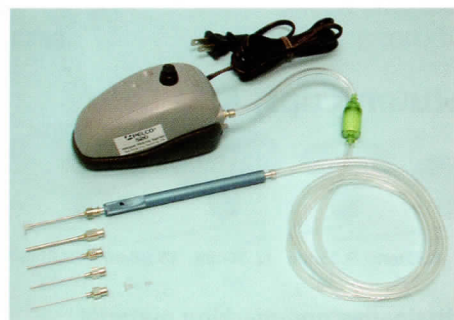


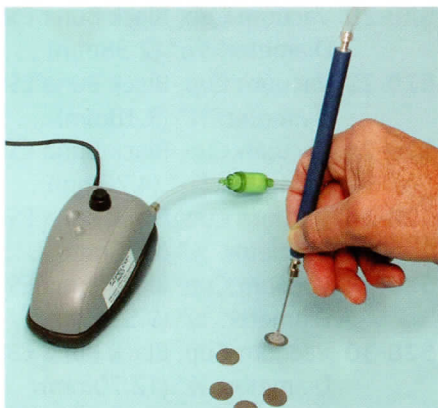
## Vacuum Transfer Devices

### ■ PELCO® Vacuum Pick-Up System



Vacuum Pick-up System including pump, finger control pen, five interchangeable tips (12, 16, 18, 20 and 25 gauge), vacuum cups (.25", .14" and .4"), filter and hose.

Use this system for picking up delicate lightweight material with finger controlled vacuum. Attach various hollow needle tips (5 with system) or rubber cups (see below) onto the pick-up pen. Use easy finger control for picking up or releasing. Not for wet or corrosive materials. Unit comes with an on/off switch on top of housing.



handle and transport grids and wafers without the use of tweezers

The 520 PELCO® Vacuum Pick-Up System has a vacuum specification of 8" Hg. This equates to a suction force of 2.75g/mm<sup>2</sup>. Due to cup deformation and leakage, we have determined the practical lifting capacity for the cups and tips.

#### Lifting Capacity for the Cups and Tips:

Cup or Tip Prod. No.	Cup or Tip Size	Size in mm	Lifting Capacity in g
520-4	Vac Cup 0.4"	10.16	70
520-5	Vac Cup 0.25"	6.35	35
520-6	Vac Cup 0.14"	3.56	10
520-7	Tip, 12 gauge	2.77	5
520-8	Tip, 16 gauge	1.65	1
520-9	Tip, 18 gauge	1.27	0.5
520-10	Tip, 20 gauge	0.9	0.3
520-11	Tip, 25 gauge	0.52	0.05

#### System consists of:

- 520 Vacuum Pump only, 110V . . . . .each
- 520-220 Vacuum Pump only, 220V . . . . .each
- 520-3 In-line Filter . . . . .each
- 520-4 Vacuum Cup, 0.400" (10.16mm) dia . . . . .each
- 520-5 Vacuum Cup, 0.250" (6.35mm) dia . . . . .each
- 520-6 Vacuum Cup, 0.140" (3.56mm) dia . . . . .each
- 520-7 Tip, 12 gauge, 0.093" (2.36mm) ID . . . . .each

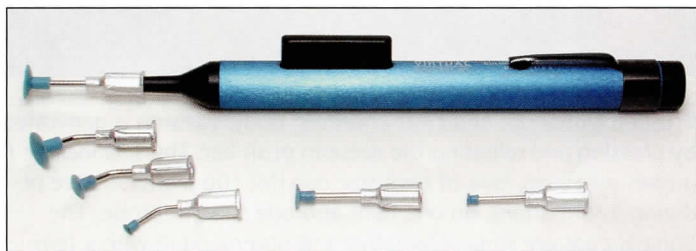
- 520-8 Tip, 16 gauge, 0.0465" (1.18mm) ID . . . . .each
- 520-9 Tip, 18 gauge, 0.0315" (0.800mm) ID . . . . .each
- 520-10 Tip, 20 gauge, 0.022" (0.558mm) ID . . . . .each
- 520-11 Tip, 25 gauge, 0.0095" (0.241mm) ID . . . . .each
- 520-12 Pick-up Pen . . . . .each
- 520-13 Silicon vacuum tubing 1/8" ID x 1/16" wall, 4' . . . . .each

#### Ordering Information:

- 520-1 PELCO® Vacuum Pick-Up System, 110V . . . . .each
- 520-220 PELCO® Vacuum Pick-Up System, 220V . . . . .each

### ■ Pen-Vac™ Tweezer

*pick up small delicate objects*



Self-contained vacuum needs no power supply or batteries yet lifts up to 50 gram items with flat surfaces. Pocket-fitting and contains a storage space in the handle for the probes. Weighs less than 30g (~1 oz.). Pen length with probe is 171mm (6-3/4"). Blue anodized aluminum body. Comes with 6 vacuum probes that are 1-1/4" long (three angled and three straight). Blue silicon rubber cups that come with the Pen-Vac™ Tweezer are two each of 3.2, 6.4 and 9.5mm (1/8, 1/4 and 3/8").

Cup diameters available in the blue silicon rubber are 3.2, 2.4, 6.4, 9.5, 12.7, 15.9 and 19.1mm (1/8, 2/32, 1/4, 3/8, 1/2, 5/8, and 3/4").

- 528 Pen-Vac™, complete with 6 probes and cups . . . . .each
- 528-1 Pen-Vac™ Cup, 2.4mm (3/32") dia. . . . .each
- 528-8 Pen-Vac™ Cup, 3.2mm (1/8") dia. . . . .each
- 528-3 Pen-Vac™ Cup, 6.4mm (1/4") dia. . . . .each
- 528-4 Pen-Vac™ Cup, 9.5mm (3/8") dia. . . . .each
- 528-5 Pen-Vac™ Cup, 12.7mm (1/2") dia. . . . .each
- 528-6 Pen-Vac™ Cup, 15.9mm (5/8") dia. . . . .each
- 528-7 Pen-Vac™ Cup, 19.1mm (3/4") dia. . . . .each
- 528-10 Pen-Vac™ Cups, set of 7: 2.4 to 19.1mm (3/32 to 3/4") . . . . .each

**Note: all of the Probes and Cups on the following pages will fit the PELCO® Vacuum Pick-Up System as well as the Pen-Vac™ Tweezer.**

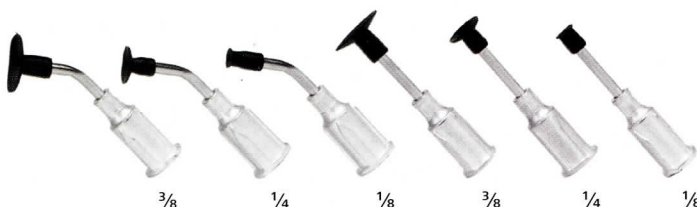
# VACUUM TRANSFER DEVICES

ESD-Safe Pen-Vac™; Vacuum Cups

## ■ ESD-Safe Pen-Vac™ with 6 Probes and Cups



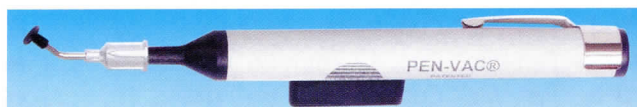
Brushed aluminum and clear anodized body; vacuum is generated by pressing and releasing the vacuum push bar. The sets include 6 probes and cups, two of each size cup (for cup diameters see ordering information), on one bent and one straight probe. The Buna-N cups are static dissipative and non-marking with a temperature range of -20°C to 120°C (-4° to 248°F). The cups also can be mounted directly to the tool.



typical set of probes and cups



Standard 146mm (5-3/4") long x 12.7mm (1/2") diameter



Junior 127mm (5") long x 12.7mm (1/2") diameter



Cup diameters:

3.2mm (1/8"), 4.8mm (3/16"), 6.4mm (1/4")

528-14 Pen-Vac™, ESD-safe, Standard,  
6 probes and cups .....each

528-15 Pen-Vac™, ESD-safe, Junior,  
6 probes and cups .....each



Cup diameters:

3.2mm (1/8"), 6.4mm (1/4"), 9.5mm (3/8")

528-16 Pen-Vac™, ESD-safe, Standard,  
6 probes and cups .....each

528-17 Pen-Vac™, ESD-safe, Junior,  
6 probes and cups .....each

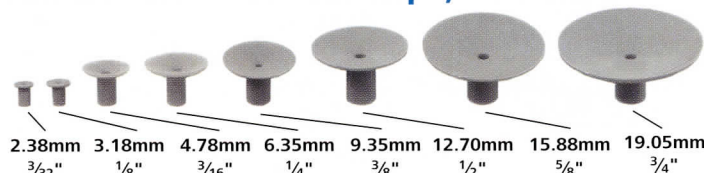
Cups can be mounted directly to the tool

Cup diameters: 6.4mm (1/4"), 9.5mm (3/8"), 12.7mm (1/2")

528-18 Pen-Vac™, ESD-safe, Standard,  
6 probes and cups .....each

528-19 Pen-Vac™, ESD-safe, Junior,  
6 probes and cups .....each

## ■ Pen-Vac™ Vacuum Cups, ESD-Safe



**Black Buna-N static dissipative non-marking material**  
(-20°C to +120°C / -4°F to +248°F)

528-20 Vacuum Cup, Black Buna ESD,  
Diameter: 3/32" (2.38mm) .....each

528-22 Vacuum Cup, Black Buna ESD,  
Diameter: 1/8" (3.18mm) .....each

528-24 Vacuum Cup, Black Buna ESD,  
Diameter: 3/16" (4.76mm) .....each

528-26 Vacuum Cup, Black Buna ESD,  
Diameter: 1/4" (6.35mm) .....each

528-28 Vacuum Cup, Black Buna ESD,  
Diameter: 3/8" (9.53mm) .....each

528-30 Vacuum Cup, Black Buna ESD,  
Diameter: 1/2" (12.70mm) .....each

528-32 Vacuum Cup, Black Buna ESD,  
Diameter: 5/8" (15.88mm) .....each

528-34 Vacuum Cup, Black Buna ESD,  
Diameter: 3/4" (19.05mm) .....each

528-36 Kit: 1 vacuum cup, Black Buna ESD  
of each size (8 total) .....each

**ESD black high-temperature conductive silicone material**  
(-55°C to +250°C / -67°F to 482°F)

528-40 Vacuum Cup, Black Silicone ESD,  
Diameter: 3/32" (2.38mm) .....each

528-42 Vacuum Cup, Black Silicone ESD,  
Diameter: 1/8" (3.18mm) .....each

528-44 Vacuum Cup, Black Silicone ESD,  
Diameter: 3/16" (4.76mm) .....each

528-46 Vacuum Cup, Black Silicone ESD,  
Diameter: 1/4" (6.35mm) .....each

528-48 Vacuum Cup, Black Silicone ESD,  
Diameter: 3/8" (9.53mm) .....each

528-50 Vacuum Cup, Black Silicone ESD,  
Diameter: 1/2" (12.70mm) .....each

528-52 Vacuum Cup, Black Silicone ESD,  
Diameter: 5/8" (15.88mm) .....each

528-54 Vacuum Cup, Black Silicone ESD,  
Diameter: 3/4" (19.05mm) .....each

528-56 Kit: 1 vacuum cup, Black Silicone ESD  
of each size (8 total) .....each

*Vacuum Cups and Probes are continued on the next page*

### ■ Pen-Vac™ Vacuum Cups

see illustrations on previous page

#### C - high temperature clear silicone material

(-55°C to +250°C / -67°F to 482°F)

- 528-70** Vacuum Cup, C, Diameter:  $\frac{3}{32}$ " (2.38mm) . . .each
- 528-72** Vacuum Cup, C, Diameter:  $\frac{1}{8}$ " (3.18mm) . . .each
- 528-74** Vacuum Cup, C, Diameter:  $\frac{3}{16}$ " (4.76mm) . . .each
- 528-76** Vacuum Cup, C, Diameter:  $\frac{1}{4}$ " (6.35mm) . . .each
- 528-78** Vacuum Cup, C, Diameter:  $\frac{3}{8}$ " (9.53mm) . . .each
- 528-80** Vacuum Cup, C, Diameter:  $\frac{1}{2}$ " (12.70mm) . . .each
- 528-82** Vacuum Cup, C, Diameter:  $\frac{5}{8}$ " (15.88mm) . . .each
- 528-84** Vacuum Cup, C, Diameter:  $\frac{3}{4}$ " (19.05mm) . . .each
- 528-86** Kit: 1 vacuum cup, C, of each size (8 total) . . .each

### ■ Metal Probes for Pen-Vac™



Consists of a metal hub that fits any of the vacuum-handling tools, shown without cups.

see illustration on previous page for cup details

< Left to right:

$\frac{1}{2}$ " long, straight; 1" long, straight;  
 $\frac{1}{2}$ " long, bent; 1" long, bent

#### Metal Probes, $\frac{1}{2}$ " long, Straight with ESD-safe Vacuum Cups (Black Buna-N static dissipative non-marking cup)

- 528-110** Metal Probe  $\frac{1}{2}$ ", straight with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{3}{32}$ " (2.38mm) . . .each
- 528-112** Metal Probe  $\frac{1}{2}$ ", straight with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{1}{8}$ " (2.38mm) . . .each
- 528-114** Metal Probe  $\frac{1}{2}$ ", straight with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{3}{16}$ " (2.38mm) . . .each
- 528-116** Metal Probe  $\frac{1}{2}$ ", straight with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{1}{4}$ " (2.38mm) . . .each
- 528-118** Metal Probe  $\frac{1}{2}$ ", straight with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{3}{8}$ " (2.38mm) . . .each
- 528-120** Metal Probe  $\frac{1}{2}$ ", straight with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{1}{2}$ " (2.38mm) . . .each
- 528-122** Metal Probe  $\frac{1}{2}$ ", straight with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{5}{8}$ " (2.38mm) . . .each
- 528-124** Metal Probe  $\frac{1}{2}$ ", straight with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{3}{4}$ " (2.38mm) . . .each

#### Metal Probes, 1" long, Straight with ESD-safe Vacuum Cups (Black Buna-N static dissipative non-marking cup)

- 528-140** Metal Probe 1", straight with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{3}{32}$ " (2.38mm) . . .each
- 528-142** Metal Probe 1", straight with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{1}{8}$ " (2.38mm) . . .each
- 528-144** Metal Probe 1", straight with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{3}{16}$ " (2.38mm) . . .each
- 528-146** Metal Probe 1", straight with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{1}{4}$ " (2.38mm) . . .each
- 528-148** Metal Probe 1", straight with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{3}{8}$ " (2.38mm) . . .each

- 528-150** Metal Probe 1", straight with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{1}{2}$ " (2.38mm) . . .each
- 528-152** Metal Probe 1", straight with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{5}{8}$ " (2.38mm) . . .each
- 528-154** Metal Probe 1", straight with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{3}{4}$ " (2.38mm) . . .each

#### Metal Probes, $\frac{1}{2}$ " long, Bent with ESD-safe Vacuum Cups (Black Buna-N static dissipative non-marking cup)

- 528-170** Metal Probe  $\frac{1}{2}$ ", bent with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{3}{32}$ " (2.38mm) . . .each
- 528-172** Metal Probe  $\frac{1}{2}$ ", bent with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{1}{8}$ " (2.38mm) . . .each
- 528-174** Metal Probe  $\frac{1}{2}$ ", bent with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{3}{16}$ " (2.38mm) . . .each
- 528-176** Metal Probe  $\frac{1}{2}$ ", bent with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{1}{4}$ " (2.38mm) . . .each
- 528-178** Metal Probe  $\frac{1}{2}$ ", bent with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{3}{8}$ " (2.38mm) . . .each
- 528-180** Metal Probe  $\frac{1}{2}$ ", bent with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{1}{2}$ " (2.38mm) . . .each
- 528-182** Metal Probe  $\frac{1}{2}$ ", bent with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{5}{8}$ " (2.38mm) . . .each
- 528-184** Metal Probe  $\frac{1}{2}$ ", bent with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{3}{4}$ " (2.38mm) . . .each

#### Metal Probes, 1" long, Bent with ESD-safe Vacuum Cups (Black Buna-N static dissipative non-marking cup)

- 528-210** Metal Probe 1", bent with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{3}{32}$ " (2.38mm) . . .each
- 528-212** Metal Probe 1", bent with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{1}{8}$ " (2.38mm) . . .each
- 528-214** Metal Probe 1", bent with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{3}{16}$ " (2.38mm) . . .each
- 528-216** Metal Probe 1", bent with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{1}{4}$ " (2.38mm) . . .each
- 528-218** Metal Probe 1", bent with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{3}{8}$ " (2.38mm) . . .each
- 528-220** Metal Probe 1", bent with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{1}{2}$ " (2.38mm) . . .each
- 528-222** Metal Probe 1", bent with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{5}{8}$ " (2.38mm) . . .each
- 528-224** Metal Probe 1", bent with Vacuum Cup, Black Buna ESD, Diameter:  $\frac{3}{4}$ " (2.38mm) . . .each

#### Metal Probes Without Cups

- 528-240** Metal Probe 18 ga., bent  $\frac{1}{2}$ " (12.7mm L) . . .each
- 528-242** Metal Probe 18 ga., straight  $\frac{1}{2}$ " (12.7mm L) each
- 528-244** Metal Probe 18 ga., bent 1" (25.4mm L) . . .each
- 528-246** Metal Probe 18 ga., straight 1" (25.4mm L) each
- 528-248** Metal Probe 15 ga., bent  $\frac{1}{2}$ " (12.7mm L) . . .each
- 528-250** Metal Probe 15 ga., straight  $\frac{1}{2}$ " (12.7mm L) each
- 528-252** Metal Probe 15 ga., bent 1" (25.4mm L) . . .each
- 528-254** Metal Probe 15 ga., straight 1" (25.4mm L) each

**Note:** 18 gauge= 0.05" (1.27mm); 15 gauge= 0.0725" (1.84mm)

# VACUUM TRANSFER DEVICES

## Porta-Wand® and Porta-Vac II® Vacuum Handling Tools for Wafers

### Porta-Wand® and Porta-Vac II® Vacuum Handling Tools for Wafers

- Portable self-contained continuous vacuum systems
- Uses no hoses, replaces tweezers and hose-style wands
- High-performance pumps, lifts over 500 grams
- Handles up to 12 inch wafers, disk media or flat, hard surface items
- Flashing LED indicates low battery
- 9.6 volt NiMH rechargeable battery system (optional on Porta-Vac II)
- Includes one ESD-safe molded wafer tip, additional tips available
- Tested to Class 1 cleanroom levels, customer replaceable 0.2 micron filter
- Vacuum up to 22 inches of mercury at sea level
- Weighs only 6 ounces with battery
- Exhaust exits from rear, away from wafer
- Made in the USA

#### ■ Porta-Wand®



Picks up 4, 6, 8, or 12 inch wafers (102, 152, 203, 300mm), disk media or flat, hard surface items.

The Porta-Wand® kit comes with a fixed internal 9.6V NiMH rechargeable battery, in-stand charger and one wafer tip. Lifts over 500 grams. Rear exhaust of the pump air is standard on these units.

A "battery-low" indicator flashes when recharging is required. A PUSH-BUTTON provides easy on/off control. An internal air filter is replaceable from the front of the tool, and an internal exhaust filter ensures better than Class 1 performance. Optional wall mounting bracket is available.

Recharge Time: 2 hours

Run Time: 3 - 4 hours continuous per charge

12" wafer model includes operational vacuum indicator that sig-

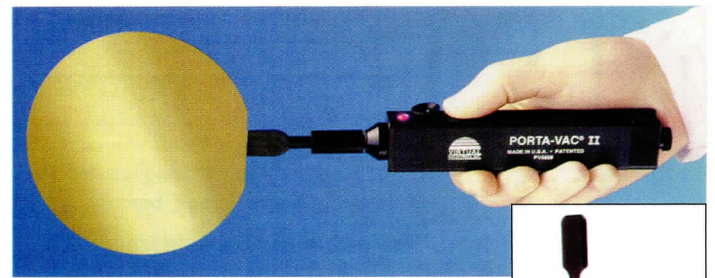
nals when it is safe to lift the wafer.

- 52901** Porta-Wand® for 4" wafers, with In-stand Charger .....each
- 52901-220** Porta-Wand® for 4" wafers, 220V with In-stand Charger .....each
- 52902** Porta-Wand® for 6" wafers, with In-stand Charger .....each
- 52903** Porta-Wand® for 8" wafers, with In-stand Charger .....each
- 52904** Porta-Wand® for 12" wafers, with In-stand Charger .....each

#### Porta-Wand® with PTFE coated wafer tip

- 52912** Porta-Wand® for 6" wafers, In-stand Charger with PTFE coated wafer tip .....each

#### ■ Porta-Vac II®



Picks up 4, 6, or 8 inch wafers (102, 152, 203mm), disk media or flat, hard surface items.

The Porta-Vac II® kit comes with one molded wafer tip. Lifts over 500 grams. A disposable 9V battery is included. Rear exhaust of the pump air is standard.

A battery-low indicator flashes red when the battery needs to be changed or recharged. A switch setting on the bottom of the tool allows the selection of an alkaline battery or NiMH battery discharge characteristics for the battery-low indicator.

A large switch provides easy on/off control. A replaceable, internal air filter is accessible from the front of the tool. The Class 1 exhaust filter ensures clean operation. An optional rechargeable battery pack and in-stand charger is also available. 9.6 volt Rechargeable Run Time (continuous operation): 4 - 5 hours.

- 52905** Porta-Vac® II for 4" wafers, with 9 Volt Non-rechargeable Battery ..each
- 52906** Porta-Vac® II for 6" wafers, with 9 Volt Non-rechargeable Battery ..each
- 52907** Porta-Vac® II for 8" wafers, with 9 Volt Non-rechargeable Battery ..each
- 52908** Porta-Vac® II In-stand Charger with 9.6 Volt Rechargeable NiMH Battery .....each
- 52908-220** Porta-Vac® II In-stand Charger with 220 Volt Rechargeable NiMH Battery .....each

*Note: Interchangeable tips and accessories are on following pages.*

### Porta-Wand® and Porta-Vac II® Accessories

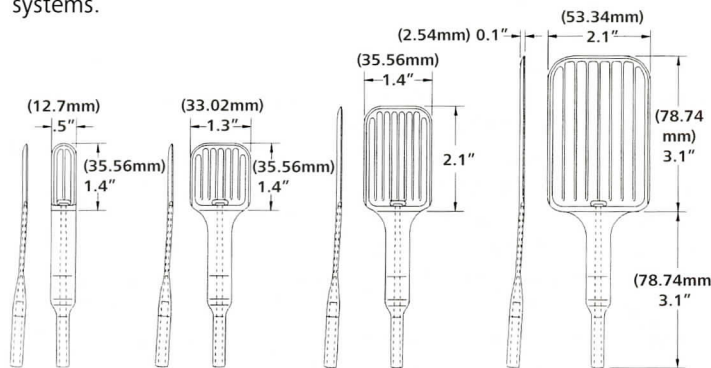
#### ■ Interchangeable ESD-Safe Wafer Tips for Porta-Wand® and Porta-Vac II®

ESD-safe, up to 100°C



52920-4 52920-6 52920-8 52920-12

These wafer tips are molded from ESD-safe 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.

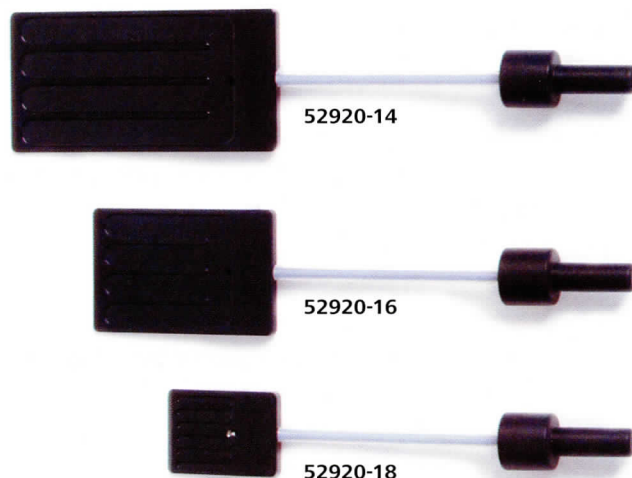


- 52920-4 Molded Flat Wafer Tip, for 4" . . . . .each  
 52920-6 Molded Flat Wafer Tip, for 6" . . . . .each  
 52920-8 Molded Flat Wafer Tip, for 8" . . . . .each  
 52920-12 Molded Flat Wafer Tip, for handling larger sized wafers (no left or right angles available) . .each

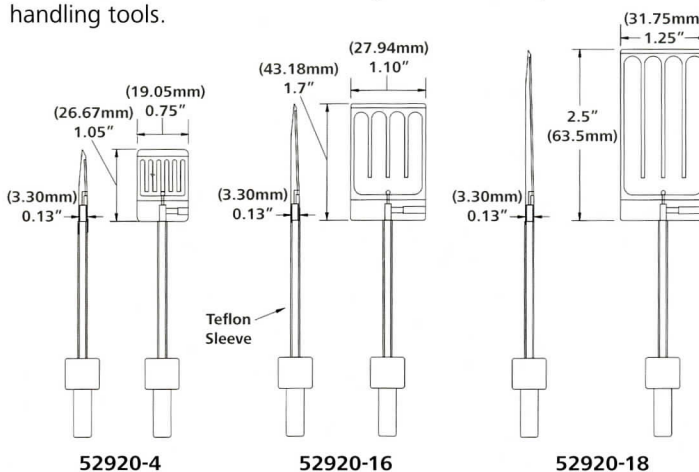
#### ■ Flex Hose for Porta-Wand® and Porta-Vac II®

- 52920-50 Flex Hose, ESD-safe, 4 ft. . . . .each  
 52920-52 Flex Hose, ESD-safe, 6 ft. . . . .each  
 52920-54 Flex Hose, ESD-safe, 8 ft. . . . .each

#### ■ Interchangeable PTFE Coated Aluminum Wafer Tips



These wafer tips are PTFE coated aluminum for high temperature applications up to 250°C. The wafer handling tips come complete with a 3" (76.20mm) long, straight, stainless steel 0.094" (2.39mm) diameter tube and fitting to connect to press-fit wafer handling tools.



- 52920-14 PTFE Coated Aluminum Wafer Tips, up to 4" (100mm) wafers . . . . .each  
 52920-16 PTFE Coated Aluminum Wafer Tips, up to 6" (150mm) wafers . . . . .each  
 52920-18 PTFE Coated Aluminum Wafer Tips, up to 8" (200mm) wafers . . . . .each

#### ■ Air Intake Filters for Porta-Wand® and Porta-Vac II®



- 52920 Air Intake Filters for Porta-Wand® . . . . .pkg/5  
 52920-29 Air Intake Filters for Porta-Vac II® . . . . .pkg/5