

EXCELT[®]
CORPORATION

Precisely Right



CAT-52

*Trust the experts who have provided
solutions for all your precision
tool needs for over 50 years.*



Table of Contents



Precisely Right

Five Star Levels of Quality	4
Suffix Codes and CTM's	5
Available Alloys for Tweezers	6

Tweezers

Cobaltima	8-11
Mirror Polish	12-14
Miniature	15
Reverse Action	16
Titanium	17
Cutting	18-19
Electronic Style	20-30
Parts Handling	31
Surface Mount	32-33
Wafer Handling	34-35
Ergonomic	36-39
Ceramic	41
Softip	42-45
Plastic	46

Pliers and Cutters

Cutter Correlation Chart	48
7000 Series Cutters	49
8000 Series Cutters	55
Standard Line Cutters	56
Selecta Cutters	58
700 Series Pliers	59
Standard Line Pliers	59
2000 Series Pliers	62

Special Design Tools

Component Forming	66
Anti-Shock Cutters	72
Handling Pliers	73

Small Hand Tools

Scissors and Scalpels	76
Probes and Scribes	78
Spatulas and Pin Vises	79
Hemostats	80
Brushes	81
Optics	85

Vacuum Handling

Roto-Pic System	86
Vacuum Systems	87
Pen-Vac	88
Vacuum Cups	89
Wafer Handling	90

Test and Measuring

Pocket Beeper	91
Intellitweeze	92

OVER 50 YEARS OF EXPERTISE

Excellta began by introducing watchmaker tools to the Aerospace industry in the mid 1950's. Today we manufacture and market tweezers, forceps, pliers, cutters, and small precision tools through our distribution network to the Military, Consumer Electronic, Medical Device Manufacturing and Electronic Assembly and Repair industries.



Excellta's expertise provides assembly solutions for customers involved with precision hand assembly. Our product offering has evolved from simple chain nose pliers and a few tweezers, to over 1,200 assembly aids. Through our "Specials Department," we are able to adapt tools to the specific needs of our customers. Excellta maintains a position of highest quality while delivering innovative solutions. We pride ourselves on staying one step ahead in providing quality tools for tomorrow's needs.

**Excellta's precision hand tools are
Precisely Right for your critical application.**

Excellta Corporation - 60 Easy Street – Buellton - California 93427
Tel.805-686-4686 Fax.805-686-9005 E-mail:sales@excellta.com
www.excellta.com

Limited Warranty:

There are no express warranties or implied warranties including, but not limited to, merchantability and fitness for a particular purpose.

COPYRIGHT 2008 BY EXCELLTA CORPORATION, Buellton, CA.

No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, mechanical, photocopying, recording or otherwise, without the prior written permission of the Excellta Corporation. The words Excellta®, Altima®, Precista®, Optima®, Cobaltima®, Neverust®, Selecta®, Intelliweeze®, Firefly® and TweezerMeter® are registered trademarks of Excellta Corporation.

Produced by Bob Williams. Design and Layout by Cory Ryan.

**Excelta Corporation has made it easy
to find the tool that is Precisely Right for the job.**



**Our FIVE STAR SYSTEM takes the guesswork
out of selecting the right tool.**

- ★ **5 Levels of Quality**
- ★ **5 Levels of Pricing**

A range of materials and designs for any application

Precisely Right



For the most critical applications, the Excelta 5 Star line offers ultra-precision with the most advanced materials available.



For demanding applications, the Excelta 4 Star line meets and exceeds high precision requirements.



The Excelta 3 Star line offers the widest range of products designed for Military, Semiconductor and Electronic assembly.



When precision is required and price is a concern, the Excelta 2 Star line fills most requirements for consumer electronics.



The Excelta 1 Star line offers quality products at our most economical price.

Call us at Excelta Corporation or contact your local
Excelta Sales Representative to find the tools that are precisely right for you.

Simply Look for the Stars.

FIVE STAR LEVELS OF QUALITY



FIVE STAR COBALTIMA® SERIES



Made in Switzerland from 40% Cobalt alloy steel, harder than stainless steel, antimagnetic, excellent resistance to corrosion and resistant to temperatures up to 500° C (932° F). Used with very high magnification.



FOUR STAR MP MEDICAL



Made in Switzerland from medical grade stainless steel, mirror polished tips for safe handling of even the most delicate parts, antimagnetic and anti-acid. Used with high magnification.



THREE STAR HIGH PRECISION



Precision grade tweezers are manufactured in Switzerland with high precision points. The perfect choice when working under 5x to 10x magnification.



TWO STAR FINE PRECISION



Standard Grade “PI” tweezers are manufactured in Italy with good precision points at a lower cost. Used with low magnification.



ONE STAR GENERAL PRECISION



General Precision Grade “SE” tweezers are manufactured for general purpose work when magnification is not required.



EXCELT A ADDITIONAL FEATURES

Tweezer Codes

TC – Teflon coating is applied to the first 1 1/2" of the tips to help prevent nicking and scratching when handling parts. This green coating can be applied in .0015", .003" or .005" thickness. It is acid and heat resistant to 500 F. Excelta recommends this coating only be added to the stainless steel tweezers, and not recommended for Carbon steel tweezers.

Teflon coating has a 12 pc. minimum order.

When ordering Teflon coating add the suffix "TC" and the thickness to the end of the part number. (Example: 3C-SA TC 1.5)

MW – Micro handling tweezers have radiused edges and polished inside jaws to prevent nicking and scratching when handling delicate parts. When ordering this feature, add the prefix "MW" to the begining of the part number. (Example: MW-7-SA)

D – Single cut serrations can be added to the inside jaws of most tweezers and pliers. Serrations help hold parts when handling and manipulating. When ordering, add the suffix "D" to the end of the part number. (Example: 2A-SA-D)

DX – Double cut serrations or Diamond serrations can be added to the inside jaws of most tweezers and pliers. Diamond serrations are finer and should be used when handling small parts and wires. When ordering, add the suffix "DX" to the end of the part number. (Example: 000-SA-DX)

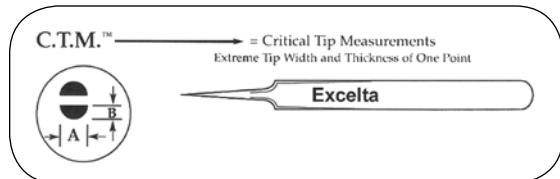
ET – Ergonomic foam cushion padding for tweezers. The soft cushion grip helps to relieve the "PINCH GRIP" when using tweezers for long periods of time. Many standard style "ET" tweezers are in stock and available for immediate delivery.

DT – Ergonomic molded grip for tweezers. Best for Clean Room use, the molded pads used on these tweezers will not particulate and can be cleaned with alcohol.



Critical Tip Measurement

CTM stands for Critical Tip Measurement. This measurement is used to describe the size of the point on a pair of tweezers. The CTM is equal to the height and width of one point. This measurement is guaranteed on all Excelta Five, Four and Three Star quality tweezers. The Excelta One and Two Star quality tweezers are not covered by this guarantee.



★★★ 3 STAR QUALITY

Part Number	A	B
O	.0067"	X .0039"
OO	.0177"	X .0098"
OOO	.0177"	X .0098"
OOB	.0177"	X .0098"
OOC	.0177"	X .0098"
OOD	.0177"	X .0098"
OC	.0067"	X .0039"
1	.0078"	X .0047"
2	.0133"	X .0055"
2A	.0591"	X .0078"
3	.0066"	X .0039"
3C	.0066"	X .0039"
4	.0051"	X .0031"
5	.0039"	X .0024"
5A	.0051"	X .0031"
5B	.0039"	X .0023"
51	.0039"	X .0023"
6	.0066"	X .0039"
7	.0066"	X .0039"
7A	.0094"	X .0062"
7B	.0066"	X .0039"
A	.0236"	X .0137"
AC	.0236"	X .0137"
SS	.0078"	X .0047"

AVAILABLE ALLOYS FOR TWEEZERS AND FORCEPS

NEVERUST®

Suffix code “SA” Stainless Steel Antimagnetic which provides excellent resistance to many acids because of the high concentration of molybdenum. “SA” material is our most popular material sold. Suitable for autoclave sterilization up to 270° C (518° F).

STAINLESS STEEL

Suffix code “S” Stainless contains a slightly higher carbon content than NEVERUST® which produces a harder tip but could rust under extreme conditions. Not recommended for autoclave sterilization.

CARBON STEEL

Carbon steel was the first material used for watchmaking tweezers and has no suffix code. The flame-hardened tips provide for long life, but are highly magnetic and have low rust resistance. Not to be used for autoclave sterilization.

COBALTIMA® ALLOY

Suffix code “CO” is a special alloy containing cobalt for added strength and corrosion resistance to acids. Cobaltima is harder than stainless steel and is antimagnetic. Resistant to temperatures up to 500° C (932° F). Highly recommended for autoclave sterilization.

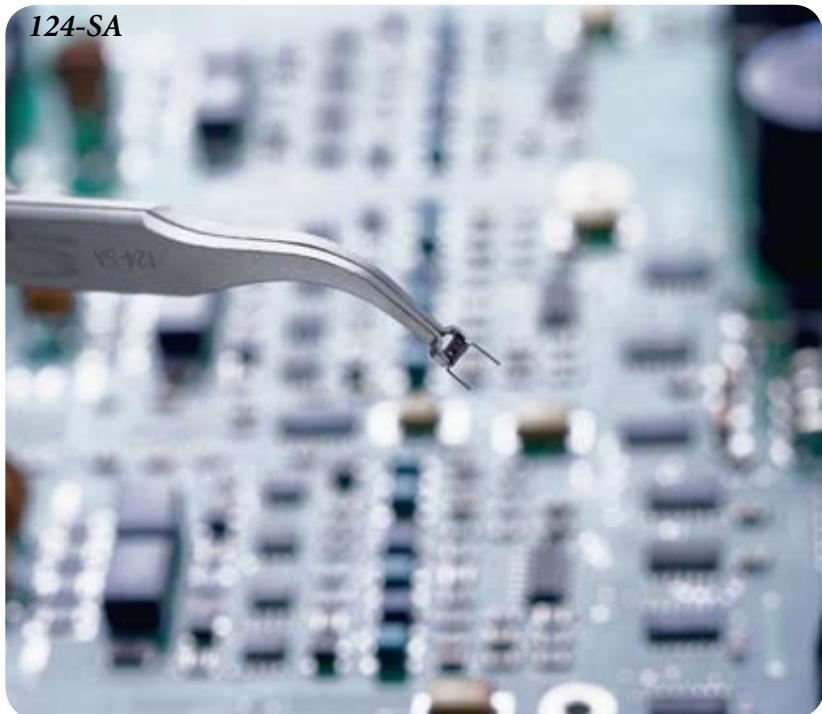
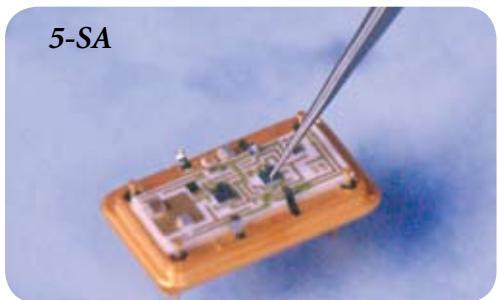
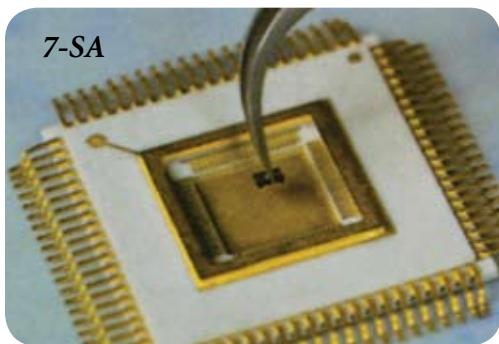
TITANIUM

Suffix code “TA” is highly resistant to corrosion from nitric acid, chloride, salt water and many other mineral and organic acids. Titanium is 40% lighter than stainless steel, non-magnetic and temperature resistant up to 430° C (806° F).

ZIRCONIA CERAMIC

Suffix code “CE” is six-times harder than stainless steel and contains no carbon or other metal additives that could produce metallic contamination. Good thermal isolation when soldering and solder will not adhere to the surface. Black Ceramic tips are ESD and clean room safe. Tips are microwave-sterilization compatible.

High-Tech Surgeons of Electronics



Precisely Right

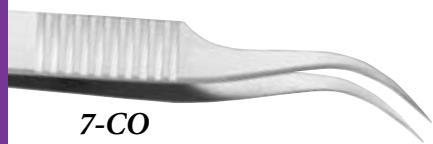


COBALTIMA® TWEEZERS/FORCEPS

★★★★★ Made in Switzerland.



5-CO



7-CO



51-CO

**Extreme Precision Points
for Medical Design and Lab Technicians**

- Super Neverust®
- Cobalt alloy steel
- Tips: harder than stainless steel
- Antimagnetic
- Excellent resistance to corrosion
- Resistant to temperatures up to 500°C
- Airflow finger grooves for better handling
- 1mm Softouch™ body thickness
- Radius edges are standard

Why Cobaltima®?

COBALTIMA® tweezers are entirely made from a patented alloy. They have tips that are insensitive to fatigue and never lose their elasticity. The hardness of the tips is progressive; it reaches its peak in the deployment-zone where we have measured a Rockwell C hardness of 63/64 for model 5-CO.

Main Features:

- Non-corrosive
- Antimagnetic: on a 0.2mm strip cold-hammered to 80%
Bs – H at 20°C = 105 G
For H max – 8000°C
Bs – H at 196°C = 640 G
- Resistant to fatigue, modulus of elasticity 210,000 MPa
- Hardness about 720 Vickers 63 / 64 Rockwell C on the tips
- Resistance to high temperatures 500°C maximum
- Excellent resistance to corrosion: sea water, HCl, H₃PO₄, HNO₃, H₂SO₄
Its resistance is superior to that of the best stainless steel.

Chemical Composition	CO	Ni	Mo	Cr	Ti	Nb	Al	Fe
	40	16	7	20	–	–	–	Bal

Temperature of Fusion		(°C)	450–1460
Volunteer Mass		(g.cm ³)	8.3
Electrical Resistivity at 20°		{. cm)	90/95
Thermo Coefficient Between 0 and 3000°C	softened crushed	(°C) ⁻¹	4.10 ⁻⁴ 20,8.10 ⁻³
Magnetic Properties			antimagnetic

★★★★★ Cobaltima® Tweezers/Forceps Extreme Precision Points

Harder than Stainless Steel, Radius Edges, Antimagnetic

MADE IN
SWITZERLAND

Cobaltima tweezers are **Made In Switzerland**. Our special Cobalt Steel is harder than stainless steel, antimagnetic and has excellent resistance to corrosion and temperatures up to 500°C. The radiused inside edges protect parts from scratching, while the outside finger grooves provide extra grip and feel when handling very small parts. Super Neverust®.

2-CO ★★★★★ 4 3/4"

Five Star Cobaltima® tweezers with tapered tips and strong fine points.

The stronger points on this design can be used to bend small wires and components.

CTM = .0098" wide
.0039" high



3C-CO ★★★★★ 4 1/4"

Five Star Cobaltima® tweezers with straight tips and very fine points. Very popular design for handling and placing of small parts.

CTM = .0031" wide
.0016" high



3-CO ★★★★★ 4 3/4"

Five Star Cobaltima® tweezers with straight tips and very fine points. Our most popular design for all types of micro assembly.

CTM = .0031" wide
.0016" high



4-CO ★★★★★ 4 3/8"

Five Star Cobaltima® tweezers with tapered tips and extra fine points. The tapered tips on this design provide a long reach into limited access areas.

CTM = .0024" wide
.0008" high



5-CO ★★★★★ 4 3/8"

Five Star Cobaltima® tweezers with tapered tips and micro fine points.

This design has our finest points for handling the smallest parts.

CTM = .0020" wide
.0004" high



★★★★★ Cobaltima® Tweezers/Forceps

Extreme Precision Points

Harder than Stainless Steel, Radius Edges, Antimagnetic

Cobaltima tweezers are **Made in Switzerland**. Our special Cobalt Steel is harder than stainless steel, antimagnetic and has excellent resistance to corrosion and temperatures up to 500°C. The radiused inside edges protect parts from scratching, while the outside finger grooves provide extra grip and feel when handling very small parts. Super Neverust®.



7-CO
MADE IN SWITZERLAND

5A-CO ★★★★★ 4 1/2"

Five Star Cobaltima® tweezers with offset tips and micro fine points.

The offset design offers better visibility in dense areas.

CTM = .0024" wide
.0008" high



7-CO ★★★★★ 4 1/2"

Five Star Cobaltima® tweezers with curved tips and very fine points.

Our most popular design for working under high magnification.

CTM = .0027" wide
.0012" high



7B-CO ★★★★★ 4 1/2"

Five Star Cobaltima® tweezers with curved tips and very fine serrated points.

The added serrations provide additional grip when handling small parts.

CTM = .0027" wide
.0012" high



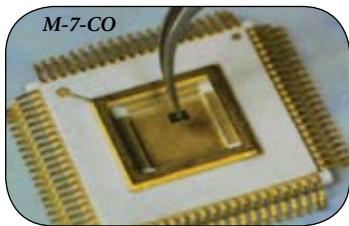
51-CO ★★★★★ 4 1/2"

Five Star Cobaltima® tweezers with bent tips and micro fine points.

The bent tips are helpful when reaching into confined areas.

CTM = .0020" wide
.0004" high





MADE IN
SWITZERLAND

Miniature Cobaltima® Tweezers

Extreme Precision Points

Harder than Stainless Steel, Radius Edges, Antimagnetic

Cobaltima miniature tweezers are designed for working under high magnification. **Made in Switzerland** from Cobalt Alloy Steel, this special alloy is harder than stainless steel, antimagnetic and has excellent resistance to corrosion and temperatures up to 500°C. The inside edges are radiused to protect parts from scratching. Super Neverust®.

M-2A-CO ★★★★★ 3 1/8"

Miniature Tweezers with
Flat Tips and Round Points

CTM = .0400" wide
.0040" high



M-3-CO ★★★★★ 3 1/8"

Miniature Tweezers with
Straight Tips and Fine Points

CTM = .0030" wide
.0016" high



M-5-CO ★★★★★ 3 1/8"

Miniature Tweezers with
Tapered Tips and Very Fine
Points

CTM = .0020" wide
.0004" high



M-6-CO ★★★★★ 3 1/8"

Miniature Tweezers with
Angle Tips and Sharp Points

CTM = .0027" wide
.0012" high



M-7-CO ★★★★★ 3 1/8"

Miniature Tweezers with
Curved Tips and Very Fine
Points

CTM = .0027" wide
.0012" high



M-51-CO ★★★★★ 3 1/8"

Miniature Tweezers with
Angle Tips and Very Fine
Points

CTM = .0020" wide
.0004" high



MN-OC-CO ★★★★★ 3 1/8"

Reverse Action Miniature
Tweezers with Straight Tips
and Very Fine Points

CTM = .0051" wide
.0031" thick



MN-2A-CO ★★★★★ 3 1/8"

Reverse Action Miniature
Tweezers with Flat Tips and
Round Points

CTM = .0600" wide
.0040" thick



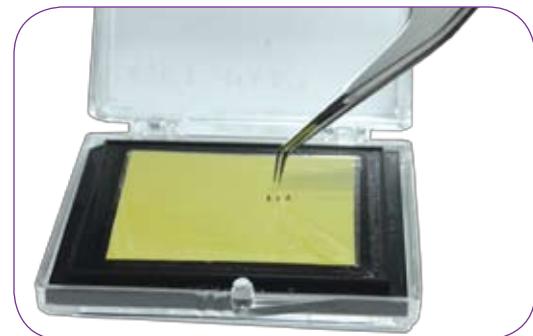
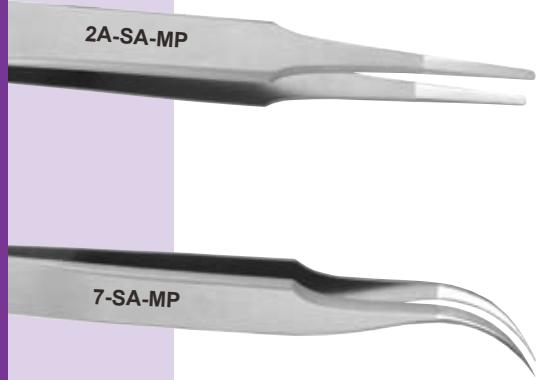
“MP” MEDICAL FORCEPS

★★★★★ Mirror Polish Tips Prevent Nicking and Scratching
Made in Switzerland.

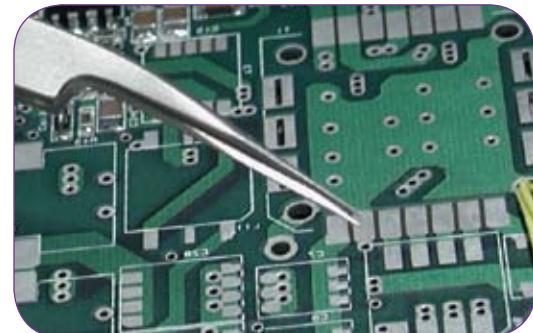
Stainless Steel Antimagnetic.

Why High Polish?

- Designed to handle delicate parts without scratching
- Smoother than standard radius edged Forceps
- Antimagnetic, Anti-Acid
- Stainless Steel
- Neverust®



51-SA-MP



5A-SA-MP

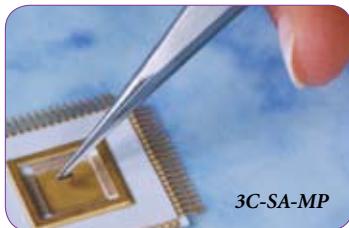
Our “Mirror Polish” series of Forceps are made in Switzerland by highly skilled craftsmen who produce the finest tip tweezers in the world.

Forged from medical grade stainless steel these forceps are antimagnetic and anti-acid.

Special mirror polish on the tips removes any sharp edges for safe handling of even the most delicate parts.



51-SA-MP



3C-SA-MP

★★★★★ “MP” Medical Forceps

Mirror Polish Tips Prevent Nicking and Scratching

Made in Switzerland.

Stainless Steel Antimagnetic.

1-SA-MP ★★★★ 4 1/2"
Mirror Polish Straight Tips with Fine Slender Points.
Stainless Steel Antimagnetic.
CTM = .0067" wide
.0039" thick



2A-SA-MP ★★★★ 4 3/4"
Mirror Polish Flat Tips with Round Points.
Stainless Steel Antimagnetic.
CTM = .0591" wide
.0078" thick



3C-SA-MP ★★★★ 4 1/4"
Mirror Polish Straight Tips with Fine Points.
Stainless Steel Antimagnetic.
CTM = .0051" wide
.0031" thick



5-SA-MP ★★★★ 4 1/4"
Mirror Polish Tapered Tips with Very Fine Points.
Stainless Steel Antimagnetic.
CTM = .0030" wide
.0015" thick



★★★★★ “MP” Medical Forceps

Mirror Polish Tips Prevent Nicking and Scratching

Made in Switzerland

Stainless Steel Antimagnetic.

5A-SA-MP ★★★★ 4 1/2"

**Mirror Polish Offset Tips
with Very Fine Points.**

**Stainless Steel Antimagnetic.
CTM = .0039" wide
.0023" thick**



51-SA-MP ★★★★ 4 1/2"

**Mirror Polish Angled Tips
with Very Fine Points.**

**Stainless Steel Antimagnetic.
CTM = .0030" wide
.0015" thick**



7-SA-MP ★★★★ 4 1/2"

**Mirror Polish Curved Tips
with Fine Points.**

**Stainless Steel Antimagnetic.
CTM = .0051" wide
.0031" thick**



SS-SA-MP ★★★★ 5 1/2"

**Mirror Polish Long Straight Tips
with Fine Points.**

**Stainless Steel Antimagnetic.
CTM = .0055" wide
.0039" thick**





Miniature Tweezers

★★★ High Precision
Made in Switzerland.

Miniature size is useful when working under a microscope.

M-AC ★★★ 3 1/4"

Straight, smooth inside tips with medium points. Designed to reduce nicking or marring of delicate components. Outside finger serrations for added gripping. Made of Carbon Steel.

CTM = .0149" wide
.0079" high

M-OOD-SA ★★★ 3 3/8"

M-OOD ★★★

Straight tips with medium points. The inside tip serrations provide a positive gripping surface. Designed for general assembly use. Choose from Stainless Steel Antimagnetic (M-OOD-SA) or Carbon Steel (M-OOD).

CTM = .0129" wide
.0039" high

M-H-SA ★★★ 3 1/2"

M-H-S ★★★ 3 1/2"

M-H-SA-PI ★★ 3 1/2"

Tapered tips with strong blunt points. The wider body provides for easy handling. Smooth inside tips. Choose from Stainless Steel Antimagnetic (M-H-SA (-PI)) or Stainless Steel (M-H-S).

CTM = .0118" wide
.0039" high

M-HD ★★★ 3 1/2"

Tapered tips with strong blunt points.

The wider body has outside finger serrations and inside tip serrations for improved handling and positive gripping. Made of Carbon Steel.

CTM = .0059" wide
.0047" high

M-2-SA ★★★ 3 1/2"

Tapered tips with round sharp points. The smaller size helps when working under a microscope. Stainless Steel Antimagnetic.

CTM = .0080" wide
.0050" high



M-2A-SA ★★★ 2 3/4"

Tapered tips with round flat points. This style is excellent for handling various micro-components. Made of Stainless Steel Antimagnetic.

CTM = .0591" wide

.0079" high

M-3-S ★★★ 2 3/4"

Straight tips with fine precision points. Our most popular design for micro-electronic assembly. Made of Stainless Steel.

CTM = .0067" wide

.0039" high



M-4-S ★★★ 2 3/4"

Tapered precision tips with extra fine points. The long tapered shank and finely ground points make it suitable for handling extremely small parts. Made of Stainless Steel.

CTM = .0051 wide

.0031 high



M-4A-S ★★★ 3 1/2"

Tapered fine precision tips with medium fine points.

Uniquely designed tweezers can handle extremely fine parts. Made of Stainless Steel.

CTM = .0094" wide

.0063" high



M-5-SA ★★★ 3 1/4"

M-5-S ★★★ 3 1/4"

Straight precision tips with very fine points. Very popular design for micro-electronic assembly. Choose from Stainless Steel Antimagnetic (M-5-SA) or Stainless Steel (M-5-S).

CTM = .0039" wide

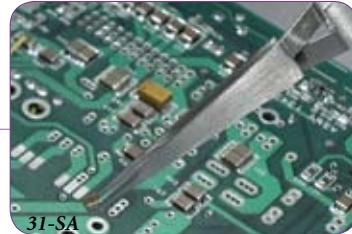
.0023" high



Reverse Action Tweezers

Holds Parts without Finger Strain

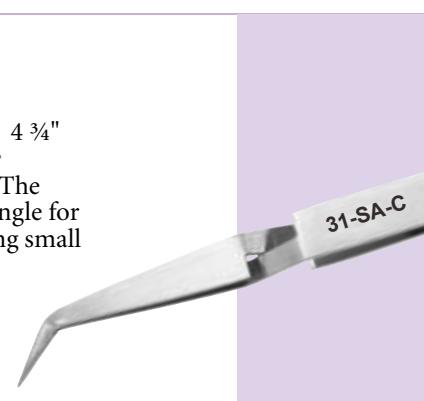
Useful for inspection and microscope work.



31-SA-C ★★★ 4 3/4"

Reverse Action tweezers for general-purpose assembly. The tips are bent at a 45-degree angle for better visibility when handling small parts.

CTM = .0118" wide
.0078" high

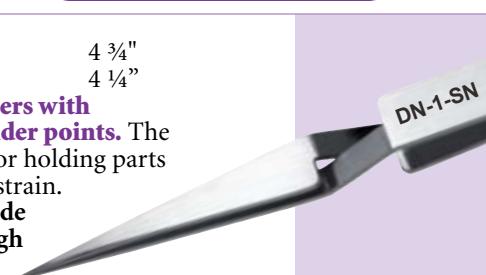


DN-1-SN ★★★★

DN-3C-SA-SE ★ 4 1/4"

Reverse Action tweezers with straight tips and slender points. The light tension is great for holding parts without added finger strain.

CTM = .0060" wide
.0039" high



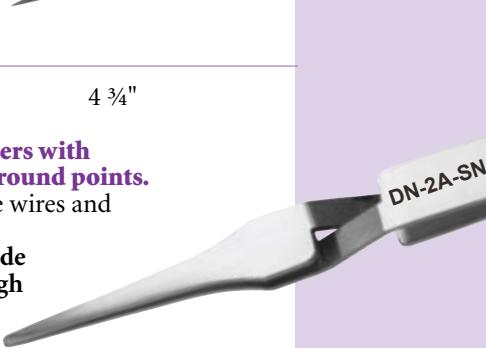
DN-2A-SN ★★★★ 4 3/4"

DN-2A-SA-SE ★

Reverse Action tweezers with tapered tips and flat round points.

Used for handling fine wires and components.

CTM = .0591" wide
.0079" high

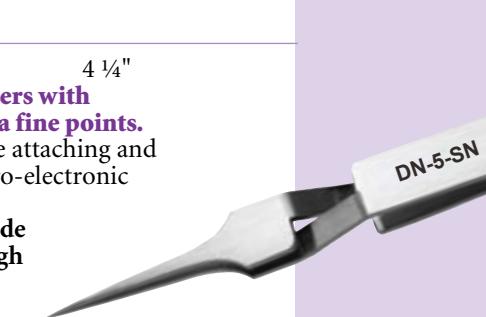


DN-5-SN ★★★★ 4 1/4"

Reverse Action tweezers with tapered tips and extra fine points.

Excellent for use in die attaching and wire bonding for micro-electronic assembly.

CTM = .0031" wide
.0015" high



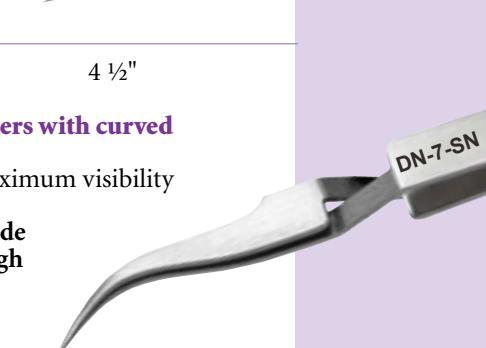
DN-7-SN ★★★★ 4 1/2"

DN-7-SA-SE ★

Reverse Action tweezers with curved tips and fine points.

This design allows maximum visibility under magnification.

CTM = .0051" wide
.0031" high

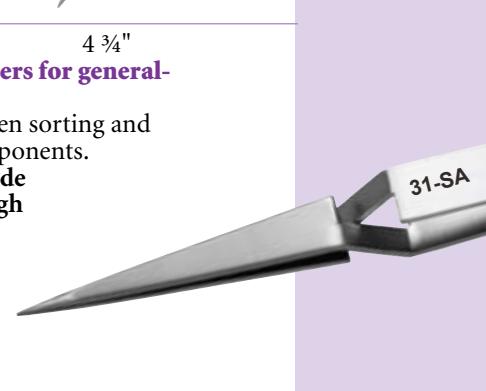


31-SA ★★★ 4 3/4"

Reverse Action tweezers for general-purpose assembly.

This style is useful when sorting and handling various components.

CTM = .0118" wide
.0078" high



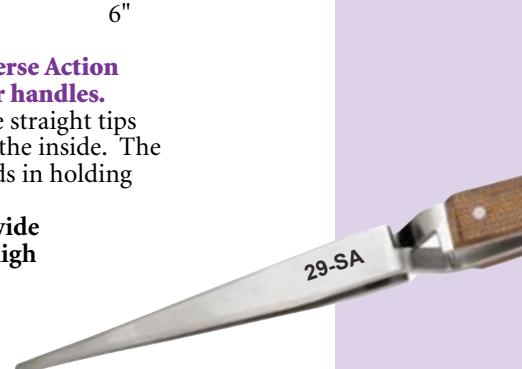
29-SA ★★★ 6"

29-S-SE ★

Stainless steel Reverse Action tweezers with fiber handles.

These tweezers have straight tips and are smooth on the inside. The constant tension aids in holding various small parts.

CTM = .090" wide
.070" high



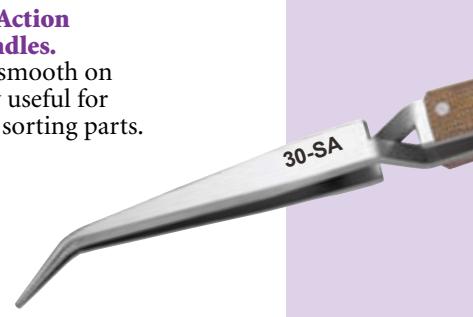
30-SA ★★★ 6"

30-S-SE ★

Stainless steel Reverse Action tweezers with fiber handles.

The tips are angled and smooth on the inside. They are very useful for component handling or sorting parts.

CTM = .090" wide
.070" high

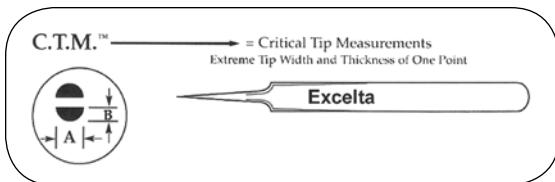


31B-SA-SE ★ 6 1/2"

Reverse Action screw holding tweezers.

The special groove in the tips hold small screws, helping get them started when working in dense and hard to reach areas.





★★★★ Titanium Tweezers



- Suffix -"TA"
- Made in Switzerland from lightweight Titanium
- Great for all solder applications, solder will not adhere to the tip
- Non-Magnetic – zero magnetic retentivity
- Non-Corrosive – high resistance to most acids
- Heat resistant – up to 430°C (806°F)

3C-TA ★★★★

4 1/4"

Four Star high quality tweezers with straight tips and fine points.

Very popular design used for micro assembly. Titanium tweezers are lightweight, non-magnetic, non-corrosive and heat resistant. Made in Switzerland.

CTM= .0051" wide
 .0031" thick



5-TA ★★★★

4 1/2"

Four Star high quality tweezers with tapered tips and extra fine points.

The very fine tips are great when working under high magnification. Titanium tweezers are lightweight non-magnetic, non-corrosive and heat resistant.

Made in Switzerland.

CTM= .0030" wide
 .0015" thick



7-TA ★★★★

4 1/2"

Four Star high quality tweezers with curved tips and very fine points.

The curved tips allow for better visibility when working in tight areas. Titanium tweezers are lightweight non-magnetic, non-corrosive and heat resistant. Made in Switzerland.

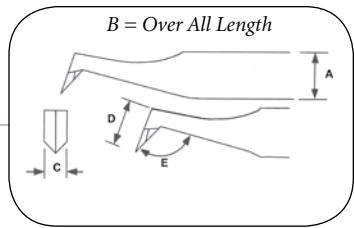
CTM= .0051" wide
 .0031" thick



★★★ Lightweight Cutting Tweezers

Made In Switzerland

High-Grade Carbon Steel



14A-GW ★★★

Three Star Slim High Precision Cutting Tweezers.

New thinner body designed for lightweight and easy handling. 25% lighter then our 15A-GW. Cutting capacity .010" (0,25mm) soft wire.

4 $\frac{3}{8}$ "

A:	0.375"	(9.5 mm)
B:	4.375"	(111 mm)
C:	0.210"	(5.4 mm)
D:	0.285"	(7.2 mm)
E:	80°	



14A-N ★★★

Three Star Long Thin Precision Cutting Blades.

Angled Tips can be used horizontally or vertically. Durable carbon steel cutting edges. Cutting capacity .005" (0,12mm) soft wire.

4 $\frac{1}{2}$ "

A:	0.375"	(9.5 mm)
B:	4.500"	(115 mm)
C:	0.138"	(3.5 mm)
D:	0.492"	(12.5 mm)
E:	75°	



52-MW ★★★

Three Star High Precision Micro Straight Tips.

Excellent for working in dense access areas. Durable carbon steel cutting edges.

4 $\frac{1}{2}$ "

A:	0.375"	(9.5 mm)
B:	4.500"	(115 mm)
C:	0.149"	(3.8 mm)
D:	0.276"	(5.2 mm)
E:	45°	



54-MW ★★★

Three Star High Precision Micro Angled Tips.

Designed for maximum visibility when working under magnification. Durable carbon steel cutting edges.

4 $\frac{1}{4}$ "

A:	0.375"	(9.5 mm)
B:	4.250"	(108 mm)
C:	0.122"	(3.1 mm)
D:	0.303"	(7.7 mm)
E:	80°	



★★ Traditional Cutting Tweezers Made In Italy.

15A-RW-PI ★★

Made in Italy

Fine round tips with flush cutting blades. For use on .010" or smaller soft wire.

4 $\frac{1}{2}$ "

A:	0.393"	(10 mm)
B:	4.500"	(115 mm)
C:	0.095"	(2.5 mm)
D:	0.200"	(5.2 mm)
E:	70°	



15A-GW-PI ★★

Made in Italy

General-purpose cutting tweezers for use on .010" or smaller soft wire.

4 $\frac{1}{2}$ "

A:	0.393"	(10 mm)
B:	4.500"	(115 mm)
C:	0.215"	(5.5 mm)
D:	0.375"	(9.5 mm)
E:	70°	





★★★ Traditional Cutting Tweezers

Super Sharp Flush Cutting Blades
Made In Switzerland

High-Grade Carbon Steel

15A-GW ★★★ 4 1/2" Made in Switzerland with ESD safe epoxy handle. General-purpose cutting tweezers for use on .010" or smaller soft wire.

A:	0.393"	(10 mm)
B:	4.500"	(115 mm)
C:	0.215"	(5.5 mm)
D:	0.375"	(9.5 mm)
E:	70°	



15A-RW ★★★ 4 1/2" Made in Switzerland ESD safe epoxy handle. Fine round tips with flush cutting blades for use on .010" or smaller soft wire.

A:	0.393"	(10 mm)
B:	4.500"	(115 mm)
C:	0.095"	(2.5 mm)
D:	0.200"	(5.2 mm)
E:	70°	



15A-GW-PB ★★★ 4 1/2" Made in Switzerland Parallel cutting blades touch completely in closed position. Cutting capacity .010" soft wire.

A:	0.393"	(10 mm)
B:	4.500"	(115 mm)
C:	0.215"	(5.5 mm)
D:	0.375"	(9.5 mm)
E:	70°	



15A-C ★★★ 4 1/2" Made in Switzerland Short fine blade cutting tweezers. Cutting capacity .010" soft wire.

A:	0.393"	(10 mm)
B:	4.500"	(115 mm)
C:	0.215"	(5.5 mm)
D:	0.275"	(7.8 mm)
E:	70°	



15A-SW ★★★ 4 1/2" Made in Switzerland Round tips provide greater visibility. Designed for cutting soft wire. Cutting capacity .010" soft wire.

A:	0.393"	(10 mm)
B:	4.500"	(115 mm)
C:	0.095"	(2.5 mm)
D:	0.200"	(5.2 mm)
E:	70°	



15 ★★★ 4 1/2" Made in Switzerland Transverse end cutting tweezers with narrow head design. Cutting capacity .010" soft wire.

A:	0.393"	(10 mm)
B:	4.500"	(115 mm)
C:	0.098"	(2.5 mm)
D:	0.157"	(2.0 mm)
E:		



ELECTRONIC STYLE TWEEZERS

★★★ High Precision

★★ Fine Precision ★ General Precision

Available in Stainless Steel, S/S Antimagnetic, Carbon Steel.

The following pages feature our Electronic style tweezers. Most styles are available in three quality levels and materials. The stars are used to designate the quality level.

When ordering:

- Select the part number or design you require
- Choose the quality level required by the number of Stars
- Find the material or type of metal
- Order by the part number shown

★★★ Three Star “SA” High Precision Grade

Three Star High Precision Grade tweezers are manufactured in Switzerland, with high precision points, the perfect choice when working under 5x to 10x magnification.



★★ Two Star “PI” Fine Precision Grade

Two Star Fine Precision Grade “PI” tweezers are manufactured in Italy, with good precision points at a lower cost.



★ One Star “SE” General Precision Grade

One Star General Precision Grade “SE” tweezers are manufactured for general-purpose use when magnification is not required.



Materials

S/S Antimagnetic – Part number code “SA” NEVERUST® tweezers have very good antimagnetic, anti-acid and corrosion properties. “SA” material is the most popular material used for electronic assembly.

Stainless Steel – Part number code “S” stainless steel tweezers have a higher carbon content and will produce a harder tip than the “SA” series. “S” series can rust under extreme exposure.

Carbon Steel – Part number code not applicable. The tips are flame hardened for long life and are highly magnetic with low rust resistance.

Micro Tip Electronic Style Tweezers



#4 Design

4 1/4"

Tapered tips with very fine points.

Excellent for dense access area use in micro-electronics.

PART #	MATERIAL	STARS
4-SA	S/S Antimagnetic	★★★★
4-SA-PI	S/S Antimagnetic	★★★
4-SA-SE	S/S Antimagnetic	★



#5 Design

4 1/4"

Micro fine tips with high precision points.

Excellent for use in die attaching and wire bonding.

PART #	MATERIAL	STARS
5-SA	S/S Antimagnetic	★★★★
5-S	Stainless Steel	★★★★
5-SA-PI	S/S Antimagnetic	★★★
5-S-PI	Stainless Steel	★★★
5-SA-SE	S/S Antimagnetic	★
5-S-SE	Stainless Steel	★



#5A Design

4 1/2"

Micro fine tips with high precision points.

The offset design offers easy access in confined areas.

PART #	MATERIAL	STARS
5A-SA	S/S Antimagnetic	★★★★
5A-S	Stainless Steel	★★★★
5A-SA-PI	S/S Antimagnetic	★★★
5A-SA-SE	S/S Antimagnetic	★
5A-S-SE	Stainless Steel	★



#5B Design

4 1/4"

Oblique angle tips with high precision points.

The angle tips allow maximum visibility while working under microscopes.

PART #	MATERIAL	STARS
5B-SA	S/S Antimagnetic	★★★★
5B-SA-PI	S/S Antimagnetic	★★★



#5C Design

4 1/4"

Oblique angle tips with high precision points.

The angle tips allow maximum visibility while working under microscopes.

PART #	MATERIAL	STARS
5C-SA	S/S Antimagnetic	★★★★



#51 Design

4 1/2"

Oblique angle tips with micro fine points.

Most popular design used for die attaching. The tip angle provides better visibility.

PART #	MATERIAL	STARS
51-SA	S/S Antimagnetic	★★★★
51-S	Stainless Steel	★★★★
51-SA-PI	S/S Antimagnetic	★★★



Fine Tip Electronic Style Tweezers

★★★ High Precision

★★ Fine Precision ★ General Precision

Available in Stainless Steel, S/S Antimagnetic, Carbon Steel.

#1 Design 4 1/2"

Slender tips with fine points.

Designed for delicate applications when handling very fine wires and components.

PART #	MATERIAL	STARS
1-SA	S/S Antimagnetic	★★★★
1-S	Stainless Steel	★★★★
1-SA-PI	S/S Antimagnetic	★★★
1-PI	Carbon Steel	★★★
1-SA-SE	S/S Antimagnetic	★
1-S-SE	Stainless Steel	★



#2 Design 4 3/4"

Tapered tips with medium points.

Used for handling and bending of small components and wires.

PART #	MATERIAL	STARS
2-SA	S/S Antimagnetic	★★★★
2-S	Stainless Steel	★★★★
2-SA-PI	S/S Antimagnetic	★★★
2-SA-SE	S/S Antimagnetic	★
2-S-SE	Stainless Steel	★



#3 Design 4 3/4"

Very fine tips with precision points.

Very popular design used in micro-electronic assembly.

PART #	MATERIAL	STARS
3-SA	S/S Antimagnetic	★★★★
3-S	Stainless Steel	★★★★
3-SA-PI	S/S Antimagnetic	★★★
3-S-PI	Stainless Steel	★★★
3-SA-SE	S/S Antimagnetic	★
3-S-SE	Stainless Steel	★



#3C Design 4 1/4"

Very fine tips with precision points.

The shorter body helps when working under magnification.

PART #	MATERIAL	STARS
3C-SA	S/S Antimagnetic	★★★★
3C-S	Stainless Steel	★★★★
3C	Carbon Steel	★★★★
3C-SA-PI	S/S Antimagnetic	★★★
3C-S-PI	Stainless Steel	★★★
3C-PI	Carbon Steel	★★★
3C-SA-SE	S/S Antimagnetic	★
3C-S-SE	Stainless Steel	★
3C-SE	Carbon Steel	★



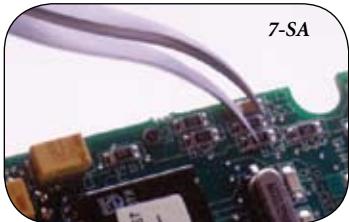
#SS Design 5 1/2"

Long straight tips with precision points.

The extra long length and slimmer body is useful when working in a limited access area.

PART #	MATERIAL	STARS
SS-SA	S/S Antimagnetic	★★★★
SS-S	Stainless Steel	★★★★
SS-SA-PI	S/S Antimagnetic	★★★
SS-SA-SE	S/S Antimagnetic	★
SS-S-SE	Stainless Steel	★





Curved Electronic Style Tweezers

★★★ High Precision
★★ Fine Precision ★ General Precision
Available in Stainless Steel, S/S Antimagnetic, Carbon Steel.

#7 Design 4 1/2"

Curved tips with high precision points.

Curved tips allow maximum visibility under magnification.

PART #	MATERIAL	STARS
7-SA	S/S Antimagnetic	★★★★
7-S	Stainless Steel	★★★★
7-SA-PI	S/S Antimagnetic	★★★
7-PI	Stainless Steel	★★★
7-PI	Carbon Steel	★★★
7-SA-SE	S/S Antimagnetic	★
7-S-SE	Stainless Steel	★



#7B Design 4 1/2"

Curved tips with fine serrated points.

The added serration on the inside tips provide better gripping of small components and wires.

PART #	MATERIAL	STARS
7B-SA	S/S Antimagnetic	★★★★
7B-S	Stainless Steel	★★★★
7B-SA-PI	S/S Antimagnetic	★★★
7B-SA-SE	S/S Antimagnetic	★



#6 Design 4 1/2"

Angled tips with flat sharp points.

These tweezers are very useful in picking parts out of waffle trays.

PART #	MATERIAL	STARS
6-SA	S/S Antimagnetic	★★★★
6-S	Stainless Steel	★★★★
6-SA-PI	S/S Antimagnetic	★★★
6-PI	Carbon Steel	★★★
6-SA-SE	S/S Antimagnetic	★
6-S-SE	Stainless Steel	★



#65A Design 5 1/2"

Long oblique angle tips with precision points.

The long length, slim body and angle tips are useful when working in dense areas.

PART #	MATERIAL	STARS
65A-SA	S/S Antimagnetic	★★★★



#66 Design 5 1/2"

Circumvented angled tips with precision points.

The curved circumvented tips allow for maximum visibility.

PART #	MATERIAL	STARS
66-SA	S/S Antimagnetic	★★★★



#3CB Design 4 1/4"

Angled tip tweezers with fine precision points.

The angled tips provide maximum clearance when placing small parts.

PART #	MATERIAL	STARS
3CB-S	Stainless Steel	★★★★



Flat Tip Electronic Style Tweezers

★★★ High Precision

★★ Fine Precision ★ General Precision

Available in Stainless Steel, S/S Antimagnetic, Carbon Steel.

#2A Design

4 3/4"

Tapered tips with flat round points.

This design works great for handling various types of micro components and wires.

PART #	MATERIAL	STARS
2A-SA	S/S Antimagnetic	★★★★
2A-S	Stainless Steel	★★★★
2A	Carbon Steel	★★★★
2A-SA-PI	S/S Antimagnetic	★★
2A-SA-SE	S/S Antimagnetic	★
2A-S-SE	Stainless Steel	★



#52A Design

4 3/4"

Tapered tips with flat round points.

The added anti-crush device lets the tweezers tips flex when excess pressure is applied.

PART #	MATERIAL	STARS
52A-SA	S/S Antimagnetic	★★★★



#F Design

4 3/4"

Tapered tips with flat points.

The flat tips are useful for handling chips and small parts.

PART #	MATERIAL	STARS
F-SA	S/S Antimagnetic	★★★★
F-SA-PI	S/S Antimagnetic	★★



#2AB Design

4 1/2"

Curved tips with flat round points.

The curved tips allow for maximum visibility.

PART #	MATERIAL	STARS
2AB-N	Nickel	★★★★
2AB-SA-PI	S/S Antimagnetic	★★
2AB-SA-SE	S/S Antimagnetic	★



#12A Design

4 1/2"

Tapered tips with flat round points.

The 45 degree bend allows the tips to slide under objects when picking parts up from a flat surface.

PART #	MATERIAL	STARS
12A-SA	S/S Antimagnetic	★★★★



#25 Design

4 1/2"

Straight tips with large flat points.

The smooth inside tips and round points makes easy handling of fragile parts.

PART #	MATERIAL	STARS
25-SA	S/S Antimagnetic	★★★★



Strong Tip Electronic Style Tweezers

★★★ High Precision

★★ Fine Precision ★ General Precision

Available in Stainless Steel, S/S Antimagnetic, Carbon Steel.

#0 Design 4 3/4"

Strong tips with precision points.

The light spring tension helps to reduce operator fatigue.

PART #	MATERIAL	STARS
0-SA	S/S Antimagnetic	★★★★
0	Carbon Steel	★★★★
0-SA-SE	S/S Antimagnetic	★



#00 Design 4 1/2"

Medium tips with strong straight points.

Our most popular designed tweezers in the electronics market today.

PART #	MATERIAL	STARS
00-SA	S/S Antimagnetic	★★★★
00	Carbon Steel	★★★★
00-SA-PI	S/S Antimagnetic	★★★
00-PI	Carbon Steel	★★★
00-SA-SE	S/S Antimagnetic	★
00-SE	Carbon Steel	★



#000 Design 4 1/2"

Medium tips with strong straight points.

Inside radius edges for handling delicate parts.

PART #	MATERIAL	STARS
000-SA	S/S Antimagnetic	★★★★
000-SA-PI	S/S Antimagnetic	★★



#0C Design 3 1/2"

Straight precision tips with fine points.

Shorter length with smooth inside tips can handle delicate parts without damage.

PART #	MATERIAL	STARS
0C-SA	S/S Antimagnetic	★★★★
0C	Carbon Steel	★★★★
0C-SA-PI	S/S Antimagnetic	★★★
0C-SA-SE	S/S Antimagnetic	★



#00C Design 4 1/4"

Semi-fine tips with sturdy points.

Popular tweezers for general assembly work in dense areas.

PART #	MATERIAL	STARS
00C-SA	S/S Antimagnetic	★★★★
00C	Carbon Steel	★★★★
00C-SA-SE	S/S Antimagnetic	★



Strong Tip with Finger Serrations Tweezers

★★★ High Precision

★★ Fine Precision ★ General Precision

Available in Stainless Steel, S/S Antimagnetic, Carbon Steel.

#AC Design 4 1/4"

Straight strong tips with medium fine points.

Outside finger serrations for easy handling and smooth inside tips.

PART #	MATERIAL	STARS
AC-SA	S/S Antimagnetic	★★★★
AC	Carbon Steel	★★★★
AC-SA-PI	S/S Antimagnetic	★★★
AC-PI	Carbon Steel	★★★
AC-SA-SE	S/S Antimagnetic	★



#00B Design 4 3/4"

Straight strong tips with fine points.

Outside finger serrations and smooth inside tips.

PART #	MATERIAL	STARS
00B-SA	S/S Antimagnetic	★★★★
00B-SA-PI	S/S Antimagnetic	★★★
00B-SA-SE	S/S Antimagnetic	★



#00D Design 4 3/4"

Straight strong tips with serrated points.

Inside tip serrations and outside finger serrations provide better gripping when handling small parts.

PART #	MATERIAL	STARS
00D-SA	S/S Antimagnetic	★★★★
00D	Carbon Steel	★★★★
00D-SA-PI	S/S Antimagnetic	★★★
00D-SA-SE	S/S Antimagnetic	★

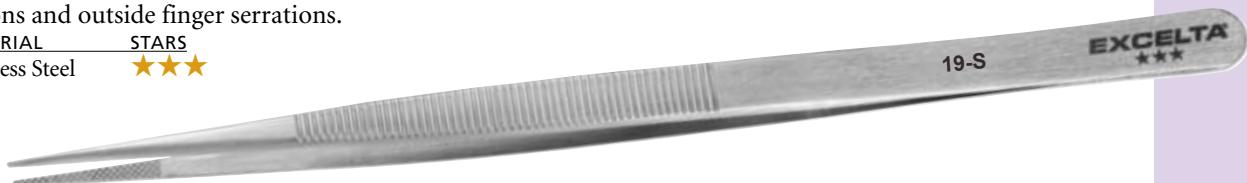


#19 Design 6 1/2"

Straight long tips with medium points.

Inside tip serrations and outside finger serrations.

PART #	MATERIAL	STARS
19-S	Stainless Steel	★★★★



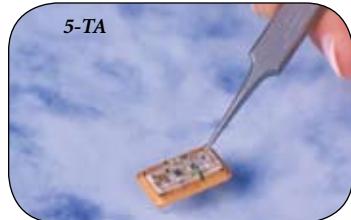
#21 Design 6", 8" or 12"

Straight strong tips with broad points.

General purpose assembly tweezers with inside tip serrations and outside finger serrations.

PART #	MATERIAL	STARS
21-6-SA	S/S Antimagnetic	★★★★
21-8-SA	S/S Antimagnetic	★★★★
21-SA-PI	S/S Antimagnetic	★★★
21-SA-SE	S/S Antimagnetic	★
21-SA-SE-12	S/S Antimagnetic	★





Strong Tip General Purpose Tweezers

★★★ High Precision

★★ Fine Precision ★ General Precision

Available in Stainless Steel, S/S Antimagnetic, Carbon Steel.

#22 Design 5 1/2"

Angle tips with medium fine points.

Features outside finger serrations and inside double-cut tip serrations.

Alignment pin helps tip alignment when bending leads and wires.

PART #	MATERIAL	STARS
22-SA	S/S Antimagnetic	★★★★
22	Carbon Steel	★★★★



#24 Design 6" or 8"

Angle tips with broad points.

Inside tip serrations and outside finger serrations, the angle tips provide better visibility.

PART #	MATERIAL	STARS
24-6-SA	S/S Antimagnetic	★★★★
24-8-SA	S/S Antimagnetic	★★★★
24-SA-PI	S/S Antimagnetic	★★★
24-6-PI	Carbon Steel	★★★
24-SA-SE	S/S Antimagnetic	★



#24A Design 4 1/2"

Curved tips with medium points.

Low cost general purpose tweezers with inside tip serrations, finger serrations, and alignment pin.

PART #	MATERIAL	STARS
24A-S-SE	Stainless Steel	★



#20 Design 5 1/2"

Straight tips with medium points.

Low cost general purpose tweezers with inside tip serrations and outside finger serrations.

PART #	MATERIAL	STARS
20-S	Stainless Steel	★★★★
20-SA-PI	S/S Antimagnetic	★★



#20A Design 4 1/2"

Straight tips with medium points.

Low cost general purpose tweezers with inside tip serrations and outside finger serrations.

PART #	MATERIAL	STARS
20A-S-SE	Stainless Steel	★



#231 Design 4 3/4"

Straight tips with medium points.

General purpose low cost tweezers. The 231A-SA-SE has smooth inside jaws, the 231-SA-SE has serrated inside jaws.

PART #	MATERIAL	STARS
231-SA-SE	S/S Antimagnetic	★
231A-SA-SE	S/S Antimagnetic	★



Strong Tip General Purpose Style Tweezers

★★★ High Precision

★★ Fine Precision ★ General Precision

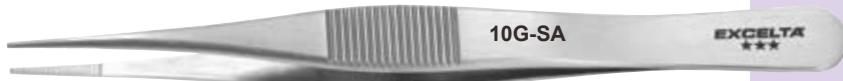
Stainless Steel Antimagnetic with Plastic Handles.

#10G Design 4 $\frac{3}{8}$ "

Tapered tips with medium serrated points.

The wide body with outside finger serrations fits comfortably in the hand when manipulating components.

PART #	MATERIAL	STARS
10G-SA	S/S Antimagnetic	★★★



#8 Design 4 $\frac{1}{4}$ "

Straight wide body tweezers with flat sharp points.

These heavy-duty tweezers with wide tips can be used to straighten small leads and wires.

PART #	MATERIAL	STARS
8-SA-PI	S/S Antimagnetic	★★



#AH Design 5"

Wide diamond shape tips with sharp serrated points.

The wide body design makes for easy gripping and handling.

PART #	MATERIAL	STARS
AH-SE	Carbon Steel	★



#AA Design 5"

Straight tips with medium points.

Smooth inside jaws for handling delicate parts; with plastic coated handle for added comfort.

PART #	MATERIAL	STARS
AA-SA-SE-PH	S/S Antimagnetic	★



#24 Design 6 $\frac{1}{2}$ "

Angled tips with blunt serrated points.

The angled tips provide better visibility when placing parts; with plastic coated handle for added comfort.

PART #	MATERIAL	STARS
24-SA-SE-PHS/S	Antimagnetic	★





Strong Precision Tip Tweezers

★★★ High Precision - Made In Switzerland

#0A Design 4 3/4"

Straight round tip tweezers with fine sharp points.

The round outside edge makes for a strong tip, enabling work to be performed in confined areas. Made from carbon steel, very hard points.

PART #	MATERIAL	STARS
0A	Carbon Steel	★★★



#60 Design 5 1/4"

Long straight tip tweezers with parallel points.

The inside tip surface is raised and closes parallel for positive and uniform holding of small parts.

PART #	MATERIAL	STARS
60-SA	S/S Antimagnetic	★★★



#P Design 4 3/4"

Straight tip tweezers with fine precision points.

Made from 400 series stainless steel making the points harder and stronger than the "SA" material.

PART #	MATERIAL	STARS
P-S	Stainless Steel	★★★



#64 Design 4 3/4"

Straight tip tweezers with fine precision points.

Smooth inside jaws for handling fine parts. The outside finger serrations create a greater feel when wearing gloves.

PART #	MATERIAL	STARS
64-SA	S/S Antimagnetic	★★★



Boley Style Electronic Tweezers

★★★ High Precision

★★ Fine Precision ★ General Precision

Available in Stainless Steel, Antimagnetic, Nickel Plated Carbon Steel.

#AA Design 5"

Straight tips with medium points.

General purpose use. The economical price makes these tweezers a very popular choice.

PART #	MATERIAL	STARS
AA-SA	S/S Antimagnetic	★★★★
AA-S	Stainless Steel	★★★★
AA	Carbon Steel	★★★★
AA-SA-PI	S/S Antimagnetic	★★
AA-SA-SE	S/S Antimagnetic	★
AA-S-SE	Stainless	★
AA-SE	Carbon Steel	★



#MM Design 5"

Straight tips with sturdy points.

Popular tweezers for general assembly work in dense areas.

PART #	MATERIAL	STARS
MM	Carbon Steel	★★★★
MM-SA-PI	S/S Antimagnetic	★★
MM-SA-SE	S/S Antimagnetic	★
MM-SE	Carbon Steel	★



#GG Design 5"

Tapered tip tweezers with medium points.

The long tapered tips can reach deep into recessed areas.

PART #	MATERIAL	STARS
GG-SA	S/S Antimagnetic	★★★



#RR Design 5 1/2"

Straight tip tweezers with blunt points.

Heavy-duty tweezers with wide body makes for easy handling.

PART #	MATERIAL	STARS
RR	Carbon Steel	★★★





36C-SA

Small Parts Handling Tweezers

Round Tips – Flat Tips – Broad Tips

Specially designed tips for handling small wires and chips.

38 ★★★

4 1/2"

39 ★★★

4 1/2"

40 ★★★

4 1/2"

40-S ★★★

4 1/2"

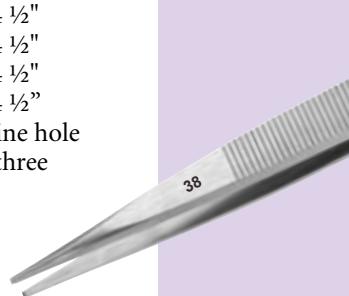
Small tip tweezers with a very fine hole in the extreme tips. Available in three sizes. Hole sizes are as follows:

#38 = .008"

#39 = .012"

#40 = .015"

#40-S=.015"



32A-SA ★★★

4 1/2"

Round tip tweezers

Holds components firmly, offering easy positioning on many types of resistors and diodes. The 45 degree angle allows maximum surface clearance. In a closed position, the inside diameter is .156" (4.0 mm.) Stainless Steel Antimagnetic.



35A-SA ★★★

4 3/4"

35A-SA-SE ★

4 3/4"

Broad tip tweezers

Useful for handling delicate electronic parts. Stainless Steel Antimagnetic.



42A-SA ★★★

4 1/2"

Round tip tweezers

Holds components firmly, offering easy positioning. Can be used on many types of cylindrical components. The 45 degree angle allows maximum surface clearance. In a closed position, the inside diameter is .253" (6.5mm). Stainless Steel Antimagnetic.



815-SA-SE ★

4 1/2"

Round tip tweezers

These tweezers can handle many types of round components and electronic devices. The inside hole diameter is 0.060" (1.5mm). Stainless Steel Antimagnetic.



27-SA ★★★

4 1/4"

Flat tip tweezers

Very useful when straightening components or lead wires. Stainless Steel Antimagnetic.

CTM= .247 wide

.016 high



135A-SA ★★★

4 3/4"

Broad tip tweezers

Used for picking up delicate parts by the edges from a flat surface. Stainless Steel Antimagnetic.



36A-SA ★★★

4 3/4"

36A-SA-SE ★

4 3/4"

Broad tip tweezers

The 45 degree offset angle on the tips is useful for picking up parts from flat surfaces. Stainless Steel Antimagnetic.

CTM= .247" wide

.016" high



Surface Mount Handling Tweezers

★★★ High Precision ★★ Fine Precision

Paddle Tip Design for Placing Components Quickly and Easily

Stainless Steel Antimagnetic with outside finger grooves for better control.



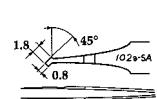
102A-SA ★★★

102A-SA-PI ★★

Chip Handling Paddle Tip Tweezers

The wider tip has been designed for easy manipulation of most chips and miniature components. Anti-crush device has been added to reduce chip breakage. Stainless Steel Antimagnetic.

4 1/2"



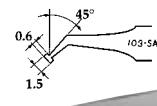
103-SA ★★★

103-SA-PI ★★

S.M.D. Paddle Tip Tweezers

The 45° angle tips are very helpful for placing SOT-23 and SOT-89 packages. Stainless Steel Antimagnetic.

4 1/4"



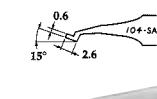
104-SA ★★★

104-SA-PI ★★

S.M.D. Paddle Tip Tweezers

The wide paddle tips provide perfect control when manipulating and placing SOT-89 transistors and monolithic chip capacitors. Stainless Steel Antimagnetic.

4 1/2"

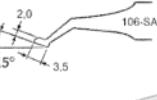


106-SA ★★★

S.M.D. Paddle Tip Tweezers

The wider tips help when placing S.O.T. packages. Stainless Steel Antimagnetic.

4 1/4"

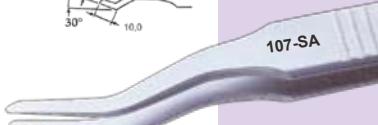
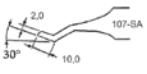


107-SA ★★★

S.M.D. Paddle Tip Tweezers

The longer tip design will grip parts on the sides when picking them off a flat surface. Stainless Steel Antimagnetic.

4 1/4"



108-SA ★★★

S.M.D. Paddle Tip Tweezers

The tips have an inside groove for better grip and control, anti-crush allows for delicate manipulating of small parts. Stainless Steel Antimagnetic.

4 1/4"



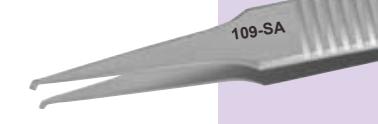
109-SA ★★★

109-SA-PI ★★

S.M.D. Paddle Tip Tweezers

The small tips are set at a 45° angle for working in dense areas. Stainless Steel Antimagnetic.

4 1/4"

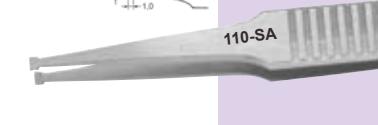


110-SA ★★★

S.M.D. Paddle Tip Tweezers

The small groove on the inside of the tips provides better control when placing small parts and wires. Stainless Steel Antimagnetic.

4 1/4"





124-SA

Surface Mount Handling Tweezers

★★★ High Precision - Made In Switzerland

Paddle Tip Design for Placing Components Quickly and Easily

Stainless Steel Antimagnetic with outside finger grooves for better control.

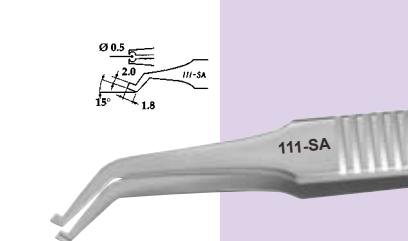
111-SA ★★★

S.M.D. Paddle Tip Tweezers

The angle of the tips and the small 0,5mm hole will firmly hold many types of SMD components.

Stainless Steel Antimagnetic.

4 1/2"

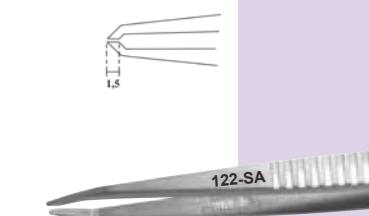
**122-SA ★★★**

Chip Handling Paddle Tip Tweezers

The strong flat tips will firmly hold components when de-soldering.

Stainless Steel Antimagnetic.

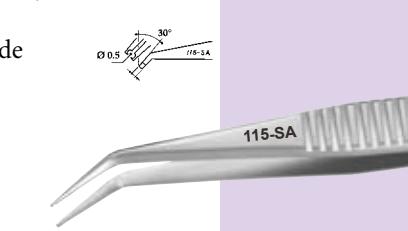
4 1/2"

**115-SA ★★★**

S.M.D. Paddle Tip Tweezers

The 0,5mm groove on the inside of the tip is designed on a 30° angle, for holding and placing cylindrical devices. Stainless Steel Antimagnetic.

4 1/4"

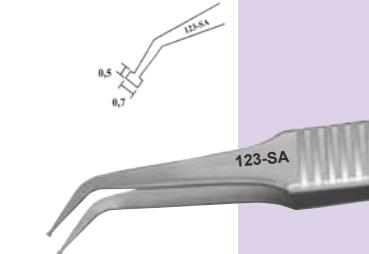
**123-SA ★★★**

Chip Handling Paddle Tip Tweezers

The smaller size tips will handle many types of S.M.D. resistors and capacitors.

Stainless Steel Antimagnetic.

4 1/2"

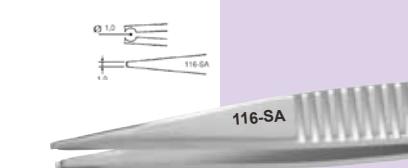
**116-SA ★★★**

S.M.D. Paddle Tip Tweezers

Tips have a 1mm groove for handling small cylindrical devices.

Stainless Steel Antimagnetic.

4 1/4"

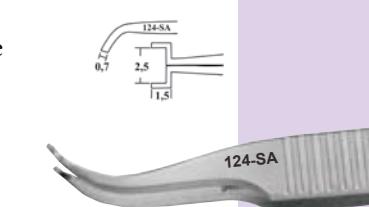
**124-SA ★★★**

S.M.D. Paddle Tip Tweezers

The unique shape tips on these tweezers are helpful in placing SOT-23 and TO-236 packages.

Stainless Steel Antimagnetic.

4 1/4"

**117-SA ★★★**

S.M.D. Paddle Tip Tweezers

The tip design will firmly hold 3mm and larger parts. Stainless Steel Antimagnetic.

4 1/2"

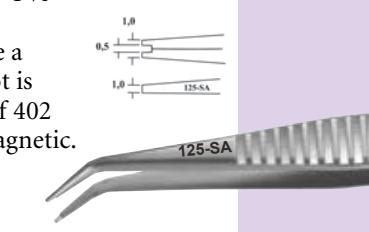
**125-SA ★★★**

S.M.D. Paddle Tip Tweezers

The tips on these tweezers have a 0,5mm slot in the end. This slot is great for picking and placing of 402 resistors.

Stainless Steel Antimagnetic.

4 1/4"

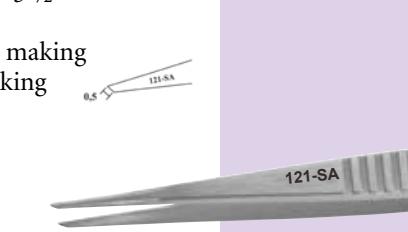
**121-SA ★★★**

S.M.D. Paddle Tip Tweezers

The thin flat tips are cut at 45° making these tweezers useful when picking parts from a "Gel Pak".

Stainless Steel Antimagnetic.

5 1/2"

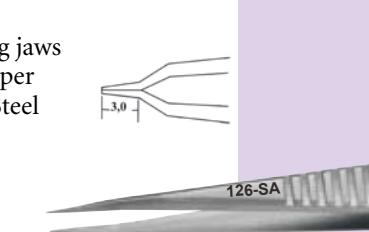
**126-SA ★★★**

S.M.D. Fine Tip Tweezers

The fine tip and parallel closing jaws are very useful for routing jumper wires on PC boards.

Stainless Steel Antimagnetic.

4 1/4"



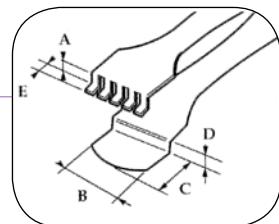
Wafer Handling Tweezers

★★★ High Precision – Made in Switzerland

★★ Fine Precision – Made in Italy

Includes special engaging slot for easy handling of wafers.

Stainless Steel Antimagnetic.



300 Series Wafer Tweezers

Designed to handle 3" wafers

390-SA ★★★ 4 3/4"

390-SA-PI ★★ 4 3/4"

Fine Tip

A 4.0 mm-.157"
B 6.5-.257"
C 5.0-.197"
D 3.5-.138"



390B-SA ★★★ 4 3/4"

390B-SA-PI ★★ 4 3/4"

Bent Handle

A 4.0 mm-.157"
B 6.5-.257"
C 5.0-.197"
D 3.5-.138"
E 1.5-.060"



390L-SA ★★★ 4 3/4"

390L-SA-PI ★★ 4 3/4"

Top Lip

A 4.0 mm-.157"
B 6.5-.257"
C 5.0-.197"
D 3.5-.138"
E 1.5-.060"



390T-SA ★★★ 4 3/4"

390T-SA-PI ★★ 4 3/4"

Teflon Pad

A 7.2 mm-.285"
B 6.5-.257"
C 5.0-.197"
D 3.5-.138"

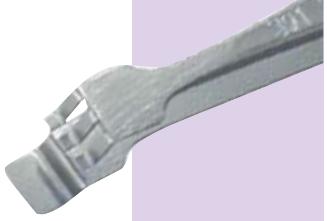


391-SA ★★★ 4 3/4"

391-SA-PI ★★ 4 3/4"

Three Teeth

A 4.0 mm-.157"
B 6.5-.257"
C 5.0-.197"
D 3.5-.138"
E 1.5-.060"



400 Series Wafer Tweezers

Designed to handle 4" wafers

490-SA ★★★ 4 7/8"

490-SA-PI ★★ 4 7/8"

Fine Tip

A 4.0 mm-.157"
B 12.0-.472"
C 7.0-.275"
D 3.1-.125"



490B-SA ★★★ 4 7/8"

490B-SA-PI ★★ 4 7/8"

Bent Handle

A 4.0 mm-.157"
B 12.0-.472"
C 7.0-.275"
D 3.5-.138"
E 3.1-.125"



490L-SA ★★★ 4 7/8"

490L-SA-PI ★★ 4 7/8"

Top Lip

A 4.0 mm-.157"
B 12.0-.472"
C 7.0-.275"
D 3.5-.138"
E 3.1-.125"



490T-SA ★★★ 4 7/8"

490T-SA-PI ★★ 4 7/8"

Teflon Pad

A 4.0 mm-.157"
B 12.0-.472"
C 7.0-.275"
D 3.5-.138"



491-SA ★★★ 4 7/8"

491-SA-PI ★★ 4 7/8"

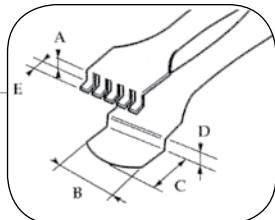
Four Teeth

A 4.0 mm-.157"
B 12.0-.472"
C 7.0-.275"
D 3.5-.138"
E 3.1-.125"





891-SA



Wafer Handling Tweezers

★★★ High Precision – Made in Switzerland

★★ Fine Precision – Made in Italy

Includes special engaging slot for easy handling of wafers.

Stainless Steel Antimagnetic.

500 Series Wafer Tweezers

Designed to handle 5" wafers

590-SA ★★★ 5"

590-SA-PI ★★

Fine Tip

A 4.0 mm-.157"
B 16.2-.638"
C 9.0-.355"
D 2.7-.106"

591B-SA ★★★ 5"

591B-SA-PI ★★

Bent Handle

A 3.0 mm-.118"
B 16.2-.638"
C 9.0-.355"
D 2.7-.106"
E 3.1-.125"

590L-SA ★★★ 5"

590L-SA-PI ★★

Top Lip

A 4.5 mm-.180"
B 16.2-.638"
C 9.0-.355"
D 2.7-.106"
E 3.1-.125"

590T-SA ★★★ 5"

590T-SA-PI ★★

Teflon Pad

A 6.5 mm-.257"
B 16.2-.638"
C 9.0-.355"
D 2.7-.106"

591-SA ★★★ 5"

591-SA-PI ★★

Five Teeth

A 3.0 mm-.118"
B 16.2-.638"
C 9.0-.355"
D 2.7-.106"
E 3.1-.125"



600 Series Wafer Tweezers

Designed to handle 6" wafers

690-SA ★★★ 5"

690-SA-PI ★★

Fine Tip

A 3.8 mm-.150"
B 19.8-.780"
C 9.0-.355"
D 2.7-.106"

691B-SA ★★★ 5"

691B-SA-PI ★★

Bent Handle

A 3.0 mm-.118"
B 19.8-.780"
C 9.0-.355"
D 2.7-.106"
E 2.3-.089"

690L-SA ★★★ 5"

690L-SA-PI ★★

Top Lip

A 3.5 mm-.140"
B 19.8-.780"
C 9.0-.355"
D 2.7-.106"
E 3.0-.120"

690T-SA ★★★ 5"

690T-SA-PI ★★

Teflon Pad

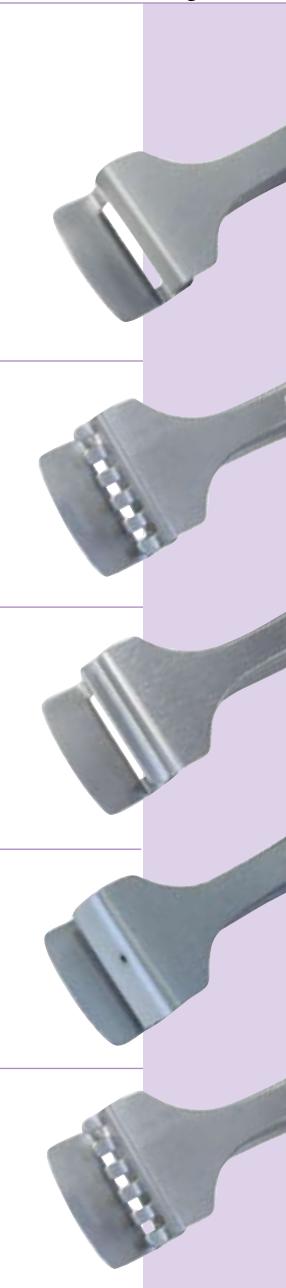
A 6.5 mm-.257"
B 19.8-.780"
C 9.0-.355"
D 2.7-.106"

691-SA ★★★ 5"

691-SA-PI ★★

Six Teeth

A 3.0 mm-.118"
B 19.8-.780"
C 9.0-.355"
D 2.7-.106"
E 2.3-.089"



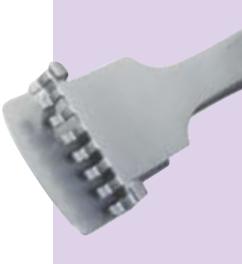
800 Series Wafer Tweezers

Designed to handle 300mm wafers

891-SA ★★★ 7"

Eight Teeth

A 3.8mm-.150"
B 28.5-1.120"
C 11.5-.450"
D N/A
E 2.15-.085"



890L-SA ★★★ 7"

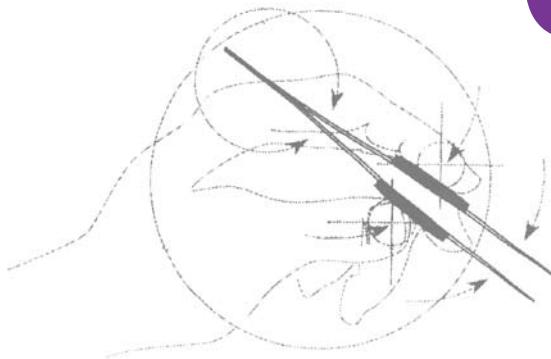
Top Lip

A 3.8mm-.150"
B 28.5-1.120"
C 11.5-.450"
D N/A
E 2.15-.085"



ERGO-TWEEZ™

A Breakthrough In Handling



★★★★★ **COBALTIMA**

Cobalt Steel
MADE IN SWITZERLAND



ESD SAFE
ERGO-TWEEZ™

★★★★ **High Precision**

Stainless Steel Antimagnetic NEVERUST®
MADE IN SWITZERLAND

*Wider, Softer,
Designed With You In Mind.
Better Control.*



It's more than meets the eye.

- A soft foam cushion grip specially designed to combat operator fatigue and Carpel Tunnel Syndrome.
- Acts as a heat shield.
- Great for die attaching.

★★ **Fine Precision**

Stainless Steel Antimagnetic
MADE IN ITALY



★★★★★ Cobaltima® "ET" Tweezers

Made in Switzerland

Cobaltima® Ergonomic Tweezers

Foam cushion grips help provide relief from hand fatigue.



- Super Neverust®
- Cobalt alloy steel
- Tips: harder than stainless steel
- Antimagnetic
- Excellent resistance to corrosion
- Resistant to temperatures up to 500°C
- Radius edges are standard

3C-CO-ET ★★★★★ 4 1/4"

Straight Tip tweezers with extra fine points and ESD safe ergonomic grip. Cobalt Steel is harder than Stainless Steel and is both antimagnetic and resistant to corrosion.

CTM = .0031" wide
.0016" high



3-CO-ET ★★★★★ 4 3/4"

Straight Tip tweezers with extra fine points and ESD safe ergonomic grip. Cobalt Steel is harder than Stainless Steel and is both antimagnetic and resistant to corrosion.

CTM = .0031" wide
.0016" high



5-CO-ET ★★★★★ 4 1/4"

Tapered Tip tweezers with very fine precision points and ESD safe ergonomic grip. Cobalt Steel is harder than Stainless Steel and is both antimagnetic and resistant to corrosion.

CTM = .0020" wide
.0004" high



51-CO-ET ★★★★★ 4 1/2"

Bent Tip tweezers with micro fine points and ESD safe ergonomic grip. Cobalt Steel is harder than Stainless Steel and is both antimagnetic and resistant to corrosion.

CTM = .0030" wide
.0015" high



7-CO-ET ★★★★★ 4 1/2"

Curved Tip tweezers with very fine points and ESD safe ergonomic grip. Cobalt Steel is harder than Stainless Steel and is both antimagnetic and resistant to corrosion.

CTM = .0027" wide
.0012" high



3C-CO-ET

★★★ High Precision “ET” Tweezers

Made in Switzerland

Stainless Steel Antimagnetic Ergonomic Tweezers

Foam cushion grips help provide relief from hand fatigue.

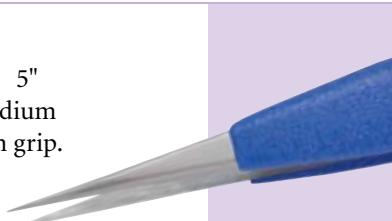


7-SA-ET

AA-SA-ET ★★★

5"

Straight tip tweezers with medium points. ESD Safe foam cushion grip. CTM = .0080" wide .0080" high



5A-SA-ET ★★★

4 1/2"

Off-set tip tweezers with high precision fine points. ESD Safe foam cushion grip. CTM = .0051" wide .0031" high



1-SA-ET ★★★

4 1/2"

Straight tip tweezers with fine points. ESD Safe foam cushion grip. CTM = .0078" wide .0047" high



5B-SA-ET ★★★

4 1/4"

Bent tip tweezers with high precision fine points. ESD Safe foam cushion grip. CTM = .0039" wide .0023" high



2-SA-ET ★★★

4 3/4"

Tapered tip tweezers with medium points. ESD Safe foam cushion grip. CTM = .0078" wide .0047" high



6-SA-ET ★★★

4 1/2"

Angled tip tweezers with flat sharp points. ESD Safe foam cushion grip. CTM = .0066" wide .0039" high



2A-SA-ET ★★★

4 3/4"

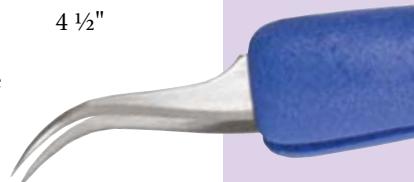
Tapered tip tweezers with flat points. ESD Safe foam cushion grip. CTM = .0590" wide .0078" high



7-SA-ET ★★★

4 1/2"

Curved Tip tweezers with extra fine points. ESD Safe foam cushion grip. CTM = .0066" wide .0039" high



3-SA-ET ★★★

4 3/4"

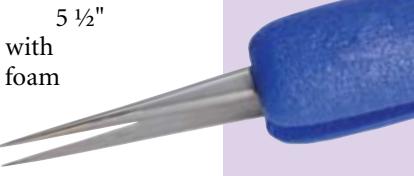
Straight tip tweezers with very fine points. ESD Safe foam cushion grip. CTM = .0066" wide .0039" high



SS-SA-ET ★★★

5 1/2"

Straight long tip tweezers with precision points. ESD Safe foam cushion grip. CTM = .0078" wide .0047" high



3C-SA-ET ★★★

4 1/4"

Straight tip tweezers with very fine points. ESD Safe foam cushion grip. CTM = .0066" wide .0039" high



00-SA-ET ★★★

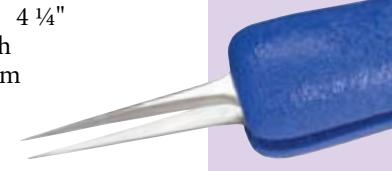
4 1/2"

Strong tip tweezers with medium points. ESD Safe foam cushion grip. CTM = .0177" wide .0098" high

5-SA-ET ★★★

4 1/4"

Tapered tip tweezers with high precision points. ESD Safe foam cushion grip. CTM = .0039" wide .0024" high



00D-SA-ET ★★★

4 3/4"

Strong serrated tip tweezers with medium points. ESD Safe foam cushion grip. CTM = .0177" wide .0098" high





★★ Fine Precision “ET” Tweezers

Made in Italy

Stainless Steel Antimagnetic Ergonomic Tweezers

Foam cushion grips help provide relief from hand fatigue.

AA-SA-PI-ET ★★

5"

Straight tip tweezers with medium points. ESD Safe foam cushion grip.



2A-SA-PI-ET ★★

4 3/4"

Tapered tip tweezers with flat points. ESD Safe foam cushion grip.



3-SA-PI-ET ★★

4 3/4"

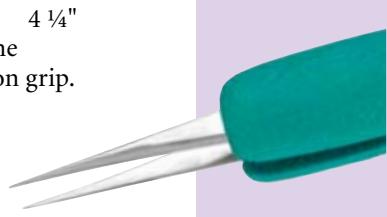
Straight tip tweezers with fine points. ESD Safe foam cushion grip.



3C-SA-PI-ET ★★

4 1/4"

Straight tip tweezers with fine points. ESD Safe foam cushion grip.



5-SA-PI-ET ★★

4 1/4"

Tapered tip tweezers with extra fine points. ESD Safe foam cushion grip.



5A-SA-PI-ET ★★

4 1/2"

Off-set tip tweezers with very fine points. ESD Safe foam cushion grip.



5B-SA-PI-ET ★★

4 1/4"

Bent tip tweezers with very fine points. ESD Safe foam cushion grip.



6-SA-PI-ET ★★

4 1/2"

Angled tip tweezers with flat sharp points. ESD Safe foam cushion grip.



7-SA-PI-ET ★★

4 1/2"

Curved Tip tweezers with very fine points. ESD Safe foam cushion grip.



00-SA-PI-ET ★★

4 1/2"

Strong tip tweezers with medium points. ESD Safe foam cushion grip.



00D-SA-PI-ET ★★

4 3/4"

Strong serrated tip tweezers with medium points. ESD Safe foam cushion grip.



SofTip Tweezers with Replaceable Tips

Will not leave metal marks, free from metal contamination.



A-275A-CE

★★★★★ ESD Safe Ceramic Tip Tweezers

Made in Switzerland

Zirconia Ceramic is six-times harder than Stainless Steel, non-magnetic and chemically inert. Solder will not adhere to the surface. Working temperature of over 2000 degrees F. Stainless Steel Body with Replaceable Tips. Non-metal tips for safe handling of delicate parts. Clean room safe, also available in Static Dissipative tips.



161A-RT

★★★★★ PEEK Tip Tweezers

Made in Switzerland

PEEK – Polyetheretherketon is high temperature thermoplastic with excellent chemical resistance. Inert to all common solvents, it resists a wide range of inorganic liquids, and is widely used with semi-conductors. It has a working temperature of 249° C (480° F). Lightweight, non-magnetic aluminum body.



179A-RT

★★★★★ Copolymer Tip Tweezers

Made in Switzerland

Copolymer tips are a special blend of static dissipative plastics without the use of carbon fibers. Surface resistivity of 10^6 Ohm cm, temperature resistant to 200 C (392 F) and are Silicon and Chloride free. Stainless steel antimagnetic body with screw on replaceable tips. ESD and Clean Room safe.



159B-RTW

★★★ Delrin Tip Tweezers

Made in Italy

Delrin tips have outstanding resistant to chemicals and solvents. They are electrically insulative and resistant to temperatures up to 175 C (347 F). Stainless Steel antimagnetic body with screw on replaceable tips.



159B-RT

★★★ Carbofib Tip Tweezers

Made in Italy

Carbofib is a Teflon base material with carbon fibers added. Carbofib is ESD Safe with a surface resistivity of 10^8 Ohm cm, and temperature resistant up to 121 C (249 F). Stainless Steel antimagnetic body with screw on replaceable tips.

D-275A-CE



Ceramic Tip Tweezers

Made in Switzerland

Stainless Steel Body with Replaceable Tips. Non-metal tips for safe handling of delicate parts. Zirconia Ceramic is six-times harder than Stainless Steel, non-magnetic and chemically inert. Solder will not adhere to the surface. Working temperature of over 2000 degrees(F). Clean room safe, also available in Static Dissipative tips.

A-275A-CE ★★★★

4 3/4"

Dissipative Ceramic tips screwed onto Stainless Steel Antimagnetic body. Tip size .012" wide.



A-275-RTX Replacement Tips

D-275A-CE ★★★★

4 3/4"

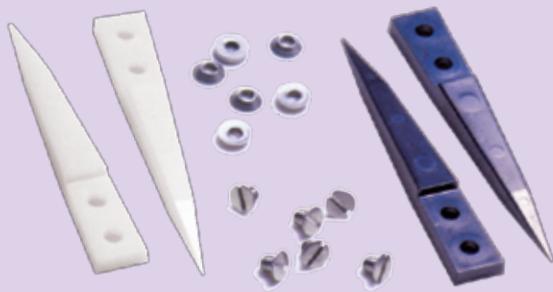
White Ceramic tips screwed onto Stainless Steel Antimagnetic body. Tip size .012" wide.



D-275-RTX Replacement Tips

Ceramic Replacement Tip Kits

complete with two tips, four screws and washers for easy replacement of worn tips.



D-275-RTX

A-275-RTX

276-CE ★★★

5"

White Ceramic tips with new snap-on rivet system, nickel silver non-magnetic body. Tip size .020" wide.



277-CE ★★★

5"

White Ceramic tips with new snap-on rivet system, nickel silver non-magnetic body. Tip size .040" wide.



DN-277-CE ★★★★

4 3/4"

White Ceramic tips Stainless Steel Antimagnetic, Reverse Action body. Tip size .020" wide.



DE-277-CE ★★★★

5 1/4"

White Ceramic tips with new snap-on rivet system, ergonomic designed stainless steel antimagnetic body. Tip size .020" wide.



★★★★★ PEEK Tip Tweezers

New Snap-On Replaceable Tip Rivet System
Made in Switzerland. Widely used in Clean Rooms.



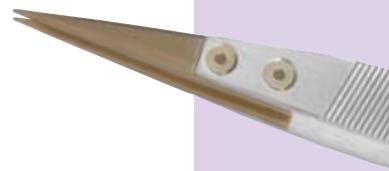
PEEK – Polyetheretherketone is high temperature thermoplastic with excellent chemical resistance. Inert to all common solvents, it resists a wide range of inorganic liquids, and is widely used with semi-conductors. It has a working temperature of 249° C (480°F).

- All new and improved “snap-on” tip system. Easily replace worn out tips
- High temperature resistance 249° C (480°F) Softip material
- Lightweight aluminum body with easy grip finger serrations

161A-RT ★★★★☆

PEEK snap-on replaceable tip tweezers on lightweight aluminum body with easy grip finger serrations. Tip size is .020" wide.

5"

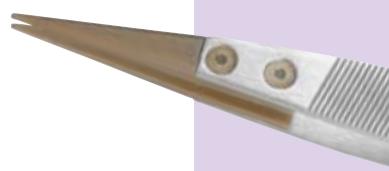


161A-RTX Replacement Tips

161B-RT ★★★★☆

PEEK snap-on replaceable tip tweezers on lightweight aluminum body with easy grip finger serrations. Tip size is .040" wide.

5"

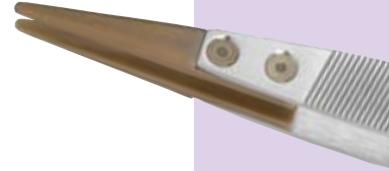


161B-RTX Replacement Tips

161C-RT ★★★★☆

PEEK snap-on replaceable tip tweezers on lightweight aluminum body with easy grip finger serrations. Tip size is .080" wide.

5"



161C-RTX Replacement Tips

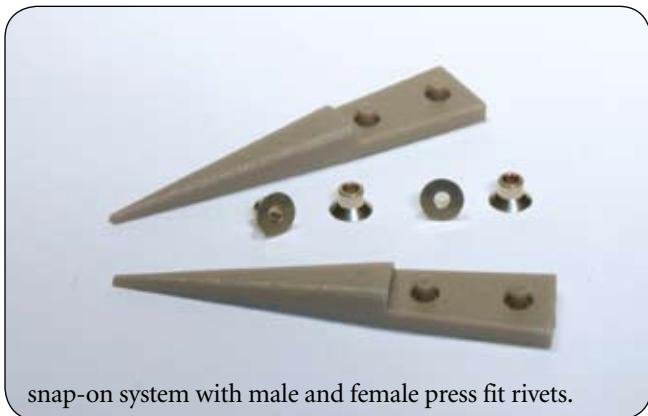
761A-RT ★★★★☆

PEEK snap-on replaceable curved tip tweezers on lightweight aluminum body with easy grip finger serrations. Tip size is .020" wide.

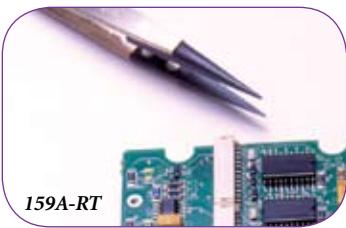
5"



761A-RTX Replacement Tips



snap-on system with male and female press fit rivets.



159A-RT

★★★★★ Copolymer Tip Tweezers

Made in Switzerland

Screw on Replaceable Tips on Stainless Steel Body. ESD and Clean Room Safe.

Copolymer Tips

- ESD Safe tips – Surface Resistivity 10^6 Ohm cm
- Temperature resistance to 200° C (392° F)
- Acetone and Alcohol resistant
- Silicon and chloride free

Protect Against:

ESD damage

Nicking, Scratching, Marring

ESD SAFE



179A-RT ★★★★

5"

Copolymer fine tip tweezers on stainless steel body. Screw on replaceable tips. ESD and Clean Room safe. Tip size .020" wide.



179A-RTX Replacement Tips

179D-RT ★★★★

5"

Copolymer flat tip tweezers on stainless steel body. 2A Style Head. Screw on replaceable tips. ESD and Clean Room safe. Tip size .080" wide.

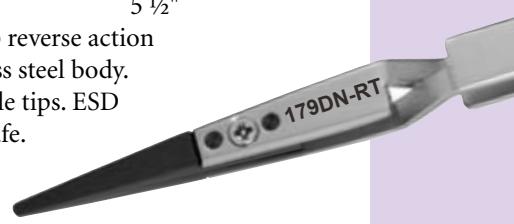


179D-RTX Replacement Tips

179DN-RT ★★★★

5 1/2"

Copolymer flat tip reverse action tweezers on stainless steel body. Screw on replaceable tips. ESD and Clean Room safe. Tip size .080" wide.



179D-RTX Replacement Tips

★★★ Delrin Tip Tweezers

Made in Italy

Screw on Replaceable Tips on Stainless Steel Body. Highly resistant to chemicals and solvents.



Delrin Tips

- Electrically Insulative
- Temperature resistance to 175° C (347° F)
- Outstanding resistance to chemicals and solvents
- Replaceable screw on tips

159B-RTW ★★ 5"

White Delrin tip tweezers on Stainless Steel body. Screw on replaceable tips. Good for Clean Rooms. Electrical insulative. Tip size .040" wide.



159B-RTWX Replacement Tips

159C-RTW ★★ 5"

White Delrin medium tip tweezers on Stainless Steel body. Screw on replaceable tips. Good for Clean Rooms. Electrical insulative. Tip size .080" wide.



159C-RTWX Replacement Tips

159D-RTW ★★ 5"

White Delrin flat tip tweezers on Stainless Steel body. Screw on replaceable tips. Good for Clean Rooms. Electrical insulative. Tip size .060" wide.



159D-RTWX Replacement Tips

159A-RT



★★★ Carbofib Tip Tweezers

Made in Italy

Screw on Replaceable Tips on Stainless Steel Body. Safe Handling of Delicate Parts, ESD Safe.

Carbofib Tips

- Choose from seven new styles
- Screw on replaceable tips
- Softip™ tweezers - safe handling of delicate parts
- ESD Safe tips - Surface Resistivity 10^8 Ohm cm
- 30% Carbon fibers added for high stiffness
- Temperature resistance to 121°C (249°F)

159-RT ★★★

5"

Extra Fine Carbofib tip tweezers on Stainless Steel body. Screw on replaceable tips. Tip size .012" wide.



Replacement Tips 159-RTX

159A-RT ★★★

5"

Fine Carbofib tip tweezers on Stainless Steel body. Screw on replaceable tips. Tip size .020" wide.



Replacement Tips 159A-RTX

159B-RT ★★★

5"

Small Carbofib tip tweezers on Stainless Steel body. Screw on replaceable tips. Tip size .040" wide.



Replacement Tips 159B-RTX

159C-RT ★★★

5"

Medium Carbofib tip tweezers on Stainless Steel body. Screw on replaceable tips. Tip size .080" wide.



Replacement Tips 159C-RTX

159D-RT ★★★

5"

Flat Carbofib tip tweezers on Stainless Steel body. Screw on replaceable tips. Tip size .060" wide.



Replacement Tips 159D-RTX

159E-RT ★★★

5"

Large Carbofib tip tweezers on Stainless Steel body. Screw on replaceable tips. Tip size .120" wide.



Replacement Tips 159E-RTX

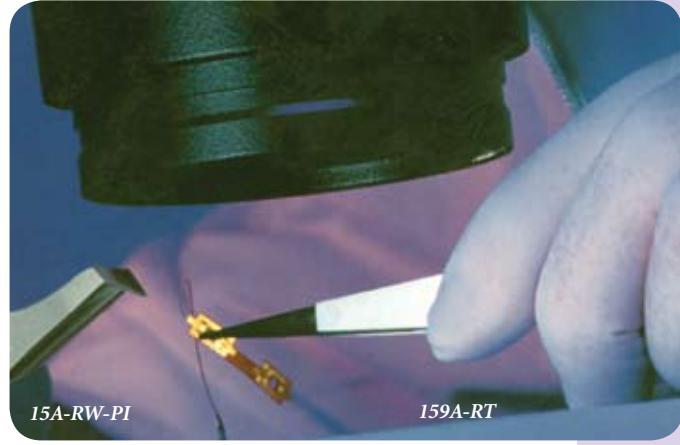
759-RT ★★★

5"

Curved Carbofib tip tweezers on Stainless Steel body. Screw on replaceable tips. Tip size .017" wide.



Replacement Tips 759-RTX



Plastic Handling Tweezers

Sharp tips, Flat tips, Round tips, Wide Angle tips.
General precision handling without metal contact.



7-LER ★

4 1/2"

Glass filled Delrin tweezers with sharp pointed tips.

7A-LER ★

4 1/2"

ACETAL Clean room safe, anti-static tweezers, sharp pointed tips.

808 ★

4 1/2"

Glass filled Delrin tweezers with sharp pointed angle tips.

609 ★

4 1/2"

Glass filled Delrin tweezers with 1/8" wide tips.

609A ★

4 1/2"

ACETAL Clean room safe, anti-static tweezers, 1/8" wide tips.

61 ★

4 5/8"

Glass filled Delrin tweezers with 9/32" wide tips.

300 ★

4 5/8"

Glass filled Delrin tweezers with 3/32" wide tips.

P2A ★

4 5/8"

Glass filled Delrin tweezers with 7/64" flat tips.

3C-ESD ★★

4 5/8"

ESD Safe Plastic tweezers with sharp pointed tips. Surface resistivity of 10^5 Ohm cm.

NEW ITEM

609-ESD ★★

4 5/8"

ESD Safe Plastic tweezers with 1/8" wide tips. Surface resistivity of 10^5 Ohm cm.

NEW ITEM

35A-ESD ★★

4 1/2"

ESD Safe Plastic tweezers with 1/4" wide tips. Surface resistivity of 10^5 Ohm cm.

NEW ITEM

6-ESD ★★

4 3/4"

ESD Safe Plastic tweezers with angled tips and sharp points. Surface resistivity of 10^5 Ohm cm.

NEW ITEM

2A-ESD ★★

4 5/8"

ESD Safe Plastic tweezers with tapered tips 1/16" flat points. Surface resistivity of 10^5 Ohm cm.

NEW ITEM



PLIERS AND CUTTERS

★★★★★ The Star System ★★★★★

Choose the quality and price that's right for you.

When choosing a hand tool you should consider...

The Shape of the cutting head will determine the expected life you get from a cutter. A round head cutter of the same size will outlast a tapered or tapered relieved head cutter. The more material behind the cutting edge, the longer the life of the tool.

The "Type of Cut" refers to the outside angle of the cutting blades. A semi-flush cutter will produce more cuts than a maximum flush cutter, and a maximum flush cutter will produce more cuts than an optimum flush cutter. Be sure to choose the type of cut that suits your cutting needs.

The Size of the tool should correctly fit the hand of the person using it. Excelta manufactures tools in many head styles and handle lengths. Your local Excelta Certified Representative will be happy to recommend the proper size tool for your applications.

The Grip on a hand tool should fit comfortably in your hand. You can choose from our soft foam cushion grips or molded grips, both are ergonomically designed and ESD safe.

★★★★★ **Five Star** 7000 series cutters and 700 series pliers are made in the USA from 1% carbon tool steel. Our cutting edges are induction hardened to 63-65 Rockwell C. The redesigned, longer lasting, stainless steel leaf springs provide smooth operation. Available in two handle sizes and three types of cuts.

7100 series cutters – long ergonomic foam cushion grips, ESD safe.

7200 series cutters – ergonomic molded teal grips, ESD safe.

7000EH series cutters – Tungsten alloy hard wire cutters, ESD safe molded teal grips.

700 series pliers – ergonomic molded teal grips, ESD safe.

★★★★★ **Four Star** 8000 series cutters are forged tool steel with an anti-glare black finish. Available in three head sizes and two types of cuts, with molded teal grips.

★★★ **Three Star** cutters and pliers are the standard line of the industry. Forged in Italy from Chrome Vanadium tool steel, which offers the most head shapes and handle sizes to choose from.

"EI" series cutters – ESD safe, soft foam cushion grips are standard.

"I" series pliers – ESD safe, soft foam cushion grips are standard.

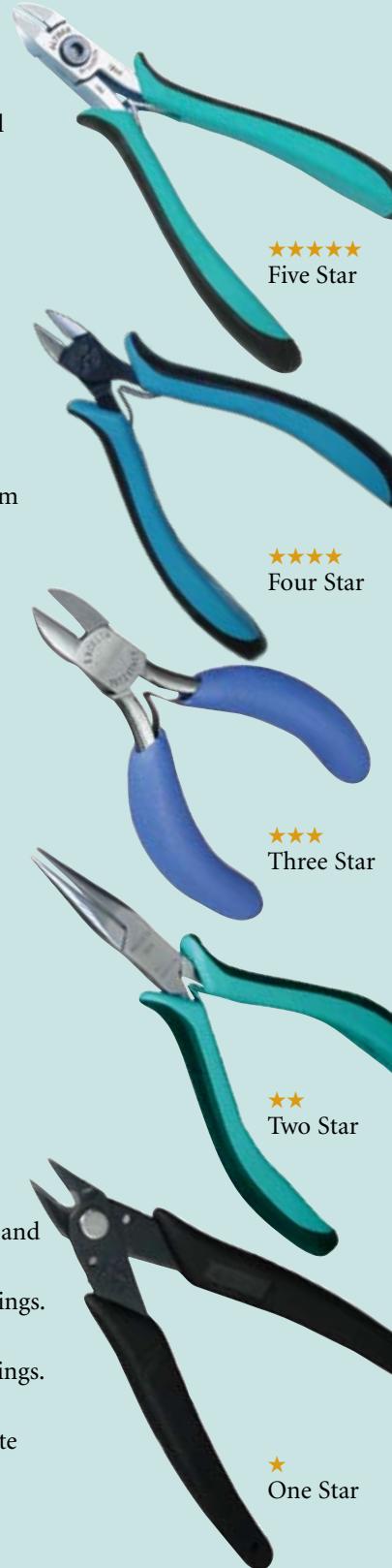
★★ **Two Star** 2000 series pliers are manufactured from hardened stainless steel. The 2600 series and 2800 series feature a precision box joint and the 2900 series feature a precision lap joint.

2900 series pliers – 6 1/2" with ESD Safe soft foam cushion grips and stainless steel leaf springs.

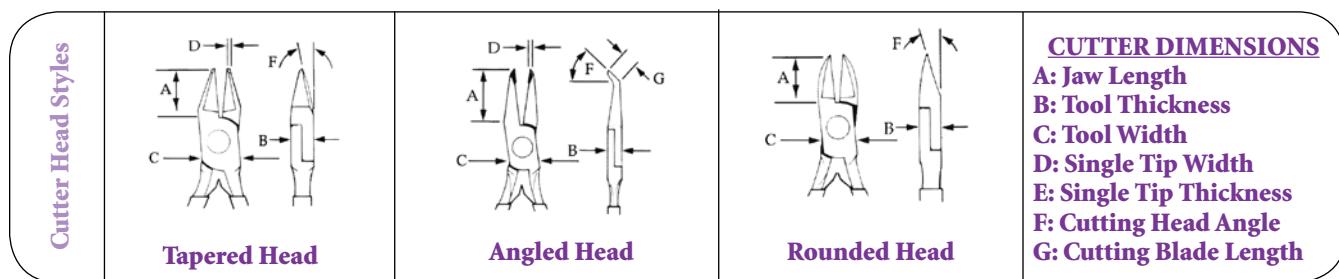
2800 series pliers – 5" with ESD Safe molded teal grips and stainless steel leaf springs.

2600 series pliers – 4 1/2" with ESD Safe soft foam cushion grips and stainless steel leaf springs.

★ **One Star** SE series cutters are stamped tools made of carbon steel. They have a black phosphate anti-glare finish and ESD safe molded grips.



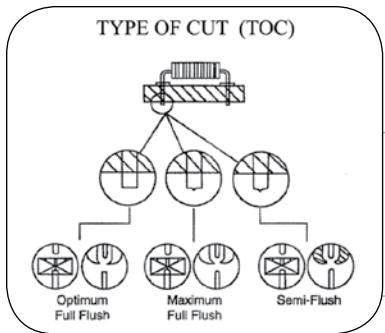
EXCELTA CUTTER CORRELATION CHART



Reference #	Cut	.010"	.012"	.016"	.020"	.025"	.032"	.040"	.050"	.064"
		30 AWG	28 AWG	26 AWG	24 AWG	22 AWG	20 AWG	18 AWG	16 AWG	14 AWG
57E-I	MF									
76E-I	MF									
77E-I	MF									
84E-I	MF									
86E-I-5	MF									
92E-I	MF									
95E-I	MF									
96E-I-4.75	SF									
97E-I	SF									
99E-I	MF									
7104E / 7204E	MF									
7130E / 7230E	SF									
7131E / 7231E	MF									
7132E / 7232E	OF									
7134E / 7234E	MF									
7135E / 7235E	OP									
7137E / 7237E	MF									
7138E / 7238E	OF									
7140E / 7240E	SF									
7141E / 7241E	MF									
7142E / 7242E	OF									
7143E / 7243E	SF									
7144E / 7244E	MF									
7145E / 7245E	OF									
7146E / 7246E	SF									
7147E / 7247E	MF									
7148E / 7248E	OF									
7150E / 7250E	SF									
7151E / 7251E	MF									
7152E / 7252E	OP									
7170E / 7270E	OF									
7171E / 7271E	OF									
7172E / 7272E	OF									
7174E / 7274E	OF									
7175E / 7275E	OF									
7182E / 7282E	OF									
7183E / 7283E	OF									
7149E / 7249E	OF									
8140E-I	SF									
8141E-I	MF									
8150E-I	SF									
8151E-I	MF									
8160E-I	SF									
8161E-I	MF									

Hard wire alloy cutters - For use on Stainless Steel, Nitinol, Eligloy and Tungsten

Reference #	Cut	.010"	.012"	.016"	.020"	.025"	.032"	.040"	.050"	.064"
		30 AWG	28 AWG	26 AWG	24 AWG	22 AWG	20 AWG	18 AWG	16 AWG	14 AWG
7230EH	SF									
7231EH	MF									
7237EH	MF									
7247EHT	MF									
7282EH	MF									
1200EH	SF									
1003EH	SF									
1006EH	SF									



★★★★★ 7000 Series Hard Wire Cutters

Made in the USA

Tungsten Alloy Cutters with Ergonomic Molded Grips.

Precision Alignment for clean, crisp cutting.

★★★★★ Carbide Insert Cutters with Ergonomic Molded Grips

- 5" Cutters with Carbide inserts
- Edge Hardness of 90-91 HRA
- Maximum Flush cutting edge
- Designed to cut most types of Medical wires



5" Tapered/Relieved Head Carbide Cutter

7247EHT Maximum Flush Cut
Cutting Capacity .003" – .020"
A B C D E F
.425" .275" .425" .030" N/A 15°



★★★★★ Tungsten Alloy Cutters with Ergonomic Molded Grips

- Alloy Steel - Tungsten, Cobalt, Vanadium and Chromium
- Unique Heat-treating process makes a very hard, tough cutting edge
- Maximum Flush cutting edge
- Precision Alignment for clean crisp cutting

★★★★★ Tool Steel Insert Cutting Blades with Foam Cushion Grips

- Forged Stainless Steel Body
- Anti-rust for use in Clean Rooms
- High Speed Tool Steel Inserts
- Diamond Honed Cutting Blades

5" Large Stainless Steel Cutter

1200EH Semi Flush Cut
Cutting Capacity .010" – .028"
A B C D F
.675" .300" .450" N/A 15°



5" Small Stainless Steel Cutter

1003EH Semi Flush Cut
Cutting Capacity .006" – .015"
A B C D F
.650" .250" .375" N/A 0°



5" Angulated Stainless Steel Cutter

1006EH Semi Flush Cut
Cutting Capacity .006" – .015"
A B C D F G
.770" .300" .375" .020" 45° .565"



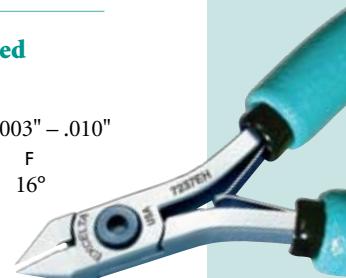
4 3/4" Miniature Head Tungsten Alloy Cutter

7230EH Semi Flush Cut
Cutting Capacity .001" – .020"
7231EH Maximum Flush Cut
Cutting Capacity .003" – .010"
A B C D E F
.400" .275" .380" N/A N/A 16°



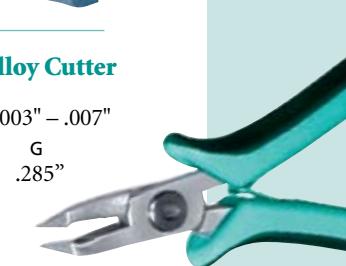
4 3/4" Miniature Tapered/Relieved Tungsten Alloy Cutter

7237EH Maximum Flush Cut
Cutting Capacity .003" – .010"
A B C D E F
.400" .275" .370" N/A N/A 16°



5" Angulated Head Tungsten Alloy Cutter

7282EH Maximum Flush Cut
Cutting Capacity .003" – .007"
A B C D F G
.650" .275" .400" .020" 50° .285"

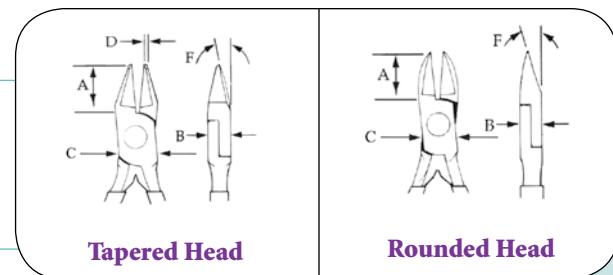


★★★★★ 7000 Series Small Head Cutters

Made in the USA

Edge hardened to 63/65 Rockwell "C"

Stainless Steel Leaf Springs – Our Most Popular Series of Cutters



7100 Series Small Head Cutters with Long Foam Cushion Grips

★★★★★ 5 3/4" Small Round Head Cutters

7130E	Semi-Flush Cut	
	Cutting Capacity	.008"-.040"
7131E	Maximum Flush Cut	
	Cutting Capacity	.005"-.040"
7132E	Optimum Flush Cut	
	Cutting Capacity	.001"-.032"

A	B	C	D	E	F
.370"	.275"	.380"	N/A	N/A	16°



★★★★★ 5 3/4" Small Tapered Head Cutters

7134E	Maximum Flush Cut	
	Cutting Capacity	.005"-.032"
7135E	Optimum Flush Cut	
	Cutting Capacity	.001"-.028"

A	B	C	D	E	F
.370"	.275"	.380"	.040"	N/A	16°



★★★★★ 5 3/4" Small Tapered/Relieved Cutters

7137E	Maximum Flush Cut	
	Cutting Capacity	.005"-.028"
7138E	Optimum Flush Cut	
	Cutting Capacity	.001"-.020"

A	B	C	D	E	F
.370"	.275"	.380"	.040"	N/A	16°



7200 Series Small Head Cutters with Foam Cushion Grips

★★★★★ 5" Small Round Head Cutters

7230E	Semi-Flush Cut	
	Cutting Capacity	.008"-.040"
7231E	Maximum Flush Cut	
	Cutting Capacity	.005"-.040"

A	B	C	D	E	F
.370"	.275"	.380"	N/A	N/A	16°



★★★★★ 5" Small Tapered Head Cutters

7234E	Maximum Flush Cut	
	Cutting Capacity	.005"-.032"
7235E	Optimum Flush Cut	
	Cutting Capacity	.001"-.028"

A	B	C	D	E	F
.370"	.275"	.380"	.040"	N/A	16°



★★★★★ 5" Small Tapered/Relieved Cutters

7237E	Maximum Flush Cut	
	Cutting Capacity	.005"-.028"
7238E	Optimum Flush Cut	
	Cutting Capacity	.001"-.020"

A	B	C	D	E	F
.370"	.275"	.380"	.040"	N/A	16°

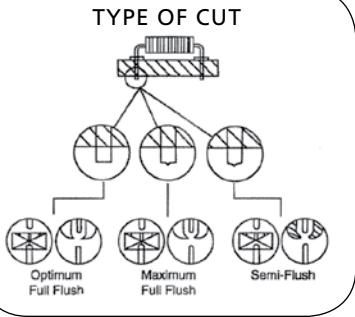


★★★★★ Five Star 7000 Series Medium Head Cutters

Made in the USA

Edge hardened to 63/65 Rockwell "C"

Stainless Steel Leaf Springs – Angulated Head for Cutting in Dense Areas



7100 Series Medium Head Cutters with Long Foam Cushion Grips

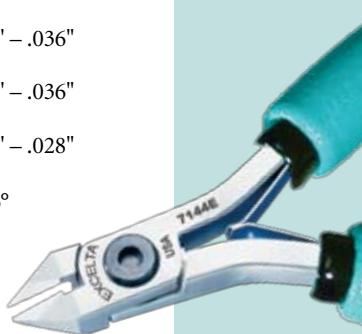
★★★★★ 5 3/4" Medium Round Head Cutters

7140E	Semi-Flush Cut					
	Cutting Capacity	.008" – .042"				
7141E	Maximum Flush Cut					
	Cutting Capacity	.005" – .040"				
7142E	Optimum Flush Cut					
	Cutting Capacity	.003" – .032"				
A	B	C	D	E	F	
.440"	.275"	.430"	N/A	N/A	16°	



★★★★★ 5 3/4" Medium Tapered Head Cutters

7143E	Semi-Flush Cut					
	Cutting Capacity	.008" – .036"				
7144E	Maximum Flush Cut					
	Cutting Capacity	.005" – .036"				
7145E	Optimum Flush Cut					
	Cutting Capacity	.002" – .028"				
A	B	C	D	E	F	
.440"	.275"	.430"	.050"	N/A	16°	



★★★★★ 5 3/4" Medium Tapered/Relieved Cutters

7146E	Semi-Flush Cut					
	Cutting Capacity	.008" – .036"				
7147E	Maximum Flush Cut					
	Cutting Capacity	.005" – .036"				
7148E	Optimum Flush Cut					
	Cutting Capacity	.002" – .028"				
A	B	C	D	E	F	
.440"	.275"	.430"	.050"	N/A	16°	



7200 Series Medium Head Cutters with Ergonomic Molded Grips

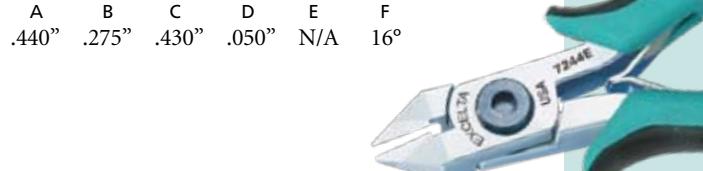
★★★★★ 5" Medium Round Head Cutters

7240E	Semi-Flush Cut					
	Cutting Capacity	.008" – .042"				
7241E	Maximum Flush Cut					
	Cutting Capacity	.005" – .040"				
7242E	Optimum Flush Cut					
	Cutting Capacity	.003" – .032"				
A	B	C	D	E	F	
.440"	.275"	.430"	N/A	N/A	16°	



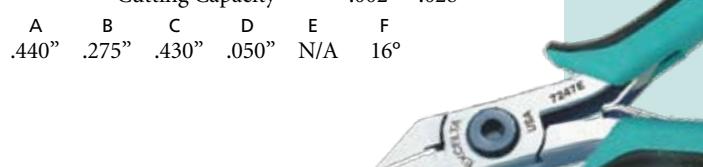
★★★★★ 5" Medium Tapered Head Cutters

7243E	Semi-Flush Cut					
	Cutting Capacity	.008" – .036"				
7244E	Maximum Flush Cut					
	Cutting Capacity	.005" – .036"				
7245E	Optimum Flush Cut					
	Cutting Capacity	.002" – .028"				
A	B	C	D	E	F	
.440"	.275"	.430"	.050"	N/A	16°	



★★★★★ 5" Medium Tapered/Relieved Cutters

7246E	Semi-Flush Cut					
	Cutting Capacity	.008" – .036"				
7247E	Maximum Flush Cut					
	Cutting Capacity	.005" – .036"				
7248E	Optimum Flush Cut					
	Cutting Capacity	.002" – .028"				
A	B	C	D	E	F	
.440"	.275"	.430"	.050"	N/A	16°	

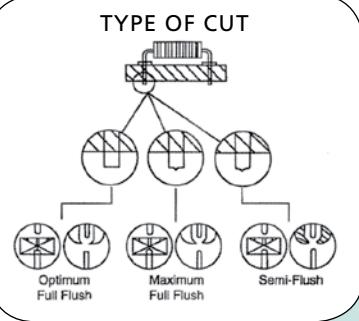


★★★★★ 7000 Series Angulated Head Cutters

Made in the USA

Edge hardened to 63/65 Rockwell "C"

Stainless Steel Leaf Springs – Fine Cutting of Small Leads and Wires



7100 Series Angulated Head Cutters with Long Foam Cushion Grips

★★★★★ 6" Miniature Angulated Head Cutter

7175E Optimum Flush Cut
Cutting Capacity .001" – .018"
A B C D F G
.710" .275" .430" N/A 50° .160"



7200 Series Angulated Head Cutters with Ergonomic Molded Grips

★★★★★ 5 1/4" Miniature Angulated Head Cutter

7275E Optimum Flush Cut
Cutting Capacity .001" – .018"
A B C D F G
.710" .275" .430" N/A 50° .160"



★★★★★ 6" Medium Angulated Head Cutter

7182E Optimum Flush Cut
Cutting Capacity .003" – .025"
A B C D F G
.710" .275" .430" N/A 50° .220"



★★★★★ 5 1/4" Medium Angulated Head Cutter

7282E Optimum Flush Cut
Cutting Capacity .003" – .025"
A B C D F G
.710" .275" .430" N/A 50° .220"



★★★★★ 6" Large Angulated Head Cutter

7172E Maximum Flush Cut
Cutting Capacity .005" – .032"
A B C D F G
.710" .275" .430" N/A 50° .310"



★★★★★ 5 1/4" Large Angulated Head Cutter

7272E Maximum Flush Cut
Cutting Capacity .005" – .032"
A B C D F G
.710" .275" .430" N/A 50° .310"



★★★★★ 6" Large Angulated/Tapered Tip Cutter

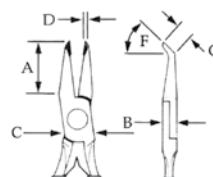
7104E Maximum Flush Cut
Cutting Capacity .003" – .025"
A B C D F G
.500" .275" .430" .025" 50° .300"



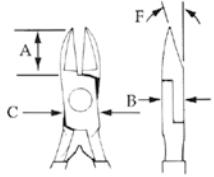
★★★★★ 5 1/4" Large Angulated/Tapered Tip Cutter

7204E Maximum Flush Cut
Cutting Capacity .003" – .025"
A B C D F G
.500" .275" .430" .025" 50° .300"





Angled Head



Rounded Head

★★★★★ 7000 Series Fine Tip Cutters

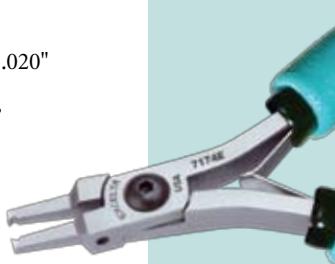
Made in the USA

Edge hardened to 63/65 Rockwell "C"
Stainless Steel Leaf Springs – ESD Safe Grips

7100 Series Fine Tip Cutters with Long Foam Cushion Grips

★★★★★ 6" Transverse End Cutter

7174E Optimum Flush Cut
Cutting Capacity .001" – .020"
A B C D F G
.710" .275" .430" .090" 90° .090"



★★★★★ 5 3/4" Small Fine Tip Cutter

7171E Optimum Flush Cut
Cutting Capacity .001" – .010"
will cut between .025" spaced leads.
A B C D F G
.550" .275" .430" N/A 10° .125"



★★★★★ 6 1/4" Medium Fine Tip Cutter

7170E Optimum Flush Cut
Cutting Capacity .001" – .020"
A B C D F G
.900" .275" .430" N/A 10° .280"



★★★★★ 5 3/4" Relieved Fine Tip Cutter

7149E Optimum Flush Cut
Cutting Capacity .001" – .020"
A B C D F G
.590" .275" .430" N/A 10° .170"



7200 Series Fine Tip Cutters with Ergonomic Molded Grips

★★★★★ 5 1/2" Transverse End Cutter

7274E Optimum Flush Cut
Cutting Capacity .001" – .020"
A B C D F G
.710" .275" .430" .090" 90° .090"



★★★★★ 5 1/4" Small Fine Tip Cutter

7271E Optimum Flush Cut
Cutting Capacity .001" – .010"
A B C D F G
.550" .275" .430" N/A 10° .125"



★★★★★ 5 3/4" Medium Fine Tip Cutter

7270E Optimum Flush Cut
Cutting Capacity .001" – .020"
A B C D F G
.900" .275" .430" N/A 10° .280"



★★★★★ 5 1/2" Relieved Fine Tip Cutter

7249E Optimum Flush Cut
Cutting Capacity .001" – .020"
A B C D F G
.590" .275" .430" N/A 10° .170"

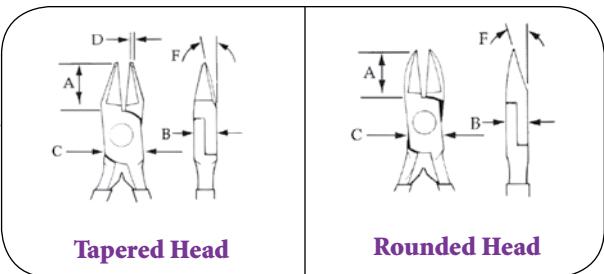


★★★★★ 7000 Series Large Head Cutters

Made in the USA

Edge hardened to 63/65 Rockwell "C"

Stainless Steel Leaf Springs – Fine Cutting of Small Leads and Wires



Large Head Cutters with Long Foam Cushion Grip

PART #	TYPE OF CUT	CUTTING CAPACITY	6" Large Round Head Cutter ★★★★				
7150E	SF	.015" – .050"	A	B	C	D	F
7151E	MF	.012" – .050"	.510"	.275"	.430"	–	16°
7152E	OF	.008" – .045"					



Large Head Cutters with Ergonomic Molded Grip

PART #	TYPE OF CUT	CUTTING CAPACITY	5 1/4" Large Round Head Cutter ★★★★				
7250E	SF	.015" – .050"	A	B	C	D	F
7251E	MF	.012" – .050"	.510"	.275"	.430"	–	16°
7252E	OF	.008" – .045"					



★★★★★ 7000 Series Parallel Jaw Cutters

Made in the USA

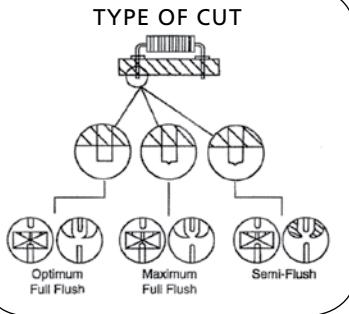
Parallel Jaw for Cutting Multiple Leads and Wires

Parallel Jaw Cutters with Long Foam Cushion Grip

PART #	TYPE OF CUT	COMBINED LEAD CUTTING CAPACITY	6" Large Round Head Cutter ★★★★				
7150EM	SF	.015" – .050"	A	B	C	D	F
7151EM	MF	.012" – .050"	.510"	.275"	.430"	–	16°
7152EM	OF	.008" – .045"					

Parallel Jaw Cutters with Ergonomic Molded Grip

PART #	TYPE OF CUT	COMBINED LEAD CUTTING CAPACITY	5 1/4" Large Round Head Cutter ★★★★				
7250EM	SF	.015" – .050"	A	B	C	D	F
7251EM	MF	.012" – .050"	.510"	.275"	.430"	–	16°
7252EM	OF	.008" – .045"					



Types of Cuts

Semi-Flush – Cutters designed for general-purpose use. The Semi-Flush cut will produce more cuts than the Maximum Flush cut over the life of the cutter.

Maximum Flush – Cutters designed to reduce the amount of shock transmitted to a component, and will produce a more reliable connection during the soldering operation.

8140E-I ★★★★

4 1/2" Small Round Head Semi-Flush Cutter

8141E-I ★★★★

4 1/2" Small Round Head Maximum Flush Cutter

General-purpose cutter used for trimming component leads after wave solder, the cutting capacity for soft wire is 18 AWG.

A	B	C	D	F
.425"	.235"	.385"	–	15°



8150E-I ★★★★

4 3/4" Medium Round Head Semi-Flush Cutter

8151E-I ★★★★

4 3/4" Medium Round Head Maximum Flush Cutter

The larger head size is useful for general cutting of component leads and wires up to 14 AWG.

A	B	C	D	F
.490"	.245"	.465"	–	15°

8160E-I ★★★★

5" Large Round Head, Semi-Flush Cutter

8161E-I ★★★★

5" Large Round Head, Maximum Flush Cutter

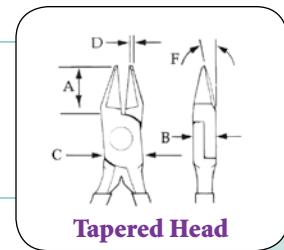
This large general-purpose cutter is great for all types of cutting applications. The hard cutting blades will cut soft wire up to 12 AWG and hard wire up to 24 AWG.

A	B	C	D	F
.600"	.320"	.610"	–	15°

★★★ EXCELTA Line Cutters

Chrome Vanadium Steel, Precision Lap Joint, ESD Safe Foam Cushion Grips

Made in Italy.



76E-I ★★★

4" Small Tapered/Relieved Head Cutter

Maximum Flush Cut

Cutting Capacity .005"-.020"

A	B	C	D	F
.500"	.250"	.370"	.025"	15°



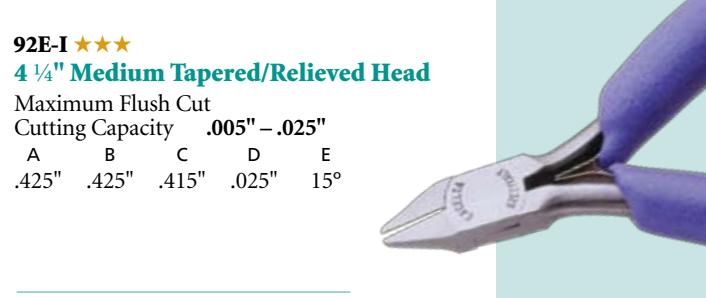
92E-I ★★★

4 1/4" Medium Tapered/Relieved Head

Maximum Flush Cut

Cutting Capacity .005"-.025"

A	B	C	D	E
.425"	.425"	.415"	.025"	15°



77E-I ★★★

4" Small Tapered Head Cutter

Maximum Flush Cut

Cutting Capacity .005"-.020"

A	B	C	D	F
.525"	.250"	.360"	.025"	15°



95E-I ★★★

4 1/4" Medium Tapered Head Cutter

Maximum Flush Cut

Cutting Capacity .008"-.025"

A	B	C	D	E
.425"	.425"	.415"	.025"	15°



99E-I ★★★

4 1/4" Medium Round Head Cutter

Maximum Flush Cut

Cutting Capacity .005"-.025"

A	B	C	D	F
.490"	.250"	.415"	N/A	15°



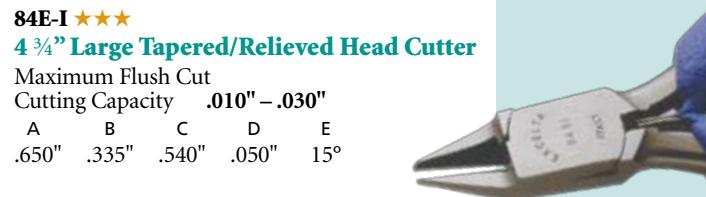
84E-I ★★★

4 3/4" Large Tapered/Relieved Head Cutter

Maximum Flush Cut

Cutting Capacity .010"-.030"

A	B	C	D	E
.650"	.335"	.540"	.050"	15°



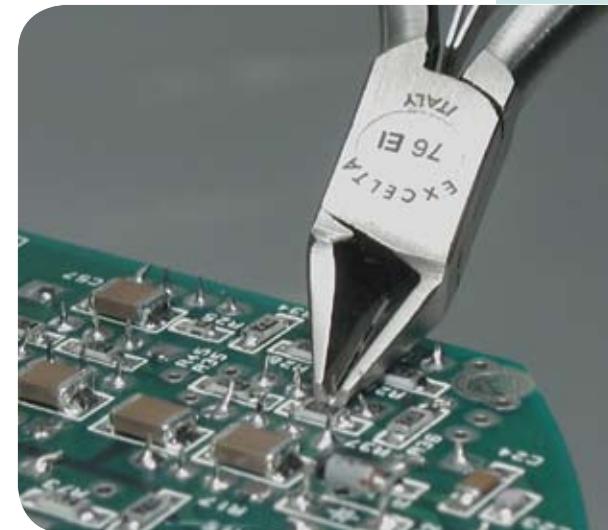
97E-I ★★★

4 1/4" Medium Round Head Cutter

Semi-Flush Cut

Cutting Capacity .008"-.025"

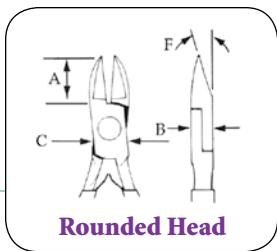
A	B	C	D	F
.490"	.250"	.415"	N/A	15°



★★★ EXCELTA Line Cutters

Chrome Vanadium Steel, Precision Lap Joint,
ESD Safe Foam Cushion Grips

Made in Italy.



57E-I ★★★

4 1/2" Small Angulated Head Cutter

Used for fine cutting on copper leads and wires,
angled head design with alignment pin in the jaw.

A	B	C	D	F	TYPE	CUTTING CAPACITY
.835"	.225"	.380"	.025"	15°	MF	.005" – .016"



96E-I-4.75 ★★★

4 3/4" Large Round Head Cutter

General-purpose cutter is very popular in the electronics industry.

A	B	C	D	F	TYPE	CUTTING CAPACITY
.690"	.400"	.425"	–	15°	SF	.012" – .040"

86E-I-5 ★★★

5 1/4" Large Tapered Head Cutter

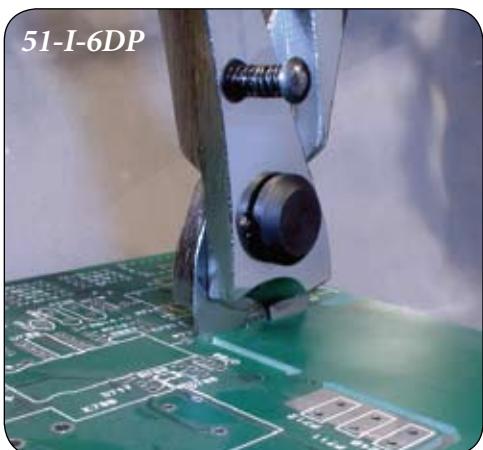
Overall size and shape makes this our largest flush cutter.

A	B	C	D	F	TYPE	CUTTING CAPACITY
.680"	.375"	.635"	.040"	15°	MF	.010" – .030"

51-T ★★

7" Tube and Cable Cutter

Stainless steel cutting blades provides a smooth clean cut on plastic tubing and soft cables. Shear Cut, Cutting Capacity 3/8"



51-I-6DP ★★★

6" Depanelizing Tool

The thin jaws on these cutters are designed to cut the tabs on PC boards. The longer handles provide more leverage when cutting. Designed to fit a 1/16" or larger slot.



51-I-6 ★★★

6" Precision Cable Cutter

Recommended for cutting stranded cables and wires up to 1/2". Locking device keeps cutting jaws in closed position when not in use. Shear Cut, Cutting Capacity 1/2"

★ One Star Selecta® Cutters

Static Safe Grips – Made in the USA

Micro Shears with anti-glare finish. Made from Carbon Steel.

Three Styles to Choose From.



SE-25

SE-25 ★

5" Small Micro Shear with Tapered Head

Lightweight and easy to handle. Shear cutting action reduces both cutting effort and mechanical shock transmitted to the component. Cutting capacity is soft wire up to 20 AWG.



SE-30 ★

5 1/4" Micro Shear with Tapered Head

The tapered head improves access even in high-density areas. Cutting capacity on soft wire up to 16 AWG. Available with cut and hold wire catch. Use reference number SE-30A.



SE-25A ★

5" Small Micro Shear with Lead Catch

Lightweight and easy to handle cutter with the added cut and hold wire catch. Cutting capacity is soft wire up to 20 AWG.



SE-30L ★

6" Micro Shear with Ergonomic Handles

The tapered head allows positioning even on fine pitch components. Cutting capacity on soft wire up to 16 AWG. Available with cut and hold wire catch. Use reference number SE-30LA.



SE-25B ★

5" Micro Shear with Bent Head

Lightweight and easy to handle cutter with a 55 degrees bent head. Cutting capacity on soft wire up to 20 AWG.



SE-40 ★

6" Micro Shear with Large Cutting Head

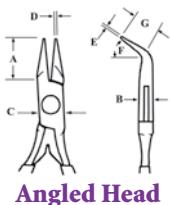
Shear cutting action for tough cutting applications. Non-glare black finish on high-grade carbon steel. Cutting capacity on soft wire up to 14 AWG. Available with cut and hold wire catch. Use reference number SE-40A.

★★★★★ High Precision Pliers

Ergonomic Molded Grips – ESD Safe Grips

Made in the U.S.A.

Chain Nose and Round Nose, 1% Carbon Tool Steel. Raised bearing plate and Stainless Steel dual Leaf Springs provide for easy operation.



PLIER DIMENSIONS

- A: Jaw Length
- B: Tool Thickness
- C: Tool Width
- D: Single Tip Width
- E: Single Tip Thickness
- F: Angle in Degrees
- G: Jaw Length from Bend

744 ★★★★

5" Chain Nose Pliers, Smooth

744D ★★★★

5" Chain Nose Pliers, Serrated

Chain Nose pliers are the most popular pliers used for handling of small parts.

A	B	C	D	E
1.250"	.275"	.425"	.030"	.060"



743 ★★★★

5" Round Nose Pliers

Round Nose pliers can be used to form and bend component leads and wires without causing nicks or damage. The jaws are tapered providing for various radius bends.

A	B	C	D	E
1.250"	.275"	.425"	.030"	.0030"



★★★ EXCELTA Line Pliers

Ergonomic "S" Handle, Chrome Vanadium Steel, Precision Lap Joint, ESD Safe Foam Cushion Grips

Made in Italy.

29-IS ★★★

6" Curved tip chain nose pliers with Ergonomic "S" Handle

Smooth jaws and beveled edges reduce marring of component leads.



44-IS ★★★

6" Chain nose pliers with Ergonomic "S" Handle

Smooth jaws and beveled edges, ideal for most types of precision assembly work.



42-IS ★★★

6" Flat tip "Duck Bill" pliers with Ergonomic "S" Handle

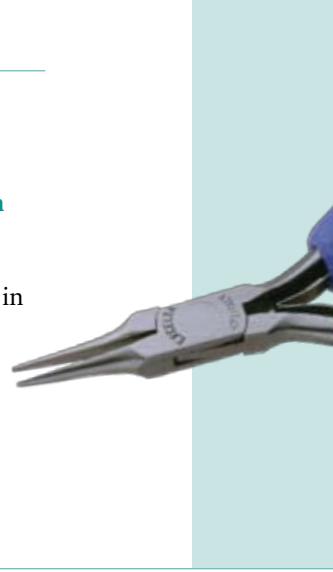
The wider tip firmly holds components and wire.



47-IS ★★★

6" Needle nose pliers with Ergonomic "S" Handle

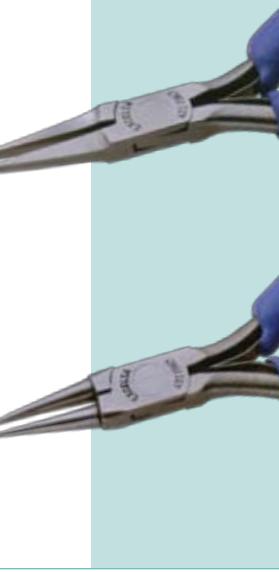
Fine tip and narrow jaws enable these pliers to work in very dense areas.



43-IS ★★★

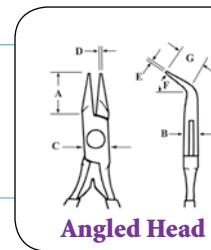
6" Round nose pliers with Ergonomic "S" Handle

Excellent pliers for forming and coiling of fine wires.



★★★ EXCELTA Line Pliers

**Chrome Vanadium Steel, Precision Joint,
ESD Safe Foam Cushion Grips
Made in Italy.**



PLIER DIMENSIONS

A: Jaw Length
B: Tool Thickness
C: Tool Width
D: Single Tip Width
E: Single Tip Thickness
F: Angle in Degrees
G: Jaw Length from Bend

29-I ★★★

**4 1/2" Small Bent Nose Pliers
with smooth inside jaws**

A .700"
B .225"
C .375"
D .025"
E .035"
F 60°
G .325"



44-I ★★★

**4 1/2" Small Chain Nose Pliers
with smooth inside jaws**

A .905"
B .236"
C .354"
D .020"
E .039"



44A-I ★★★

**4 1/2" Small Chain Nose Pliers
with radius inside jaws**

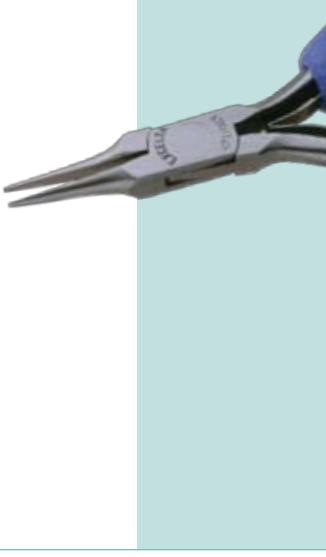
A .920"
B .250"
C .375"
D .020"
E .035"



47-I ★★★

**4 1/2" Small Needle Nose Pliers
with smooth inside jaws**

A .920"
B .235"
C .340"
D .020"
E .035"



47D-I ★★★

**4 1/2" Small Needle Nose Pliers
with serrated inside jaws**

A .920"
B .235"
C .340"
D .020"
E .035"



42-I ★★★

**4 3/4" Small Flat Nose Pliers
with smooth inside jaws**

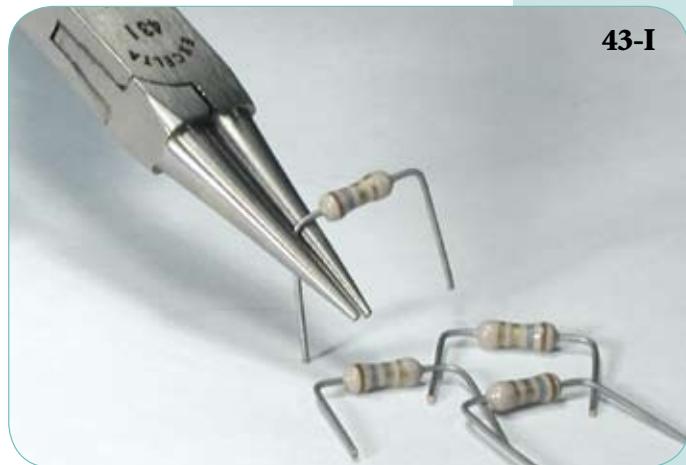
A .906"
B .236"
C .354"
D .020"
E .078"



43-I ★★★

**4 3/4" Round Nose Pliers with
smooth jaws**

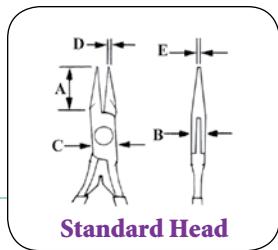
A .906"
B .236"
C .354"
D .020"
E .020"



★★★ EXCELTA Line Pliers

Chrome Vanadium Steel, Precision Lap Joint,
ESD Safe Foam Cushion Grips

Made in Italy.



5-I ★★★

**5 5/8" Large Needle Nose
pliers with serrated jaws**

A 1.889"
B .315"
C .472"
D .030"
E .060"



11-I ★★★

**4 3/4" Medium Chain Nose
pliers with smooth jaws**

A 1.102"
B .256"
C .430"
D .030"
E .060"



11D-I ★★★

**4 3/4" Medium Chain Nose
pliers with serrated jaws**

A 1.102"
B .256"
C .433"
D .030"
E .060"



13A-I ★★★

**6 1/2" Large Bent Needle Nose pliers
with smooth jaws**

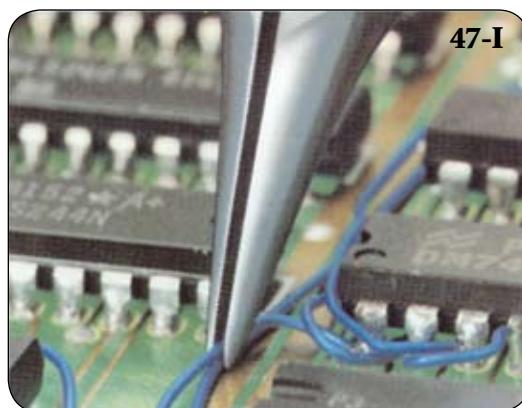
A 1.950"
B .300"
C .475"
D .040"
E .080"
F 45°
G 1.225"



14I-6 ★★★

**5 7/8" Large Needle Nose
pliers with smooth jaws**

A 2.250"
B .300"
C .490"
D .040"
E .080"



★★ Stainless Steel Pliers

**Forged Stainless Steel, Precision Box Joint,
Ergonomic Foam Cushion Grips,
Smooth and Serrated inside Jaws**

2644 ★★

**4 3/4" Stainless Steel Chain Nose
pliers with smooth jaws**

2644D ★★

**4 3/4" Stainless Steel Chain Nose
pliers with serrated jaws**

A .906"

B .250"

C .375"

D .020"

E .030"



2647 ★★

**4 3/4" Stainless Steel Needle
Nose pliers with smooth jaws**

2647D ★★

**4 3/4" Stainless Steel Needle
Nose pliers with serrated jaws**

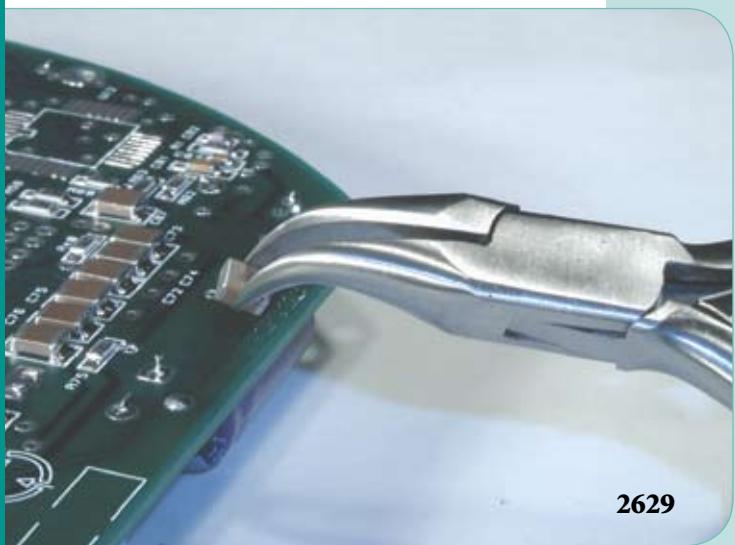
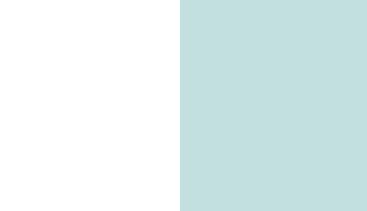
A .906"

B .250"

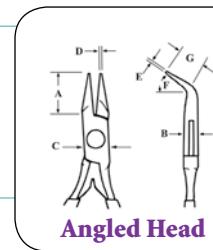
C .375"

D .015"

E .030"



2629



PLIER DIMENSIONS

A: Jaw Length

B: Tool Thickness

C: Tool Width

D: Single Tip Width

E: Single Tip Thickness

F: Angle in Degrees

G: Jaw Length from Bend

2643 ★★

**4 3/4" Stainless Steel Round
Nose pliers with smooth jaws**

A .906"

B .250"

C .375"

D .020"

E .020"



2642 ★★

**4 3/4" Stainless Steel Flat Nose
pliers with smooth jaws**

A .906"

B .250"

C .375"

D .015"

E .080"



2629 ★★

**4 1/2" Stainless Steel Bent Nose
pliers with smooth jaws**

A .750"

B .250"

C .375"

D .020"

E .040"

F 60°

G .300"



2818 ★★

**5 3/4" Stainless Steel "Duck
Bill" pliers with smooth jaws**

A 1.200"

B .300"

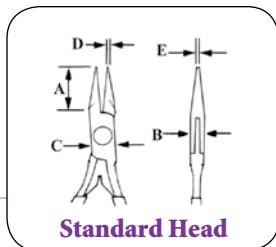
C .430"

D .035"

E .250"

★★ Stainless Steel Pliers

Forged Stainless Steel, Precision Box Joint,
Ergonomic Molded or Long Foam Cushion Grips,
Smooth and Serrated Inside Jaws



2800 Series Pliers with Ergonomic Molded Grips

2844 ★★ Smooth

2844D ★★ Serrated

5 3/4" Stainless Steel Chain Nose pliers

A 1.200"

B .260"

C .370"

D .035"

E .055"

2847 ★★ Smooth

2847D ★★ Serrated

5 1/2" Stainless Steel Needle Nose Pliers

A 1.200"

B .260"

C .370"

D .025"

E .045"

2843 ★★ Smooth

5 3/4" Stainless Steel Round Nose pliers

A 1.200"

B .260"

C .370"

D .050"

E .050"

2842 ★★ Smooth

2842D ★★ Serrated

5 3/4" Stainless Steel Flat Nose pliers

A 1.200"

B .260"

C .370"

D .020"

E .093"

2829 ★★ Smooth

5 3/4" Stainless Steel Bent Nose pliers

A 1.200"

B .260"

C .370"

D .040"

E .060"

F 60°

G .325"



2800 Series Pliers with Soft Foam Cushion Grips

2844L ★★ Smooth

6" Stainless Steel Chain Nose pliers

A 1.200"

B .300"

C .425"

D .040"

E .060"



2847L ★★ Smooth

6" Stainless Steel Long handle Needle Nose pliers

A 1.200"

B .300"

C .425"

D .035"

E .045"

2843L ★★ Smooth

6" Stainless Steel Round Nose pliers

A 1.200"

B .300"

C .425"

D .020"

E .093"

2842L ★★ Smooth

6" Stainless Steel Flat Nose pliers

A 1.182"

B .257"

D .020"

E .093"

2829L ★★ Smooth

5 3/4" Stainless Steel Bent Nose pliers

A .985"

B .300"

C .425"

D .040"

E .060"

F 60°

G .325"

★★ 2900 Series Pliers

**Forged Stainless Steel, Precision Lap Joint,
Ergonomic Foam Cushion ESD Safe Grips,
Smooth and Serrated inside Jaws**

2949 ★★

**6 1/4" Large Chain Nose
pliers with smooth jaws**

2949D ★★

**6 1/4" Large Chain Nose
pliers with serrated jaws**

A 1.575"

B .320"

C .435"

D .040"

E .060"



2910 ★★

**6 1/2" Large Needle Nose
pliers with smooth jaws**

2910D ★★

**6 1/2" Large Needle Nose
pliers with serrated jaws**

A 1.810"

B .350"

C .580"

D .045"

E .085"



2905 ★★

**6 1/2" Needle Nose
pliers with smooth jaws**

2905D ★★

**6 1/2" Needle Nose
pliers with serrated jaws**

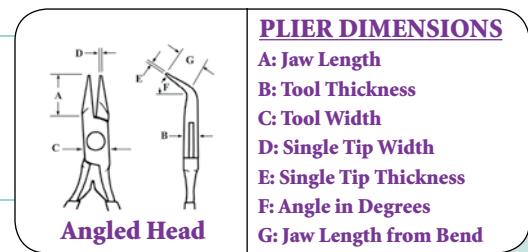
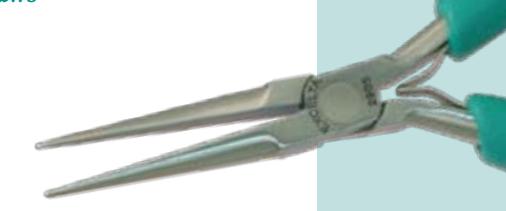
A 1.890"

B .300"

C .450"

D .040"

E .080"



PLIER DIMENSIONS

A: Jaw Length

B: Tool Thickness

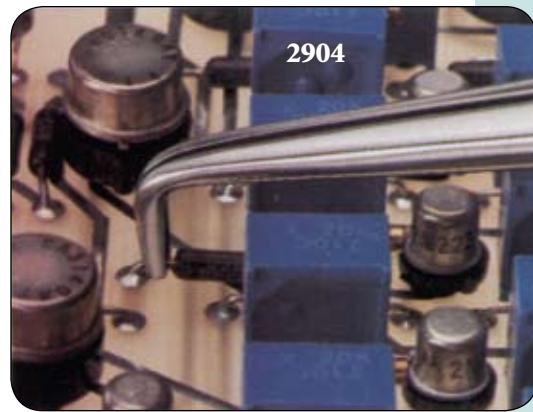
C: Tool Width

D: Single Tip Width

E: Single Tip Thickness

F: Angle in Degrees

G: Jaw Length from Bend



2904 ★★

**6 1/2" 90° Bent Nose
pliers with smooth jaws**

2904D ★★

**6 1/2" 90° Bent Nose
pliers with serrated jaws**

A 1.890"

B .300"

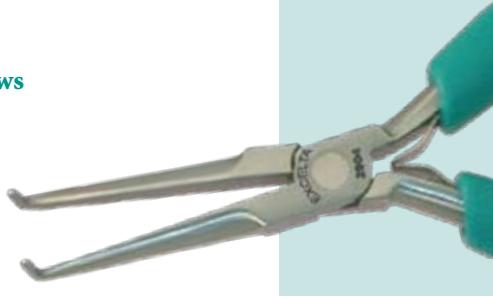
C .480"

D .050"

E .080"

F 90°

G .380"



2914 ★★

**6 5/8" 45° Bent Nose
pliers with smooth jaws**

2914D ★★

**6 5/8" 45° Bent Nose
pliers with serrated jaws**

A 2.010"

B .300"

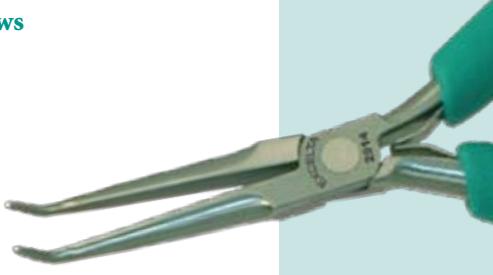
C .470"

D .060"

E .070"

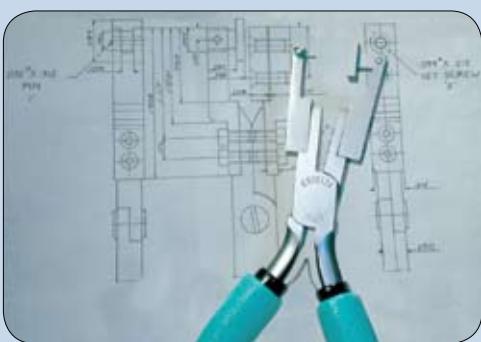
F 45°

G .330"



CUSTOM DESIGNS FROM EXCELTA

Experienced In-House Design Team and Production Facility



As the leader in tool technology,

Excelta knows that every application is unique. Our Custom Design facility can work from your schematic to manufacture any tool to your specifications. Or, if you prefer, our experienced designers can diagnose your needs and design the tool that is precisely right for your unique application.

Whether you need a single tool to handle special parts under unique conditions, or a supply of custom tools to crimp, cut, place or extract parts, Excelta's Custom Design Service has the experience, the ingenuity and the capability to meet your needs.

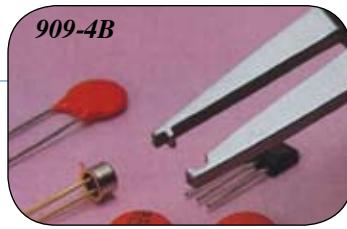
The following pages include Excelta tools that have been designed with a very special application in mind. If you don't see the tool you're looking for, contact our Custom Design Department at 1-866-EXCELTA (1-866-392-3582) or log on at www.excelta.com and we will design the custom tool to fit your application.

Custom Designed Forming Pliers

Radial Lead Component Forming Pliers

Stand-off Forming Pliers, Made from High-Carbon Tool Steel

Static Safe grips, Made in the U.S.A.

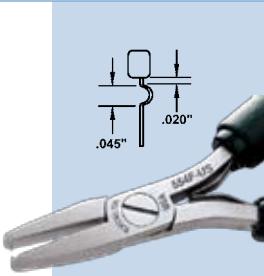


554F-US ★★★★★

5"

Stress Relief Forming Pliers

Our smallest forming pliers used to form a stand-off on component leads of .012" diameter or smaller.

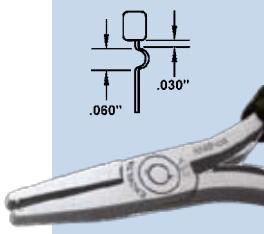


554B-US ★★★★★

5"

Stress Relief Forming Pliers

Tool design will form a consistent stress relief in a variety of components. Recommended for .020" or smaller diameter wire.

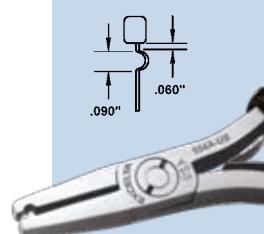


554A-US ★★★★★

5"

Stress Relief Forming Pliers

Designed to form stress relief for transistor and resistor leads. Tool design will make consistent stand-off in a variety of components. Recommended for .025" diameter or smaller wire.

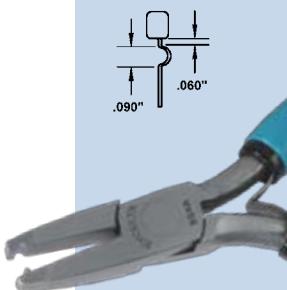


954A ★★★★★

6"

Stress Relief Forming Pliers

Designed to form a consistent stress relief in a variety of components. Similar to the 554A-US, made on a larger frame these pliers can form leads and wires up to .030" diameter.

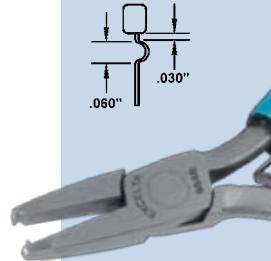


954B ★★★★★

6"

Stress Relief Forming Pliers

Designed to form a consistent stand off in a variety of components. Similar to the 554A-US, made on a larger frame these pliers can form leads and wires up to .035" diameter.

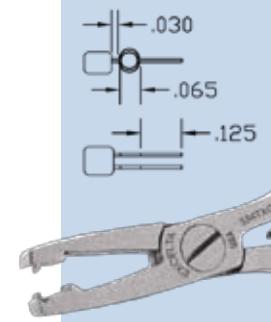


554TXC-US ★★★★★

5"

Shear Cutting and Forming Pliers

These pliers will form one lead in and one lead out at the same time on most Radial type components. The added shear cutter saves component prep time. Recommended for .020" diameter or smaller leads and wires.

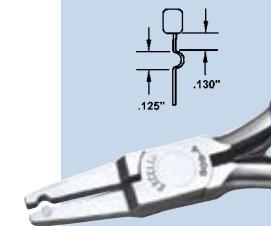


909-4 ★★★★★

5 3/4"

Stress Relief Forming Pliers

Stress relief forming pliers for transistors and resistor leads. Tool design is versatile in a variety of applications. Recommended for .035" wire or smaller.

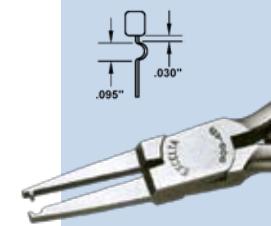


909-4B ★★★★★

6 1/4"

Stress Relief Forming Pliers

May be used for many types of components. The smaller dimensions keep components close to P.C. board. Recommended for .030" or smaller leads and wires.





500-88-US

Custom Designed Forming Pliers

Radial and Axial Lead Component Forming Pliers

Stand-off and Lock-in Forming Pliers, Made from High-Carbon Tool Steel

Static Safe grips, Made in the U.S.A.

500-88-US ★★★★★

5"

Forming pliers with Shear Cutter

Designed to form a consistent stand off and cut the lead to length on most popular radial lead components. Recommended for .025" diameter or smaller leads and wires.

900-88B ★★★★★

5 3/4"

Stress Relief Forming Pliers with Shear Cutter

Tool designed to form stress relief and cut lead to specific dimension in one easy step. Recommended for .020" diameter or smaller leads and wires.

907-88 ★★★★★

5 3/4"

Stress Relief Forming Pliers with Shear Cutter

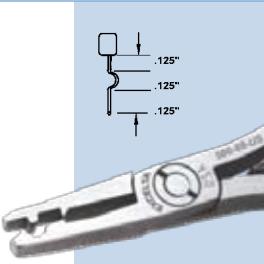
Designed to form a "Stand-Off" and cut lead to length on most popular radial lead components. Recommended for .030" diameter or smaller leads and wires.

907-88C ★★★★★

6"

Stress Relief Forming Pliers with Shear Cutter

The smaller design of this tool will "Stand-Off" the component closer to the P.C. Board. The added shear cutter saves on component prep time. Recommended for .025" diameter or smaller leads and wires.

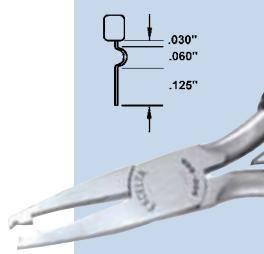


554-3RT-US ★★★★★

5 1/4"

Lock-In Lead Forming Pliers

Pliers will form an "S" bend on a component lead, enabling the component to stay in place when soldering. Recommended for .025" diameter or smaller leads and wires.

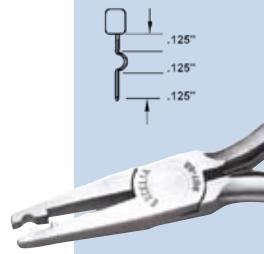


554-3RB-US ★★★★★

5 1/4"

Lock-In Lead Forming Pliers

Pliers will form an "S" bend on a component lead, enabling the component to stay in place when soldering. Recommended for .020" diameter or smaller leads and wires.

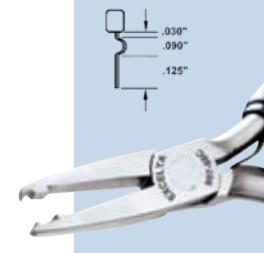


900-3RT ★★★★★

6"

Lock-In Lead Forming Pliers

Pliers will form an "S" bend on a component lead, enabling the component to stay in place when soldering. Similar to our 554-3RT-US, made on a larger frame these pliers are recommended for leads and wires up to .035" in diameter.



900-3RB ★★★★★

6"

Lock-In Lead Forming Pliers

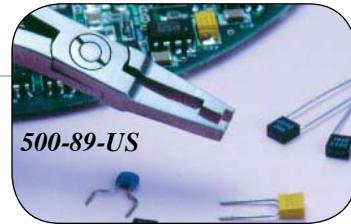
Pliers will form an "S" bend on a component lead, enabling the component to stay in place when soldering. Similar to our 554-3RB-US, made on a larger frame these pliers are recommended for leads and wires up to .035" in diameter.

Custom Designed Forming Pliers

“Flat Packs” and Multiple Lead Components

“Dog Leg” and “Gull Wing” Forming Pliers, Made from High-Carbon Tool Steel

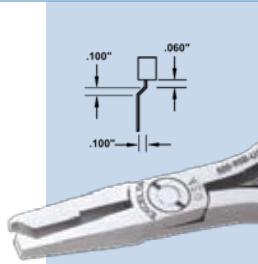
Static Safe grips, Made in the U.S.A.



500-95B-US ★★★★★ 5"

Dog Leg Lead Forming Pliers

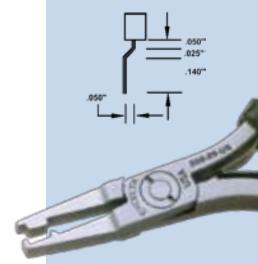
The design of this tool will form a “Dog Leg” bend in the lead wire. This tool can be used to increase or decrease the center dimensions of the Radial lead components. Recommended for .030" or smaller leads and wires.



500-89-US ★★★★★ 5 1/4"

Dog Leg Lead Forming Pliers with Shear cutter

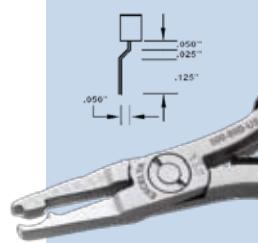
Designed to increase or decrease the center dimension on Radial lead components. The added shear cutter saves component prep time. Recommended for .025" or smaller leads and wires.



500-89B-US ★★★★★ 5 1/4"

Dog Leg Lead Forming Pliers with Shear cutter

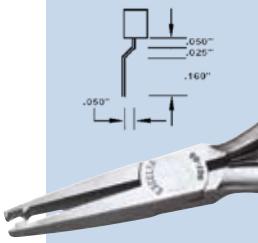
Designed to increase or decrease the center dimension on Radial lead components. The added shear cutter saves component prep time. Recommended for .025" or smaller leads and wires.



907-89 ★★★★★ 5 3/4"

Dog Leg Lead Forming Pliers with Shear cutter

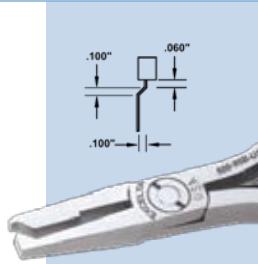
Heavy-duty pliers designed to increase or decrease the center dimension on Radial lead components. The added shear cutter saves component prep time. Recommended for .030" or smaller leads and wires.



500-13A-US ★★★★★ 5"

Flat Pack Forming Pliers with Shear cutter

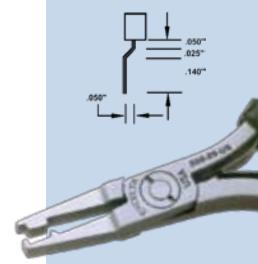
Tool will form a “Gull Wing” and cut multiple leads to length on various types of Flat Packs. Recommended for .010" or smaller lead thickness. Contact us for quotes on special sizes.



500-13B-US ★★★★★ 5"

Flat Pack Forming Pliers with Shear cutter

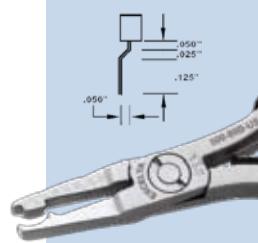
Tool will form a “Gull Wing” and cut multiple leads to length on various types of QFP and SOIC packages. Recommended for .010" or smaller lead thickness.



907-13A ★★★★★ 5 1/2"

Flat Pack Forming Pliers with Shear cutter

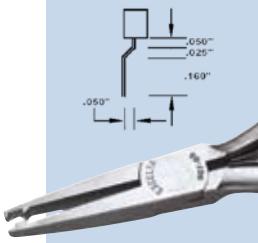
Heavy-duty tool will form a “Gull Wing” and cut multiple leads to length on various types of Flat Packs. Recommended for .010" or smaller lead thickness. Contact us for quotes on special sizes.



900-10 ★★★★★ 5 1/2"

Power Transistor Forming Pliers with Shear cutter

This tool will cut and form 3 or 5 leads on a TO-220 style component. Leads will be formed to the bottom of component body for surface mounting.





500-103-US

Custom Designed Forming Pliers

Multiple Lead Through-Hole Power Transistors

Single and Multiple Lead Forming Pliers, Made from High-Carbon Tool Steel

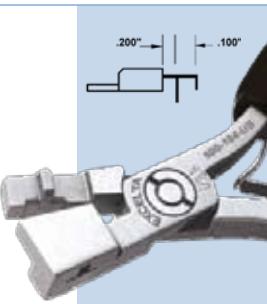
Static Safe grips, Made in the U.S.A.

500-104-US ★★★★★

5"

Through-Hole Power Transistor Forming Pliers

Used in forming 3 leads on a TO-220 style transistor. The two outside leads will be bent .200", while the center lead is bent .300" from the body of the component.

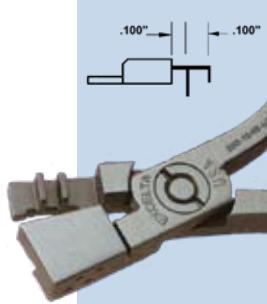


500-104B-US ★★★★★

5"

Through-Hole Power Transistor Forming Pliers

An elaborate design for forming 5 leads on a TO-220 component in one easy operation. Tool will ensure uniformity of difficult lead alignment.

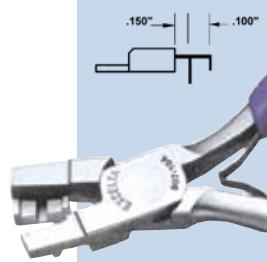


907-104 ★★★★★

5 1/2"

Through-Hole Power Transistor Forming Pliers

Used in forming 3 leads on a TO-220 style transistor. The two outside leads will be bent .150", while the center lead is bent .250" from the body of the component.

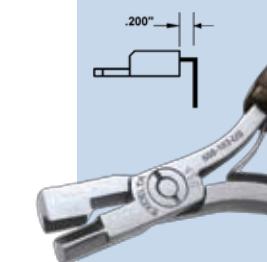


500-103-US ★★★★★

5 1/2"

Through-Hole Power Transistor Forming Pliers

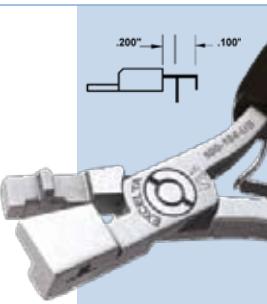
Designed to form TO-220 style transistors with 3 or 5 leads. Component leads are formed .200" from the body of component.



500-103B-US ★★★★★

5 1/2"

Same as above but with a longer (.600") forming area for wider components.

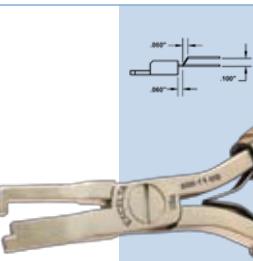


500-11-US ★★★★★

5 1/4"

"Off Set" lead Forming Pliers

Used to form a single lead on TO-220 style transistor. The lead can be formed .100" up or down to "Off Set" the lead. Great when components are mounted vertically on P.C. boards.



500-12-US ★★★★★

5 1/4"

Multiple Lead Power Transistor Forming Pliers

Used to form an "Off Set" in the 2nd and 4th lead on TO-220-5 (5 leads) transistors. This "Off Set" is useful when standing up components mounted vertically on P.C. Boards.

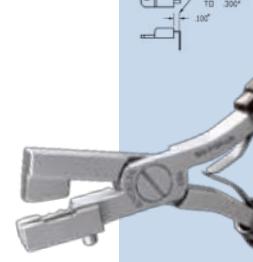


500-210A-US ★★★★★

4 3/4"

Adjustable Multiple Lead Forming Pliers

Designed to form transistor leads with .100" center spacing. Leads are formed at 90-degree for through-hole mounting. The distance from the component body to the bend is adjustable from .100" to .300".

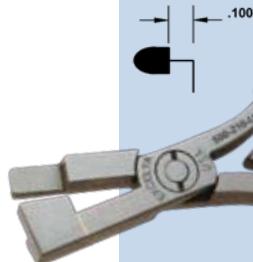


500-210-US ★★★★★

4 3/4"

Multiple Lead Forming Pliers

Designed to bend the leads on LED and other multiple lead components. Leads are formed to 90-degree, and .100" from the component body without damage. Recommended on .025" diameter leads and wires.



Custom Designed Forming Pliers

Multiple Lead Forming - Insertion/Extraction Pliers

Forming, Cutting and Handling Pliers, Made from High-Carbon Tool Steel

Static Safe grips.

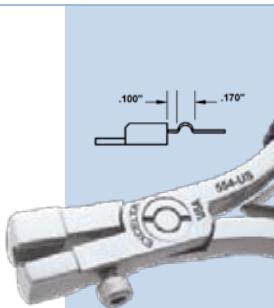


554-US ★★★★★

4 3/4"

Multiple Lead Forming Pliers

Stress relief forming pliers for multiple leads on resistors and transistors. Opening stop is adjustable for wire diameter.

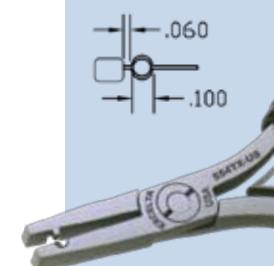


554TX-US ★★★★★

5"

Stress Relief Forming Pliers

Tool will form stress relief in most radial lead components. Designed to form one lead in and one lead out in a single operation. Recommended for .025" diameter or smaller wire.

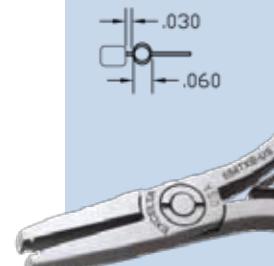


554TXB-US ★★★★★

5"

Stress Relief Forming Pliers

Tool will form stress relief in most radial lead components. Designed to form one lead in and one lead out in a single operation. Recommended for .020" diameter or smaller leads and wires.

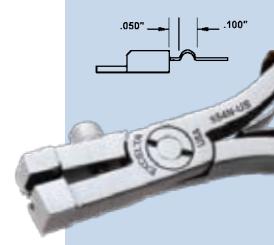


554N-US ★★★★★

4 3/4"

Multiple Lead Forming Pliers

Stress relief forming pliers for multiple lead components. The offset design makes this tool versatile for many types of components. Opening stop is adjustable for wire diameter.

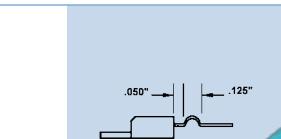


554AJ-US ★★★★★

4 3/4"

Stress Relief Forming Pliers

Designed to form standoff on 3 or 5 leads of TO-220 transistors. The angle of the head allows for longer leads to be formed. Recommended for .030" or smaller leads and wires.

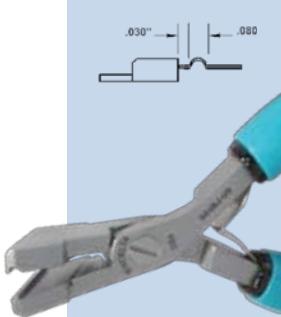


554BJ-US ★★★★★

4 3/4"

Stress Relief Forming Pliers

Designed to form standoff on 3 or 5 leads of TO-220 transistor. The angle of the head allows for longer leads to be formed. Recommended for .025" or smaller leads and wires.



900-100 ★★★★★

6 1/2"

Insertion

900-100A ★★★★★

6 1/2"

Extraction

Roll Pin Pliers

Designed to insert or extract the card key roll pin, thus reducing production time.



907-101 ★★★★★

6"

Terminal Plug Handling Pliers

Designed to insert or extract the hard to reach terminal plugs. The inside jaw has a cutout to prevent nicking or pulling on the lead wire.





530E-US ★★★★★ 5"

Anti-shock Shear Cutter

The shear action cut reduces shock on delicate components and solder connections. The stand off keeps the cutting blade from cutting into the solder connections. Tip width .140". Recommended cutting capacity 22 AWG (.025" diameter).

Standard Cut Length .040"

Custom Designed Forming Pliers

Anti-Shock Shear Cutters

Long Jaw - Angulated Head, Made from High-Carbon Tool Steel

Static Safe grips, Made in the U.S.A.



549E-US ★★★★★ 5"

Angulated Head Anti-Shock Shear cutter

The shear action cut reduces shock on delicate solder connections or components. The angle of the cutting head helps to increase visibility. Recommended cutting capacity 22 AWG (.025" diameter).

Standard Cut Length .040"



530EA-US ★★★★★ 5"

Thin Tip Anti-Shock Shear Cutter

The shear action cut reduces shock on delicate solder connections or components. Designed with thinner tips to fit between fine pitch leads. Tip width .050". Recommended cutting capacity 24 AWG (.020" diameter).

Standard Cut Length .040"



530E-4-US ★★★★★ 5 1/2"

Long Jaw Anti-Shock Shear Cutter

The shear action cut reduces shock, designed with a long thinner tip to fit between connector pins. Tip width is .100". Recommended cutting capacity 24 AWG (.020" diameter).

Standard Cut Length .040"

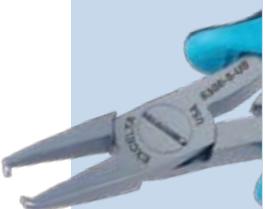


530E-5-US ★★★★★ 5"

Tapered Tip Anti-Shock Shear Cutter

The shear action cut reduces shock, the tip width of .090" will fit between leads on small components. Ergonomic handle is standard. Recommended cutting capacity 24 AWG (.020" diameter).

Standard Cut Length .040"



530E-5-USL ★★★★★ 6"

Thin Tip Shear Cutter with Ergonomic Handle

The shear action cut reduces shock, the tip width of .090" will fit between leads on small components. Ergonomic long handle is standard. Recommended cutting capacity 24 AWG (.020" diameter).

Standard Cut Length .040"

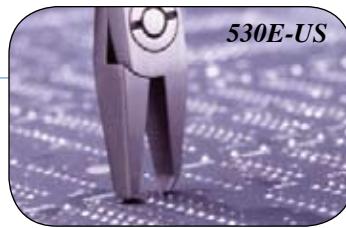


Custom Designed Shear Cutters

Anti-Shock Shear Cutters

Long Jaw - Angulated Head - Thin Tip, Made from High-Carbon Tool Steel

Static Safe grips, Made in the U.S.A.



530E-US

907-1 ★★★★★

6"

Large Anti-Shock Shear Cutter

Reduces shock on delicate solder connections and sensitive components. Tip width .170". Recommended cutting capacity 20 AWG (.032" diameter).

Standard Cut Length .040"



903 ★★★★★

5 1/2"

Heavy-Duty Anti-Shock Shear Cutter

Shear cutter designed for heavy-duty cutting of connector pins and large component leads. Tip width .180". Recommended cutting capacity 18 AWG (.040" diameter).

Standard Cut Length .040"



903A ★★★★★

5 1/2"

903A-L ★★★★★

6 1/2"

Thin Tip Shear Cutter with Ergonomic Handle

Heavy-duty shear cutter with thin tips for cutting between component leads. The longer handle will provide better leverage for easy cutting. Tip width .100". Recommended cutting capacity 18 AWG (.040" diameter).

Standard Cut Length .040"



907-4 ★★★★★

6"

Thin Jaw Anti-Shock Shear Cutter

The thinner jaw gives greater accessibility into high-density areas. Very useful for cutting connector pins in confined areas. Tip width .100". Recommended cutting capacity 20 AWG (.032" diameter).

Standard Cut Length .030"



907-5 ★★★★★

5 1/4"

Connector Pin Shear Cutting Pliers

This cutter is designed with grooves on the outside of the jaws to fit between connector pins and provide a clean cut. Tip width .100". Recommended cutting capacity 22 AWG (.025" diameter).

Standard Cut Length .025"



907-59 ★★★★★

6"

Angulated Head Anti-Shock Shear cutter

The shear action cut reduces shock on delicate solder connections or components. The angle of the cutting head helps to increase visibility. Recommended cutting capacity 18 AWG (.040" diameter).

Standard Cut Length .045"



907-7 ★★★★★

6"

Anti-Shock Shear Cutter and Bender

Cuts component leads at .060" then bends the lead keeping the component in place when soldering. Recommended cutting capacity 20 AWG (.032" diameter).

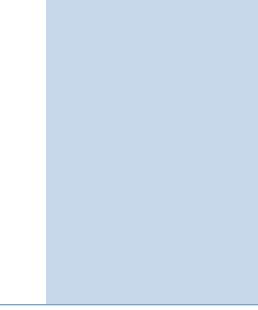


907 ★★★★★

6"

Anti-Shock Shear Cutter and Swager

Cuts component leads to .030" and swages the end of the lead to prevent it from falling out of P.C. board. Recommended cutting capacity 20 AWG (.032" diameter).

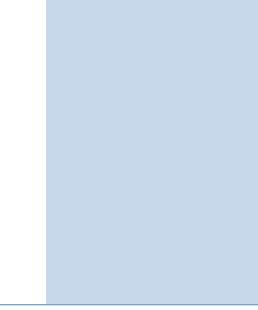


930E-1 ★★★★★

5 1/2"

Anti-Shock Shear Cutter and Bender

Cuts component leads at .060" then bends the lead keeping the component in place when soldering. Recommended cutting capacity 20 AWG (.032" diameter).



**531-US** ★★★★★**“Softip” Nylon Jaw Pliers**

Nylon jaws are useful in straightening leads and wires when metal-to-metal contact is not desired. Nylon jaws are screwed on and can be replaced when needed.

5 1/4"

531A-US ★★★★★**“Softip” Delrin Jaw Pliers**

Black Delrin material is ESD safe and temperature resistant up to 175°C. Delrin jaws are screwed on and can be replaced when needed.

5 1/4"

532-US ★★★★★**“Softip” Delrin Thin Jaw Pliers**

The tapered jaw with a small tip is useful in areas where space is limited. Black Delrin material is ESD safe and temperature resistant up to 175°C. Delrin jaws are screwed on and can be replaced when needed.

5 1/2"

533-US ★★★★★**“Softip” Round-Flat Forming Pliers**

These pliers have one round metal jaw and one flat Delrin jaw. Excellent for forming leads and wire when scratching and marring cannot be tolerated. The Delrin jaw is screwed on and can be replaced when needed.

5 3/4"

508D-US ★★★★★**“Softip” Delrin Wide Jaw Pliers**

Black Delrin heads eliminate scratching and marring of delicate leads. The jaws are 3/4" wide, ESD safe and temperature resistant up to 175°C. Delrin jaws are screwed on and can be replaced when needed.

5 1/2"



Custom Designed Handling Pliers

Softip and Metal Jaw Forming Pliers

Nylon and Delrin Replaceable Jaws, Made from High-Carbon Tool Steel

Static Safe grips, Made in the U.S.A.

508-US ★★★★★**Metal Jaw Straightening Pliers**

This unique tool will straighten multiple leads in one easy operation. The jaws are .825" wide.

5 1/2"

**508C-US** ★★★★★**Metal Jaw Straightening Pliers**

The jaws of these pliers are designed to fit between rows of connector pins. The jaws are .825" wide.

5 1/4"

**500-101-US** ★★★★★**Small Concave/Convex Forming Pliers**

Excellent for forming small wires and leads. The jaw tapers from front to back for forming various lead diameters.

5 1/4"

**500-101A-US** ★★★★★**Small Concave/Convex Forming Pliers**

Designed for forming a “J Hook” on wires and leads. The jaw tapers from front to back for forming various lead diameters.

5 1/4"



Wire Stripping Pliers

510E-US ★★★★★**Adjustable “V” Notched Stripper**

Precision wire stripper with locking setscrew can be adjusted for stripping 18-30 AWG wire.

5"

**502E-US** ★★★★★**High Precision Stripping Pliers**

Our most precision pliers for stripping Teflon coated wires. To order, specify the wire gauge size by indicating the gauge at the end of the reference number. (Example 502E-US-30 for 30 AWG) Available in 22, 24, 26, 28, and 30 AWG.

5"



Custom Designed Handling Pliers

Tube Expanding, Tube Cutters, IC Handling Pliers

Custom Sizes Available Upon Request, Made from High-Carbon Tool Steel

Static Safe grips.

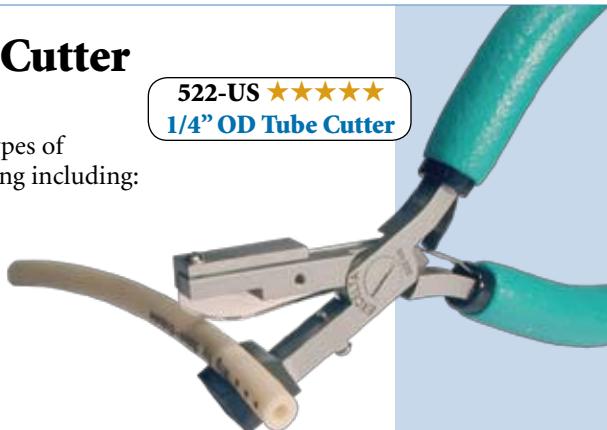


Tube Cutter

522-US ★★★★★
1/4" OD Tube Cutter

Cuts most types of medical tubing including:

*Bio-Sil®
Tygon®
Autoprene®
Viton®
Polyethylene
Polypropylene
Polyurethane
Nylon
Vinyl
Rubber
Silicone*



Clean, square cuts for inserting fittings, couplings and quick release valves.

Cutting capacity up to 1/4" OD.

Replaceable Surgical Grade Stainless Steel Blade.

Ergonomic soft cushion grips.

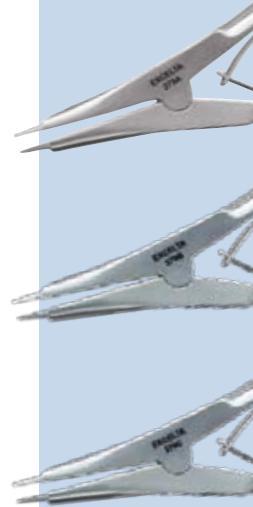
Tube Expanding Pliers

These stainless steel, reverse action pliers have been specifically designed to expand the end of flexible tubing for inserting into plastic or metal fittings and connections.

379A ★★ 5"
Expands a 1/8" tube to a 3/16" opening.

379B ★★ 5"
Expands a 3/32" tube to a 1/8" opening.

379C ★★ 5"
Expands a 1/16" tube to a 3/32" opening.

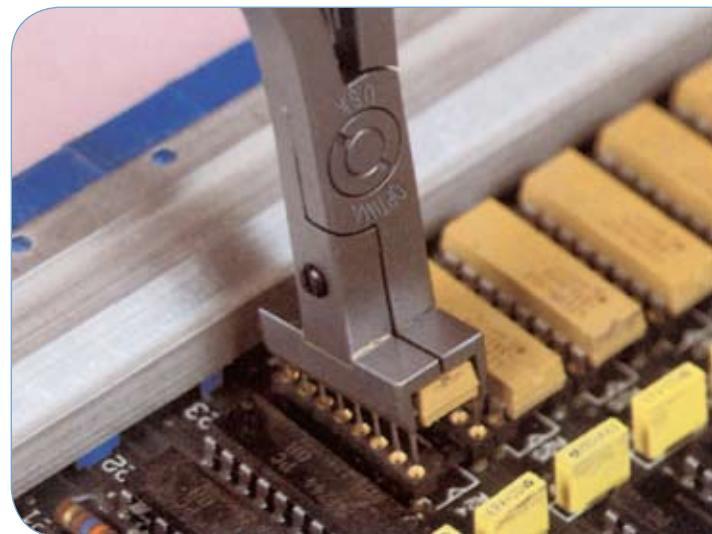
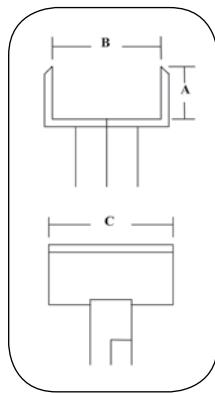


Insertion/Extraction Pliers

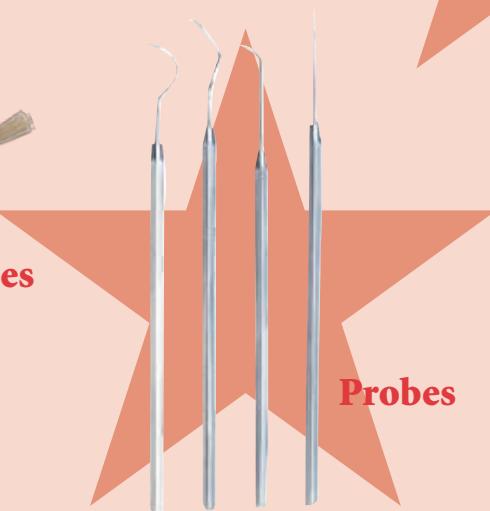
I.C. Handling Pliers

Our 505 Series pliers have been designed to handle DIP/IC packages. The chart will help you quickly find the size you are looking for. Custom size pliers available upon request.

P/N	A	B	C
505F-US	.180	.300	.257
505D-US	.180	.300	.358
505C-US	.180	.300	.788
505J-US	.180	.300	.966
505E-US	.180	.300	1.260
505-US	.180	.400	1.063
505A-US	.180	.600	1.260
505K-US	.180	.300	1.398
505BG-US	.180	.600	1.398
505G-US	.180	.600	1.660
505B-US	.180	.600	2.080



Hand Tools and Instruments For Small Parts Assemblies



Scissors – Scalpels

★★★★★ High Quality Scissors - Medical Grade - Made in Switzerland

★★★★ Scalpel Blades and Handles - Made in Germany

★★★★ Safety Scalpels - Made in United Kingdom

361 ★★★★

3 1/4" Extra Fine Blade Medical Scissors.

Stainless Steel with 3/4" Curved Blade.
Ideal for ultra miniature work and in
confined areas. Made in Switzerland.



362 ★★★★

3 1/4" Fine Blade Medical Scissors.

Stainless Steel with 7/8" Curved Blade.
Thin blades for close tolerance cutting.
Made in Switzerland.



363 ★★★★

3 3/4" Round Blade Medical Scissors.

Stainless Steel with 1 1/4" Curved Blade.
A heavy duty miniature scissor for general
use. Made in Switzerland.



364 ★★★★

3 3/4" Fine Blade Medical Scissors.

Stainless Steel with 1 1/4" Curved Blade.
Ideal for delicate applications where
small strong blades are required. Made in
Switzerland.

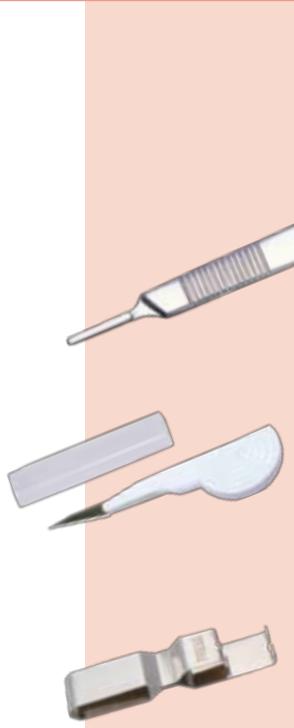


Medical Scalpels

Scalpel Handles & Blade Removers

177 ★★★

5" Scalpel handle made of Stainless Steel
with outside finger serrations for positive
gripping and easy use. Cleanroom safe,
fits scalpel blades numbers **177-10**,
177-11, **177-12**, **177-15**.



175-11 ★★★

The Safety Scalpel has a smaller handle
to fit between your thumb and index
finger. It's easy to use and comes with a
number 11 style blade and safety cover.

177A ★★★

Scalpel blade remover is safe and easy to
use.

For use with 177 Scalpel Handle.

Scalpel Blades

177-10 ★★★

Large round Stainless Steel
scalpel blade.



177-11 ★★★

Angled Stainless Steel
scalpel blade.



177-12 ★★★

Curved Stainless Steel
scalpel blade.



177-15 ★★★

Fine Stainless Steel
scalpel blade.





299D-G

Scissors – Stainless Steel

★★ Two Star

Straight, Curved, and Angled Blades

Ergonomic and Self-Opening Style Handles

Self-Opening Precision Scissors

The precision cutting blades are ideal for delicate cutting applications. Stainless steel blade is hardened to Rockwell C-50.

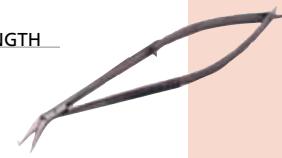
REF NO.	OVERALL LENGTH	BLADE LENGTH
346 ★★	4 1/2"	5/8"
346A ★★	3 3/4"	1/2"
346B ★★	3 1/2"	3/8"



Self-Opening Precision Scissors

The precision cutting blades angle at 45 degrees, allowing perfect visibility with good clearance.

REF NO.	OVERALL LENGTH	BLADE LENGTH
349 ★★	4 1/2"	5/8"
349A ★★	3 3/4"	1/2"
349B ★★	3 1/2"	3/8"



Long Blade Scissors

Very popular for long cuts

REF NO.	OVERALL LENGTH	BLADE LENGTH
297 ★★	3 1/2"	1 1/4"
298 ★★	4"	1 1/2"
298A ★★	4 1/2"	1 3/4"
298B ★★	5"	2"



288 ★★ Short Fine Blade Scissors

Short thin cutting blades for delicate work and close tolerance cutting. Overall length is 3 1/4". Blade length is 3/4".



289 ★★ Same as above with curved blades.

290 ★★ Medium Fine Blade Scissors

Most popular precision-made scissors for general use. Overall length is 3 3/4". Blade length is 1".



291 ★★ Same as above with curved blades.

270 ★★ 60° Angle Slim Blade Scissors

Blade angle offers good surface clearance. Overall length is 4 1/2". Blade length is 1 1/4".



271 ★★ Slim Blade Scissors

Straight blades with extra-long handles provide better cutting leverage. Overall length is 4 3/4". Blade length is 1 1/4".



309 ★★ Wire Scissors

Used for cutting soft wire. Overall length is 4". Blade length is 1 1/4".



Trimmer Scissors

Used for pattern cutting and general-purpose use. Chrome-plated.

REF NO.	OVERALL LENGTH	BLADE LENGTH
339 ★★	6"	2 3/4"
340 ★★	7"	3 1/4"
341 ★★	8"	4"



299-P ★★★ Ergonomic Kevlar Scissors

Features molded handles with tempered Stainless Steel blades. Serrations on one-edge makes this scissor great for cutting Kevlar. Wider finger holes and smooth opening makes for easy operation. Overall length 5 1/2", blade length 1 3/4".



299D-G ★★ Heavy-Duty Ergonomic Scissors

The Ergonomic design of the handles has no finger holes like traditional scissors. With added return springs and padded grips these scissors can be used for long periods of time without hand fatigue.



299 ★★ Electrician's Scissors

Heavy duty, general-purpose scissors with serrated outside blade edges. Overall length is 5". Blade length is 1 3/4".

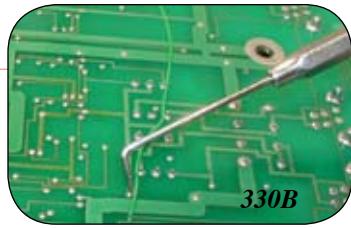


Small Hand Tools

Three Stars ★★☆

Probes – Scribes

Stainless Steel Probes, Diamond Tip Scribes



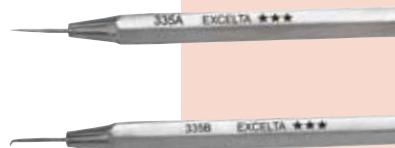
(enlarged for viewing)

Micro Tip Stainless Steel Probes – Smallest Tip Size Available

REF. NO.	TIP SIZE	STYLE	LENGTH
332A ★★☆	1 mil	Straight	6 1/2"
332B ★★☆	1 mil	45°	6 1/2"
332C ★★☆	1 mil	25°	6 1/2"
332D ★★☆	1 mil	90°	6 1/2"
332E ★★☆	1 mil	Hook	6 1/2"

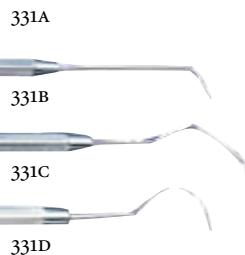
Short Tip Micro Probes, Stainless Steel

REF. NO.	TIP SIZE	STYLE	LENGTH
335A ★★☆	1 mil	Straight	4 3/4"
335B ★★☆	1 mil	90°	4 3/4"



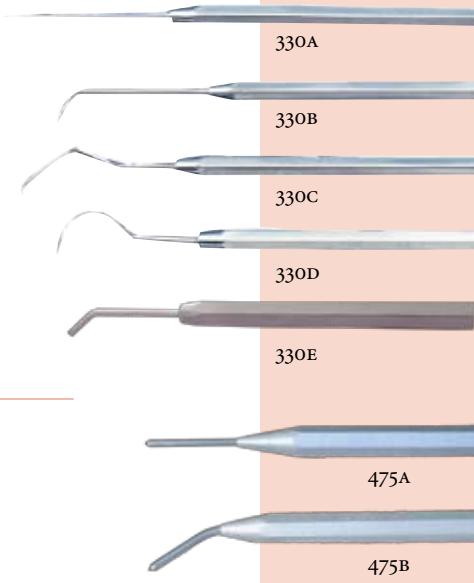
Fine Tip Stainless Steel Probes 3" Handle for Working Under Magnification

REF. NO.	TIP SIZE	STYLE	LENGTH
331A ★★☆	10 mil	Straight	3"
331B ★★☆	10 mil	Angle	3"
331C ★★☆	10 mil	Curved	3"
331D ★★☆	10 mil	Hook	3"



Fine Tip Stainless Steel Probes General Purpose with Standard Handle

REF. NO.	TIP SIZE	STYLE	LENGTH
330A ★★☆	10 mil	Straight	6"
330B ★★☆	10 mil	Angle	6"
330C ★★☆	10 mil	Curved	6"
330D ★★☆	10 mil	Hook	6"
330E ★★☆	10 mil	Angle Chisel	6"
330K Probe Kit		one each 330 A-D	
333A ★★☆	10 mil	Knife	6"



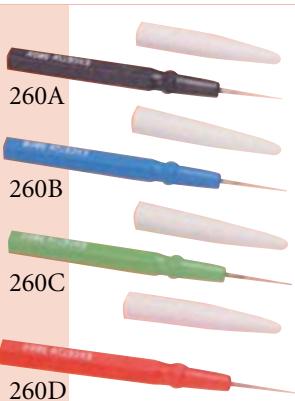
Fine Diamond Tip Scribes Aluminum Handle

REF. NO.	TIP SIZE	STYLE	LENGTH
475A ★★☆	20 mil	Straight	4 1/2"
475B ★★☆	20 mil	Angle	4 1/2"

Small Hand Tools

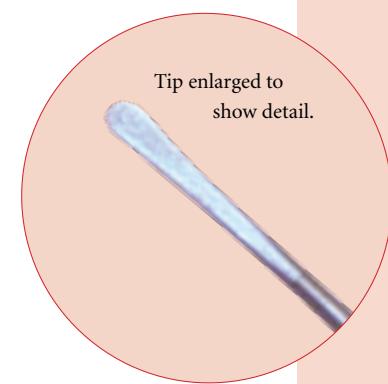
★★★ Miniature Spatulas – Pin Vises

Miniature Plastic Spatulas, Miniature Aluminum Spatulas, Brass Handle Pin Vises



Miniature Spatulas 2 1/2" with Plastic Handle

REF. NO.	TIP SIZE	STYLE	LENGTH
260A ★★★	.010"	Black	2 1/2"
260B ★★★	.015"	Blue	2 1/2"
260C ★★★	.020"	Green	2 1/2"
260D ★★★	.025"	Red	2 1/2"



Miniature Spatulas 2 1/2" with ESD Safe Aluminum Handle

REF. NO.	TIP SIZE	STYLE	LENGTH
260A-ESD ★★★	.010"	Black	2 1/2"
260B-ESD ★★★	.015"	Blue	2 1/2"
260C-ESD ★★★	.020"	Green	2 1/2"
260D-ESD ★★★	.025"	Red	2 1/2"



Pin Vises

220 ★★★

4 1/4" long double-ended pin vise. One end has a square 0 to .025" opening chuck, the other end is a round .035" to .115" opening chuck.



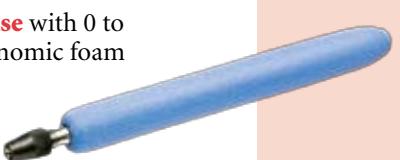
227A ★★★

3 1/2" long brass handle pin vise with 0 to .015" opening chuck.



227A-ET ★★★

3 1/2" long brass handle pin vise with 0 to .015" opening chuck and Ergonomic foam grip for comfort.



227B ★★★

4" long brass handle pin vise with 0 to .025" opening chuck.



227B-ET ★★★

4" long brass handle pin vise with 0 to .025" opening chuck and Ergonomic foam grip for comfort.



227C-ET ★★★

4" long brass handle pin vise with .010" probe tip and Ergonomic foam grip for comfort.

When ordering replacement probes use part number **227C-P**

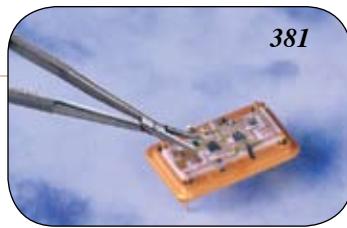


Small Hand Tools

Two Stars ★★

Miniature Pliers and Hemostats

Stainless Steel, Locking Handles



381

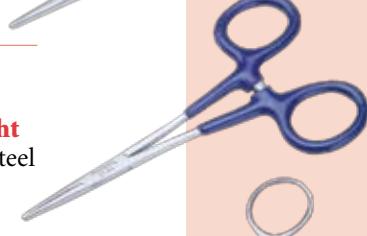
35-SE ★★

5" Locking Hemostat with straight serrated jaws. Made of Stainless Steel, clean room safe.



35-PH ★★

5" Locking Hemostat with straight serrated jaws. Made of Stainless Steel with vinyl-coated handle.



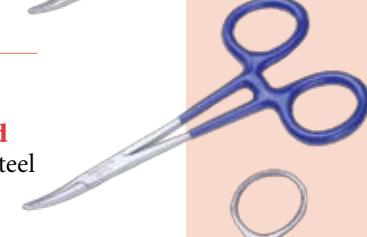
36-SE ★★

5" Locking Hemostat with curved serrated jaws. Made of Stainless Steel, clean room safe.



36-PH ★★

5" Locking Hemostat with curved serrated jaws. Made of Stainless Steel with vinyl-coated handle.



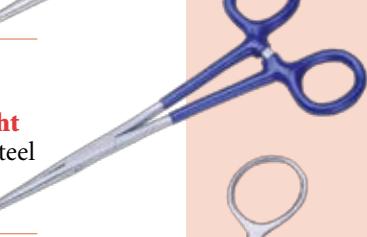
37-SE ★★

6" Locking Hemostat with straight serrated jaws. Made of Stainless Steel, clean room safe.



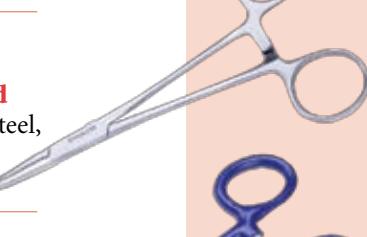
37-PH ★★

6" Locking Hemostat with straight serrated jaws. Made of Stainless Steel with vinyl-coated handle.



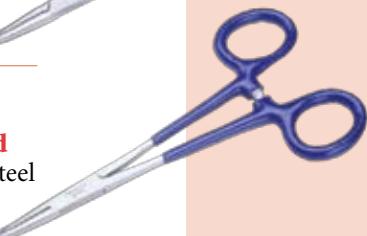
38-SE ★★

6" Locking Hemostat with curved serrated jaws. Made of Stainless Steel, clean room safe.



38-PH ★★

6" Locking Hemostat with curved serrated jaws. Made of Stainless Steel with vinyl-coated handle.



381 ★★

Curved tip chain nose Stainless Steel micro pliers.

The curved tips are excellent when working in very difficult and confined areas. Overall length is 3" and jaw length is $\frac{1}{4}$ ".



382 ★★

Straight tip chain nose Stainless Steel micro pliers.

Small fine tips for those very delicate assembly jobs. The overall length is 3" and the jaw length is $\frac{1}{4}$ ".



383 ★★

Straight tip needle nose Stainless Steel micro pliers.

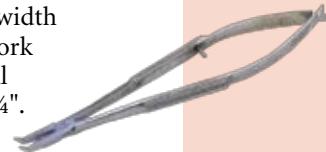
The fine needle nose is designed for light work where space and accessibility are limited. Overall length is 3" and jaw length is $\frac{1}{4}$ ".



384 ★★

Angulated tip needle nose Stainless Steel micro pliers.

The small tip width and thinness enable this tool to work well in confined areas. The overall length is 3" and the jaw length is $\frac{1}{4}$ ".



385 ★★

Round nose Stainless Steel micro pliers.

The round nose can be used to form small wires and leads. Overall length is 3" and the jaw length is $\frac{1}{4}$ ".



386 ★★

Flat nose Stainless Steel micro pliers.

The flat smooth jaws prevent nicking and marring of delicate component leads. Overall length is 3" and jaw length $\frac{1}{4}$ ".

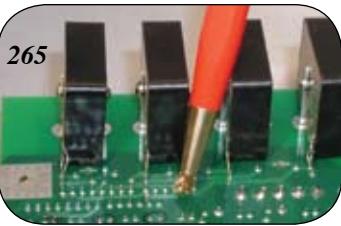


Small Hand Tools

★★ Two Stars

Scratch Brushes – Bench Brushes

Brass, Steel, Fiberglass and Nylon Bristles



264 ★★

Fiberglass Cleaning Brush

Refillable with long thin handle. Used in very confined areas, which are not accessible with larger diameter brushes. Overall length is 5 1/4" and 1/2" round. Brush is 1/20" diameter. For fiberglass refill, use reference no. 264A.



263 ★★

Fiberglass Scratch Brush

Retractable and refillable, with plastic handle. Very useful when cleaning and polishing. Overall length is 4 1/4" and 5/8" round. Brush is 5/16" diameter.

Refills available. Use reference no. 263A.



Scratch Brushes

Retractable and refillable with plastic handle. Can be used for fine deburring, polishing, rust removal, or cleaning and erasing in chemical etching processes. Excellent for pre-solder and contact cleaning. Overall length is 4 3/4" and 3/8" round. Brush is 1/8" diameter.



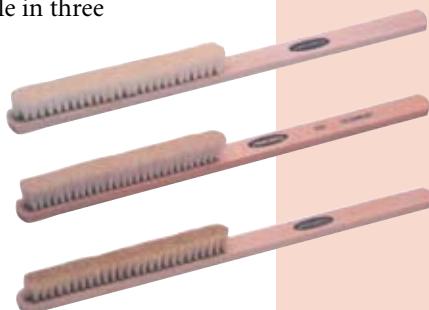
Bench Brushes – Standard ESD Safe

Made of high grade bristles with a wooden handle. There are four rows of bristles 4 1/2" long and 1/2" wide, which will not shed. Overall length is 10". Available in three degrees of hardness:

187 ★★ – Soft

189 ★★ – Half Soft

190 ★★ – Half Hard



262 ★★

Brush Kit

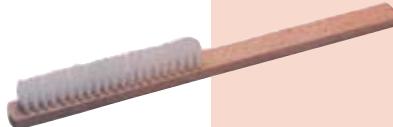
Kit consists of the following:

1 each brush holder, 265A brass refill, 266A steel refill, 267A fiberglass refill, 268A nylon refill. Supplied in plastic case.

186 ★★

Nylon Bench Brush

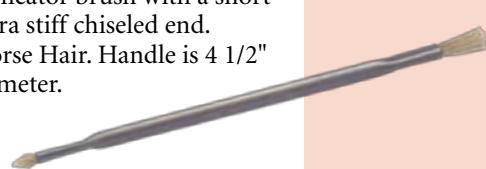
White Nylon bristles with a wooden handle. 4 rows of bristles 3 3/4" long and 1/2" wide. Overall length is 8 1/2".



214-H ★★

Applicator Brush

Double-ended applicator brush with a short flat end and an extra stiff chiseled end. Bristles are soft Horse Hair. Handle is 4 1/2" long and 3/16" diameter.



215-H ★★

Applicator Brush

Double-ended applicator brush with a short flat end and an extra stiff chiseled end. Bristles are soft Horse Hair. Handle is 4 1/2" long and 3/8" diameter.



Small Hand Tools

Four Stars ★★★★

Cleaning, Heat Resistant and Cleanroom Brushes

Stainless Steel, Nylon and Natural Fiber Bristles



Instrument Cleaning Brushes ★★★★

Designed for general cleaning in tight areas. The handle is $\frac{1}{4}$ " in diameter, with a tip size of $\frac{1}{8}$ " wide and $\frac{3}{16}$ " long. The fibers are mechanically clamped into the Stainless Steel tube and inserted in the Delrin handle. Available with straight or bent tips.



210S-P 5 $\frac{3}{4}$ " Straight tip with Hog Hair Bristles. (not shown)
210B-P 5 $\frac{1}{2}$ " Bent tip with Hog Hair Bristles. (not shown)
210S-H 5 $\frac{3}{4}$ " Straight tip with Horse Hair Bristles. (not shown)
210B-H 5 $\frac{1}{2}$ " Bent tip with Horse Hair Bristles.
210S-N 5 $\frac{3}{4}$ " Straight tip with Nylon Bristles.
210B-N 5 $\frac{1}{2}$ " Bent tip with Nylon Bristles. (not shown)
210S-S 5 $\frac{3}{4}$ " Straight tip with Stainless Steel Bristles.
210B-S 5 $\frac{1}{2}$ " Bent tip with Stainless Steel Bristles.

Materials

Hog Hair: Strong and stiff with natural taper and split end. Water resistant and heat tolerant to 500°F.

Horse Hair: Soft and slightly stiff. Used for scratch-free dry brushing. Heat resistant to 370°F.

Nylon: Resilient and durable. Impervious to solvents and common chemicals. Resistant to bacteria and heat resistance to 250°F.

Stainless Steel: Resistant to heat, rust and corrosion. Used for wet or dry applications.

Heat Resistant Brushes ★★★★

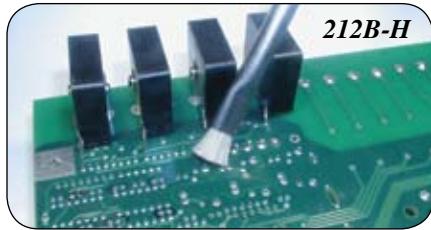
The Nylon fibers are epoxy set into the Delrin handles with a high temperature adhesive to resist deterioration in an autoclave. The soft non-shedding Nylon fibers are perfect for working on delicate parts. Brushes should be cleaned prior to Cleanroom use.



211A-N 4 $\frac{1}{2}$ " long and $\frac{3}{16}$ " diameter handle with $\frac{3}{8}$ " long and $\frac{3}{16}$ " wide bristles.
211B-N 4 $\frac{1}{2}$ " long and $\frac{1}{4}$ " diameter handle with $\frac{1}{2}$ " long and $\frac{1}{4}$ " wide bristles.
211C-N 4 $\frac{1}{2}$ " long and $\frac{3}{8}$ " diameter handle with $\frac{3}{4}$ " long and $\frac{3}{8}$ " wide bristles.
211D-N 4 $\frac{1}{2}$ " long and $\frac{1}{2}$ " diameter handle with 1" long and $\frac{1}{2}$ " wide bristles.

Materials

Nylon: Resilient and durable. Impervious to solvents and common chemicals. Resistant to bacteria and heat resistant to 250°F. 6.12 Nylon is FDA approved.



ESD Safe Brushes ★★★

Made with Stainless Steel handles and Horse Hair bristles to provide ESD protection. The bristles are mechanically clamped into the handle for maximum fiber retention without the use of adhesives that could contaminate the work area.



212A-H 3 1/2" long and 1/8" diameter handle with 1/8" long and 1/8" wide bristles.

212B-H 4 3/4" long and 3/16" diameter handle with 5/16" long and 1/4" wide bristles.

212C-H 4 3/4" long and 5/16" diameter handle with 3/8" long and 3/8" wide bristles.

212D-H 6" long and 3/8" diameter handle with 3/4" long and 7/16" wide bristles.

Materials

Horse Hair: Soft and slightly stiff. Used for scratch-free dry brushing. Heat resistance to 370°F.

Small Hand Tools

★★★ Three Stars

Cleaning, Heat Resistant and Cleanroom Brushes

Stainless Steel, Nylon and Natural Fiber Bristles

Cleanroom Safe Brushes ★★★

Made with Stainless Steel handles and new Statigo9 fiber bristles. The bristles are mechanically clamped into the handle for maximum fiber retention without the use of adhesives that could contaminate the work area. New Statigo9 fibers are similar to Nylon fibers, except they are ESD Safe with a surface resistivity of 10⁶.



213A-N 3 1/2" long and 1/8" diameter handle with 1/8" long and 1/8" wide bristles.

213B-N 4 3/4" long and 3/16" diameter handle with 5/16" long and 1/4" wide bristles.

213C-N 4 3/4" long and 5/16" diameter handle with 3/8" long and 3/8" wide bristles.

213D-N 6" long and 3/8" diameter handle with 3/4" long and 7/16" wide bristles.

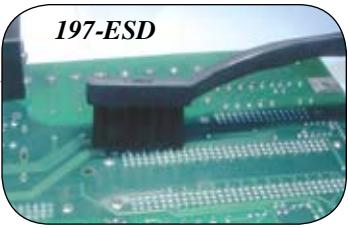
Materials

Statigo9: A static dissipative acetal that is as durable as nylon, thick enough to perform mechanical work, does not shed or slough and is clean room compatible.

Small Hand Tools

Two Stars ★★

Scribes, Inspection Mirror, Mixing Spatula, ESD Brushes



194-ESD ★★

6" Soft Cleaning Brush

Two rows of soft bristles. ESD Safe round plastic handle. Brush head is 1/2" long and 3/16" wide.



195-ESD ★★

6 1/2" Stiff Cleaning Brush

Stiff bristles clamped into holder. ESD Safe round plastic handle. Brush head is 3/4" long and 1/8" wide.



196-ESD ★★

5 3/4" Soft Cleaning Brush

One row of soft bristles. ESD Safe flat plastic handle. Brush head is 1 1/2" long and 1/8" wide.



197-ESD ★★

6 3/4" Toothbrush Style

Three rows of medium stiff bristles. ESD Safe square plastic handle with finger grooves. Brush head is 1 1/4" long and 3/8" wide.



342 ★★

Mixing Spatula

7" overall length, Made of polished Stainless Steel these spatulas are double-ended with round handle. Both ends have a rounded blade 1 1/8" long and 3/16" wide.



343 ★★

Mixing Spatula

7" overall length, made of polished Stainless Steel these spatulas are double-ended with round handle. One end has a rounded blade 1 1/4" long and 5/16" wide, the other end has a square blade 3/8" long and 1/4" wide with a sharp edge for scraping.



345 ★★

Mixing Spatula

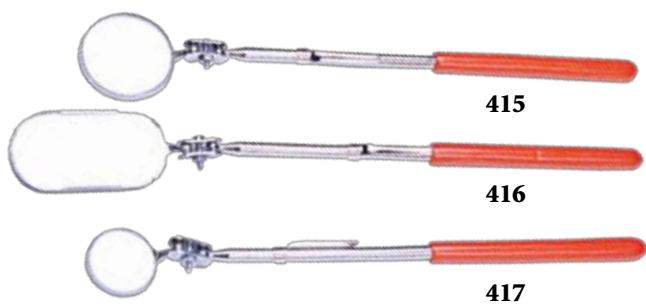
8 1/2" overall length, made of Stainless Steel with wooden handle, can be used for mixing and potting. Blade length is 4 3/4" long and 5/8" wide.



★★ Ball Joint Inspection Mirrors

Outer surfaces are heavily chrome plated. All models feature insulated vinyl grips. The clear-view mirrors are copper-backed and electro-plated.

PART. NO.	SHAPE	LENGTH	DIAMETER
415	Round	8"	1 1/4"
416	Oval	8 1/2"	1" x 2"
417	Round	7 1/2"	7/8"



Bench Top Magnifiers – 4X to 10X Magnification

Eye Loupes and Illuminating Magnifiers

455A ★★★

The Super Optivisor has a magnifying power of 2.2 and can be used for precise viewing with the added 3.3 power lens. The exclusive clear-view lens has no center post to increase viewing. Shatter-resistant precision, and optical lens brings the smallest detail up to a larger, and sharper image. Comes with an adjustable headband and can be worn over regular glasses.

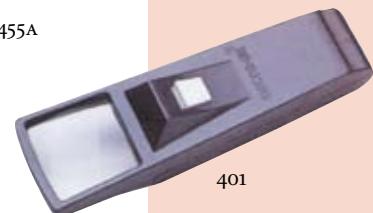


455A

401 ★★★

Magna-Lite Illuminated Optical Magnifier

5X power hand held magnifier. Lens dimension is 1 1/4" square. Perfect for quality control and inspection personnel. Comes in an unbreakable black plastic case.

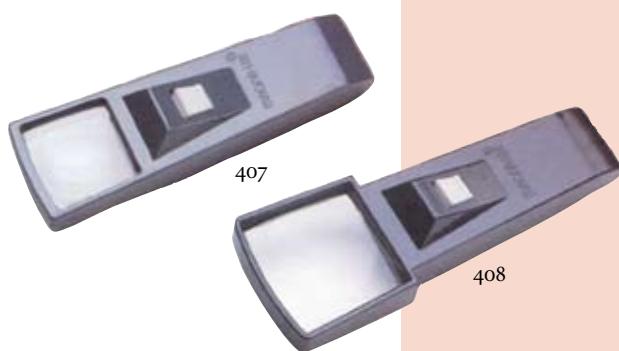


401

407 ★★★

Magna-Lite Illuminating Optical Magnifier

10X power hand held magnifier. Lens dimension is 1 1/4" square. Perfect for quality control and inspection personnel. Comes in an unbreakable black plastic case.



407

408

408 ★★★

Magna-Lite Mini-Reader

3X power hand held magnifier. Lens dimension is 2" square, offering a wider field of vision. Focal length is 4" at 3X magnification. Comes in an unbreakable black plastic case.



Eye Loupes

Used for magnification in assembly or inspection. Made with sturdy, lightweight frames, and color-coded rings for easy identification.

Single Lenses ★★★

REF. NO.	POWER	FOCAL LENGTH	COLOR CODE
207A	2 3/4X	3 1/2"	Yellow & White
207B	3 1/4X	3"	Yellow
207C	4X	2 1/2"	Blue & White
207D	5X	2"	Blue
207E	6 1/2X	1 1/2"	Red & White
207F	10X	1"	Red

Double Lenses ★★★

REF. NO.	POWER	FOCAL LENGTH	COLOR CODE
208	6 1/2X	1 1/2"	Red & White

Vacuum Handling Tools

Five Stars ★★★★★

Roto-Pic System

Vacuum Pump, Probes and Tips



EXCELTÀ® Roto-Pic ★★★★★

The most revolutionary vacuum pick-up available. Designed to reduce manual handling of both chips and wafers. Roto-Pic has a smooth, positive hold-and-release slide bar.

Round nose wheel rotates 360° so components can be picked up and aligned with ease. Easily replaceable tips come in a variety of sizes. Silicon rubber cups can be inserted on Roto-Pic for pick-up and manipulation.



Probes



Cup Assemblies



Small Tip Assemblies



Roto-Pic Vacuum System

Ref.No	Description
2000A	Roto-Pic Handpiece
2000V	Vacuum Pump
2000C	3' Plastic Hose

Probes

For use with the Roto-Pic Handpiece (2000A)

Ref.No	Description
2020	45°
2021	60°
2022	45° short
2023	90°
2024	180° straight

Cup Assemblies

High temperature vacuum cups made of silicon rubber with brass fitting, use with Roto-Pic Probes and Handpiece.

Ref.No	Description
2050	3/8" Cup
2051	1/2" Cup
2052	1/4" Cup
2060	Circo-Vac Cup
2071	Verto-Vac w/ high temp support

Small Tip Assemblies

Vacuum Tips for handling small parts, for use with Roto-Pic Probes and Handpiece.

Ref.No	Inside Diameter	Tip Material
2040	.006"	Teflon
2041	.005"	Polyethylene
2043	.012"	Polyethylene
2044	.035"	Polyethylene
2080	.004"	Stainless Steel

VACUUM KITS

2000RK Roto-Pic Vacuum Kit

Complete vacuum handling system includes one each of the following kits - **2000R, 2000P, 2000WP, 2000DA**

2000P Probe Kit

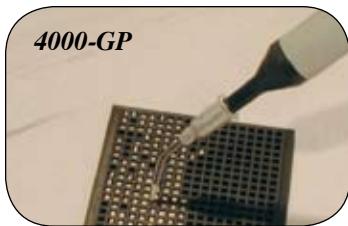
Contains one each of the following probes, **2020, 2021, 2022, 2023, 2024**.

2000WP Vacuum Cup Kit

Contains one each of the following cup assemblies, **2050, 2051, 2052, 2060, 2071**

2000DA Vacuum Tip Kit

Contains one each of the following tip assemblies, **2040, 2041, 2043, 2044, 2080**



4000-GP

Vacuum Handling Tools

★★★★ Four Stars

Continuous Powered Vacuum Systems

High Performance and General Purpose Pick and Place Tools

4000-GP ★★★★ General Purpose Vacuum System

A general-purpose vacuum handling tool that plugs directly into 110 VAC. This compact unit will handle most of the surface mount components used in industry today. The long life diaphragm vacuum pump generates over six inches of mercury. The unit connects to ground automatically with a three wire power cord.

The 4000-GP comes complete with the following features:

- Whisper-quiet operation.
- 4 feet of coiled vacuum hose.
- Vacuum pick-up handpiece.
- No-skid rubber feet.
- Produces vacuum of over six inches of mercury.
- Side mounted handpiece holder.
- Set of nine vacuum tips: **PVS-CB-12, PVS-CB-14, PVS-CB-18, PVS-CB-38, PVB-CB-332, PVB-CB-316, PVB-CB-14, PVB-CB-18, PVB-CB-38.**

4000-HP ★★★★ High Performance Vacuum System

High performance vacuum handling system will handle small to large size components. The precision pump and motor generate over fifteen inches of mercury. The compact tower design takes up a very small footprint on the work surface. An electric eye penholder on the side automatically shuts the unit off when the vacuum pen is placed in it. A jack on the rear of the 4000-HP allows the use of the optional foot switch to control vacuum during pick and place operations.

The 4000-HP comes complete with the following features:

- Quiet operation.
- 4 feet of coiled vacuum hose.
- Vacuum pick-up hand piece.
- Automatic vacuum pump ON/OFF control.
- No-skid rubber feet.
- ESD connection on rear of unit.
- Produces vacuum of over fifteen inches of mercury.
- Set of nine vacuum tips: **PVS-CB-12, PVS-CB-14, PVS-CB-18, PVS-CB-38, PVB-CB-332, PVB-CB-316, PVB-CB-14, PVB-CB-18, PVB-CB-38.**

Individual System Components

4000-FS Foot Switch for 4000-HP

4000-H Handle for 4000-HP/GP

4000-RF Replacement Filter for 4000-HP



4000-GP



4000-HP



4000-H

Vacuum Handling Tools

Three Stars ★★

Clean Room and ESD Safe Vacuum Tools

Self Contained Pick-up Tools



PV-1A-ESD



PV-2A-ESD ★★★ PEN-VAC STANDARD

This is an excellent tool for pick-and-place of many standard and odd size SMT components. The Pen-Vac Standard is 6" long by 1/2" round, with a convenient rear storage compartment and pocket clip. The kit contains the following 6 Buna-N static dissipative vacuum cups and probes: **PVB-CB-18, PVB-CB-14, PVB-CB-38, PVS-CB-18, PVS-CB-14, PVS-CB-38.**

PV-2-ESD ★★★ PEN-VAC STANDARD

This Pen-Vac Standard comes with the handpiece and convenient rear storage compartment and pocket clip. The kit contains the following 2 Buna-N static dissipative vacuum cups and probes: **PVB-CB-14, PVB-CB-18.**

PV-ST ★★★ PEN-VAC STANDARD, HANDLE ONLY

PV-1A-ESD ★★★ PEN-VAC JUNIOR

The soft Buna-N static dissipative vacuum cups will not scratch parts or damage delicate leads. The Pen-Vac Junior is 5" long by 1/2" round with added pocket clip. The kit contains the following 6 Buna-N static dissipative vacuum cups and probes: **PVB-CB-18, PVB-CB-14, PVB-CB-38, PVS-CB-18, PVS-CB-14, PVS-CB-38.**

PV-1-ESD ★★★ PEN-VAC JUNIOR

This Pen-Vac Junior kit comes with the handpiece with added pocket clip. The kit contains the following 2 Buna-N static dissipative vacuum cups and probes: **PVB-CB-14, PVB-CB-18.**

PV-JR ★★★ PEN-VAC JUNIOR, HANDLE ONLY

PV-3A-ESD ★★★ PEN-VAC PRO SERIES

The Pen-Vac PRO is 5" long by 1/2" round. The plastic static dissipative body provides ESD protection at a lower cost. The kit contains the following 6 Buna-N static dissipative vacuum cups and probes: **PVB-CB-18, PVB-CB-14, PVB-CB-38, PVS-CB-18, PVS-CB-14, PVS-CB-38.**

PV-HV ★★ HANDI-VAC®

This 3" vacuum-bulb pick-up-tool is simple and easy to use. When the vacuum bulb is squeezed, place the soft suction cup on the part to be handled, then relax your squeeze and the part is firmly gripped. A second squeeze releases the part. The Handi-Vac kit comes with the handpiece, and the following 4 Buna-N static dissipative vacuum cups and probes: **PVB-CB-18, PVB-CB-14, PVS-CB-18, PVS-CB-38.**

PV-HV-B ★★ HANDI-VAC® REPLACEMENT BULB



Vacuum Handling Tools

Cup Sizes 3/32" to 3/4", Tip Sizes down to .005"

Black Buna-N Static Safe Cups and High Temperature Silicon 250c

Finest Quality Replacement Cups + Tips

- Cup Sizes from 3/32" to 3/4"
- Black Cups are Buna-N Static Safe Non-marking
- Red Cups are High Temperature Silicon Rubber
- Interchangeable with Pen-Vac Junior, Pen-Vac Standard, Pen-Vac Pro and Handi-Vac

Vacuum Cups Only

Black - Buna-n Static Dissipative
Red - High Temperature Silicon 250c (not shown)

CB-34 black] 3/4" (19mm)
CR-34 red]

CB-58 black] 5/8" (15.9mm)
CR-58 red]

CB-12 black] 1/2" (12.7mm)
CR-12 red]

CB-38 black] 3/8" (9.5mm)
CR-38 red]

CB-14 black] 1/4" (6.4mm)
CR-14 red]

CB-316 black] 3/16" (4.76mm)
CR-316 red]

CB-18 black] 1/8" (3.2mm)
CR-18 red]

CB-332 black] 3/32" (2.4mm)
CR-332 red]

Straight Probes



PVS-CB-34] 3/4"
PVS-CR-34]



PVS-CB-58] 5/8"
PVS-CR-58]



PVS-CB-12] 1/2"
PVS-CR-12]



PVS-CB-38] 3/8"
PVS-CR-38]



PVS-CB-14] 1/4"
PVS-CR-14]



PVS-CB-316] 3/16"
PVS-CR-316]



PVS-CB-18] 1/8"
PVS-CR-18]



PVS-CB-332] 3/32"
PVS-CR-332]

Angulated Probes



PVB-CB-34] 3/4"
PVB-CR-34]



PVB-CB-58] 5/8"
PVB-CR-58]



PVB-CB-12] 1/2"
PVB-CR-12]



PVB-CB-38] 3/8"
PVB-CR-38]



PVB-CB-14] 1/4"
PVB-CR-14]



PVB-CB-316] 3/16"
PVB-CR-316]



PVB-CB-18] 1/8"
PVB-CR-18]



PVB-CB-332] 3/32"
PVB-CR-332]

Small Tips

Designed for handling very small parts. Tips are made in ESD safe Delrin plastic so there is no chance of static or mechanical damage. **Small tips should be used with continuous vacuum systems only.**



Angulated Tips

PVB-04 OD 0.05" ID 0.04"



PVB-02 OD 0.03" ID 0.02"



PVB-005 OD 0.02" ID 0.005"



PVS-04 OD 0.05" ID 0.04"



PVS-02 OD 0.03" ID 0.02"



PVS-005 OD 0.02" ID 0.005"

Vacuum Handling Tools

Five Stars ★★★★★

Clean Room and ESD Safe Vacuum Tools

Handles Wafers up to 12" (300mm)



PV-300-W12



PV-300



PV-500
w/detachable battery pack.



PV-W4

PV-W6

PV-W8

PV-W12



Rechargeable
Battery Pack



In-Stand Charger

Porta-Wand ★★★★★

Rechargeable vacuum handling tool

Kit comes with a fixed internal 9.6V NiMH rechargeable battery, in-stand charger and one wafer tip as listed below. Ideal for handling wafers, disk media or any item that has a flat, hard surface. Easily lifts over 500 grams. 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 is replaceable from the front of the tool, and an internal exhaust filter ensures better than Class 1 performance.

PV-300-W4 ★★★★★ Kit with 4" wafer tip

PV-300-W6 ★★★★★ Kit with 6" wafer tip

PV-300-W8 ★★★★★ Kit with 8" wafer tip

PV-300-W12 ★★★★★ Kit with 12" wafer tip

Porta-Wand Elite ★★★★★

Rechargeable battery operated vacuum handling tool

Kit comes with a detachable 9.6V NiMH rechargeable battery pack, an in-stand charger and one wafer tip as listed below. The detachable battery pack contains the rear exhaust filter for the entire tool to ensure better than Class 1 performance. 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. 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 intake air filter is replaceable from the front of the tool. Every PORTA-WAND is tested to meet Class 1 clean room particle contamination requirements. A serialized particle counter printout is provided with every tool.

PV-500-W4 ★★★★★ Kit with 4" wafer tip

PV-500-W6 ★★★★★ Kit with 6" wafer tip

PV-500-W8 ★★★★★ Kit with 8" wafer tip

PV-500-W12 ★★★★★ Kit with 12" wafer tip

Replacement Molded Wafer Tips (ESD safe)

PV-W4 ★★★★★ 4" replacement wafer tip

PV-W6 ★★★★★ 6" replacement wafer tip

PV-W8 ★★★★★ 8" replacement wafer tip

PV-W12 ★★★★★ 12" replacement wafer tip

Test and Measuring

★★★ Three Stars

Pocket Beeper – Three in One Tester

Continuity – High and Low Voltage



PB-1 ★★

Pocket-Beeper Model

As a continuity tester, Pocket-Beeper affords the operator quick discernment of point-to-point continuity testing by a clear audible tone. As a transistor and diode tester, the Pocket-Beeper analyzes "in circuit" junctions for go/no go normality.

The Model PB-1 indicates leakage, short or open conditions of transistors. Pocket-Beeper's portability, combined with its unique self-contained design and rugged enclosure, makes it ideal for production and field service applications.

Applications:

- Point-to-point continuity
- Rapid in-circuit scanning of transistors and diodes
- Detects shorts, open and leakage in components
- Positive go/no go testing
- Field servicing and maintenance

Features:

- Automatic power shutoff when not in use
- Audibly indicates conditions
- Low power drain for long life
- Will not harm any solid-state device or delicate circuits

Specifications:

- Power (internally supplied) 1.5 VDC "C" dry cell
- Probe signal voltage 1.6 volts peak-to-peak
- Dimensions: 4" high X 1 1/2" deep X 2 7/8" wide.
- Ambient temperature range +10°F to +120°F
- Weight: 12 ounces maximum

Replacement Probes: PB-1-L

ML-1 ★★

Three in One Board Tester

Includes high-voltage lamp for utility wiring and low-voltage lamp for continuity and low voltage testing. Checks continuity from 0-10 Ohms and voltage 0-600 volts. Requires 2 AAA batteries (not included)

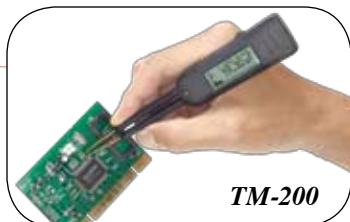
- Mode 1 Continuity tester for unpowered circuits from 0-10 Ohms.
- Mode 2 Voltage tester 60-600 volts AC or DC when lamp is used without batteries.
- Mode 3 Voltage tester 0-60 volts AC or DC when lamp is used without batteries.

Test and Measuring

★★★★★ **TM-200**

IntelliTweeze® R-C-L Meter in a Tweezer

Evaluates all types of SMD Components



TM-200

★★★★★ **TM-200**

IntelliTweeze®

R-C-L TweezerMeter™
by **EXCELTA®**



TM-200

The IntelliTweeze® is a quick and easy way of testing and troubleshooting many types of components. With the use of only one hand, this lightweight unit will quickly measure resistance, capacitance, inductance, voltage, continuity and polarity.

Measures Resistance, Capacitance, and Inductance

The primary display shows the present reading.

The secondary display (above the primary display) shows the present reading of additional parameters when the primary display shows other features (L,C).

The bar graph provides an analog indication of the measure input.

Measures Voltage

The AUTO MODE measures DC voltage from 100uV to 8VDC.

The TRACE MODE shows an oscilloscope picture of AC voltage.

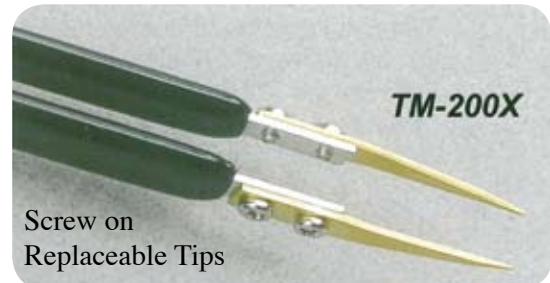
Measures Continuity

The beeper sounds for resistance below the threshold, or to indicate momentary open circuit.

Measures Diode Polarity

Manual setting for testing polarity on diodes.

Replacement Tips



Screw on
Replaceable Tips

TM-200X

TM-200-BX

Replacement Bent Tips

TM-200-X

Replacement Straight Tips

Test and Measuring

★★★★★ TM-200

IntelliTweeze® R-C-L Meter in a Tweezer

Evaluates all types of SMD Components

FEATURES

Precision gold plated replaceable tips are specially designed to work with small SMD components. With automatic recognition of measurement modes (R-C-L) and the range of measurement, sorting and evaluation of components becomes more efficient and cost effective.

Replacement Tips TM-200X
Replacement Bent Tips TM-200BX

Dual display read-out dominant and secondary parameter C+D, H+Q, C+R, H+R

Auto range

Three test frequencies

Analog Bar Graph

Audio Feedback

Left/Right hand display mode

DC Voltage measurements

Trace mode - oscilloscope display

manual mode settings

Manual test frequency settings

QUICK REFERENCE

Primary Display

The Primary Display is located in the middle of the display and is the larger of the two displays available. It shows the present reading. For most functions the primary display shows 5 digits.

If OUT OF RANGE is displayed, an overload condition is present.

Secondary Display

The Secondary Display is located at the top of the display screen and is the smaller of the two displays. It shows the present reading of additional parameters, or measurement conditions when the primary display shows some other feature (e.g. L, C).

When multiple features are present, the secondary display shows one of the values. For example, ESR value can appear in the secondary display while capacitor value appears in the primary display.

GETTING STARTED

To turn ON the IntelliTweeze® push down or rotate the Jog Dial. The symbol in the lower left corner will indicate the device is ON and ready to take measurements. The default mode is AUTO. Rotate or push Jog Dial to activate the Menu Mode.

The IntelliTweeze® will automatically shut OFF if no measurements were taken or Jog Dial has not been touched for 30 seconds.

CAUTION: Auto Power OFF does not work in the VOLTAGE measurement mode.

BASIC SPECIFICATIONS

Measurement Functions: R, L, C, ESR, D, Q,

Continuity Check,

DC Voltage (optional)

Measurement Ranges:

Accuracy		
Resistance:	999 Kohm	0.1 ohm to 9.9 Mohm
	<5%	5 ohm to
Capacitance:	4999uF	10pF to 100uF
	<3%	0.5pF to
Inductance:	9999uH	10uH to 99mH
	<5%	.5uH to
	<3%	

BATTERY

The IntelliTweeze® uses three 1.4-1.5V alkaline or air-zinc "Button" batteries, size 11.2 x 5.6 mm

Alkaline LR44, 357A, SG13, A76, AG13, L1154

Air-Zinc ZA675, VT675, KL675, 675A

The typical battery life is 70 hours with alkaline batteries.

INDEX

PART #	PAGE #	PART #	PAGE #	PART #	PAGE #	PART #	PAGE #
A-275-RTX	41	M-7-CO	11	PVS-CR-34	89	2-SA-PI	22
A-275A-CE	41	M-51-CO	11	PVS-CR-38	89	2-SA-SE	22
AA	30	ML-1	91	PVS-CR-58	89	2A	24
AA-S	30	MM	30	PVS-CR-316	89	2A-ESD	46
AA-S-SE	30	MM-SA-PI	30	PVS-CR-332	89	2A-S	24
AA-SA	30	MM-SA-SE	30	P2A	46	2A-S-SE	24
AA-SA-ET	38	MM-SE	30	RR	30	2A-SA	24
AA-SA-PI	30	MN-0C-CO	11	SE-25	58	2A-SA-ET	38
AA-SA-PI-ET	39	MN-2A-CO	11	SE-25A	58	2A-SA-MP	13
AA-SA-SE	30	P-S	29	SE-25B	58	2A-SA-PI	24
AA-SA-SE-PH	28	PB-1	91	SE-30	58	2A-SA-PI-ET	39
AA-SE	30	PB-1-L	91	SE-30L	58	2A-SA-SE	24
AC	26	PV-1A-ESD	88	SE-40	58	2AB-N	24
AC-PI	26	PV-JR	88	SS-S	22	2AB-SA-PI	24
AC-SA	26	PV-1-ESD	88	SS-S-SE	22	2AB-SA-SE	24
AC-SA-PI	26	PV-2-ESD	88	SS-SA	22	3-CO	9
AC-SA-SE	26	PV-2A-ESD	88	SS-SA-ET	38	3-CO-ET	37
AH-SE	28	PV-3A-ESD	88	SS-SA-MP	14	3-S	22
CB-12	89	PV-300-W4	90	SS-SA-PI	22	3-S-PI	22
CB-14	89	PV-300-W6	90	SS-SA-SE	22	3-S-SE	22
CB-18	89	PV-300-W8	90	TM-200	92	3-SA	22
CB-34	89	PV-300-W12	90	TM-200-BX	92	3-SA-ET	38
CB-38	89	PV-500-W4	90	TM-200-X	92	3-SA-PI	22
CB-58	89	PV-500-W6	90	0	25	3-SA-PI-ET	39
CB-316	89	PV-500-W8	90	0-SA	25	3-SA-SE	22
CB-332	89	PV-500-W12	90	0-SA-SE	25	3C	22
CR-12	89	PV-HV	88	0A	29	3C-CO	9
CR-14	89	PV-HV-B	88	0C	25	3C-CO-ET	37
CR-18	89	PV-ST	88	0C-SA	25	3C-ESD	46
CR-34	89	PV-W4	90	0C-SA-PI	25	3C-PI	22
CR-38	89	PV-W6	90	0C-SA-SE	25	3C-S	22
CR-58	89	PV-W8	90	00	25	3C-S-PI	22
CR-316	89	PV-W12	90	00-PI	25	3C-S-SE	22
CR-332	89	PVB-005	89	00-SA	25	3C-SA	22
D-275A-CE	41	PVB-02	89	00-SA-ET	38	3C-SA-ET	38
D-275-RTX	41	PVB-04	89	00-SA-PI	25	3C-SA-MP	13
DE-277-CE	41	PVB-CB-12	89	00-SA-PI-ET	39	3C-SA-PI	22
DN-1-SN	16	PVB-CB-14	89	00-SA-SE	25	3C-SA-PI-ET	39
DN-2A-SA-SE	16	PVB-CB-18	89	00-SE	25	3C-SA-SE	22
DN-2A-SN	16	PVB-CB-34	89	00B-SA	26	3C-SE	22
DN-3C-SA-SE	16	PVB-CB-38	89	00B-SA-PI	26	3C-TA	17
DN-5-SN	16	PVB-CB-58	89	00B-SA-SE	26	3CB-S	23
DN-7-SA-SE	16	PVB-CB-316	89	00C	25	4-CO	9
DN-7-SN	16	PVB-CB-332	89	00C-SA	25	4-SA	21
DN-277-CE	41	PVB-CR-12	89	00C-SA-SE	25	4-SA-PI	21
F-SA	24	PVB-CR-14	89	00D	26	4-SA-SE	21
F-SA-PI	24	PVB-CR-18	89	00D-SA	26	5-CO	9
GG-SA	30	PVB-CR-34	89	00D-SA-ET	38	5-CO-ET	37
M-AC	15	PVB-CR-38	89	00D-SA-PI	26	5-S	21
M-H-S	15	PVB-CR-58	89	00D-SA-PI-ET	39	5-S-PI	21
M-H-SA	15	PVB-CR-316	89	00D-SA-SE	26	5-S-SE	21
M-H-SA-PI	15	PVB-CR-332	89	000-SA	25	5-SA	21
M-HD	15	PVS-02	89	000-SA-PI	25	5-SA-ET	38
M-00D	15	PVS-04	89	1-PI	22	5-SA-MP	13
M-00D-SA	15	PVS-005	89	1-S	22	5-SA-PI	21
M-2-SA	15	PVS-CB-12	89	1-S-SE	22	5-SA-PI-ET	39
M-2A-CO	11	PVS-CB-14	89	1-SA	22	5-SA-SE	21
M-2A-SA	15	PVS-CB-18	89	1-SA-ET	38	5-TA	17
M-3-CO	11	PVS-CB-34	89	1-SA-MP	13	5A-CO	10
M-3-S	15	PVS-CB-38	89	1-SA-PI	22	5A-S	21
M-4-S	15	PVS-CB-58	89	1-SA-SE	22	5A-S-SE	21
M-4A-S	15	PVS-CB-316	89	2-CO	9	5A-SA	21
M-5-CO	11	PVS-CB-332	89	2-S	22	5A-SA-ET	38
M-5-S	15	PVS-CR-12	89	2-S-SE	22	5A-SA-MP	14
M-5-SA	15	PVS-CR-14	89	2-SA	22	5A-SA-PI	21
M-6-CO	11	PVS-CR-18	89	2-SA-ET	38	5A-SA-PI-ET	39

INDEX

PART #	PAGE #	PART #	PAGE #	PART #	PAGE #	PART #	PAGE #
5A-SA-SE	21	24-SA-SE	27	84EI	56	186	81
5B-SA	21	24-SA-SE-PH	28	86EI-5	57	187	81
5B-SA-ET	38	24-6-PI	27	92EI	56	189	81
5B-SA-PI	21	24-6-SA	27	95EI	56	190	81
5B-SA-PI-ET	39	24-8-SA	27	96EI-4.75	57	194-ESD	84
5C-SA	21	24A-S-SE	27	97EI	56	195-ESD	84
5I	61	25-SA	24	99EI	56	196-ESD	84
6-ESD	46	27-SA	31	102A-SA	32	197-ESD	84
6-PI	23	29-SA	16	102A-SA-PI	32	207A	85
6-S	23	29-S-SE	16	103-SA	32	207B	85
6-S-SE	23	29I	60	103-SA-PI	32	207C	85
6-SA	23	29IS	59	104-SA	32	207D	85
6-SA-ET	38	30-SA	16	104-SA-PI	32	207E	85
6-SA-PI	23	30-S-SE	16	106-SA	32	207F	85
6-SA-PI-ET	39	31-SA	16	107-SA	32	208	85
6-SA-SE	23	31-SA-C	16	108-SA	32	209	85
7-CO	10	31B-SA-SE	16	109-SA	32	210B-H	82
7-CO-ET	37	32A-SA	31	109-SA-PI	32	210B-N	82
7-LER	46	35-SE	80	110-SA	32	210B-P	82
7-PI	23	35A-ESD	46	111-SA	33	210B-S	82
7-S	23	35A-SA	31	115-SA	33	210S-H	82
7-S-PI	23	35A-SA-SE	31	116-SA	33	210S-N	82
7-S-SE	23	35PH	80	117-SA	33	210S-P	82
7-SA	23	36-SE	80	121-SA	33	210S-S	82
7-SA-ET	38	36A-SA	31	122-SA	33	211A-N	82
7-SA-MP	14	36A-SA-SE	31	123-SA	33	211B-N	82
7-SA-PI	23	36PH	80	124-SA	33	211C-N	82
7-SA-PI-ET	39	37-SE	80	125-SA	33	211D-N	82
7-SA-SE	23	37PH	80	126-SA	33	212A-H	83
7-TA	17	38	31	135A-SA	31	212B-H	83
7A LER	46	38-SE	80	159-RT	45	212C-H	83
7B-CO	10	38PH	80	159-RTX	45	212D-H	83
7B-S	23	39	31	159A-RT	45	213A-N	83
7B-SA	23	40	31	159A-RTX	45	213B-N	83
7B-SA-PI	23	40-S	31	159B-RT	45	213C-N	83
7B-SA-SE	23	42A-SA	31	159B-RTW	44	213D-N	83
8-SA-PI	28	42I	60	159B-RTWX	44	214-H	81
10G-SA	28	42-IS	59	159B-RTX	45	215-H	81
11DI	61	43I	60	159C-RT	45	220	79
11I	61	43-IS	59	159C-RTW	44	227A	79
12A-SA	24	44AI	60	159C-RTWX	44	227A-ET	79
13AI	61	44I	60	159C-RTX	45	227B	79
13I	61	44-IS	59	159D-RT	45	227B-ET	79
14A-GW	18	47DI	60	159D-RTW	44	227C-ET	79
14A-N	18	47I	60	159D-RTWX	44	227C-P	79
14I-6	61	47-IS	59	159D-RTX	45	231-SA-SE	27
15	19	51-CO	10	159E-RT	45	231A-SA-SE	27
15A-C	19	51-CO-ET	37	159E-RTX	45	260A	79
15A-GW	19	51-S	21	161A-RT	42	260A-ESD	79
15A-GW-PB	19	51-SA	21	161A-RTX	42	260B	79
15A-GW-PI	18	51-SA-MP	14	161B-RT	42	260B-ESD	79
15A-RW	19	51-SA-PI	21	161B-RTX	42	260C	79
15A-RW-PI	18	51-I-6DP	57	161C-RT	42	260C-ESD	79
15A-SW	19	51-6	57	161C-RTX	42	260D	79
19-S	26	51-T	57	175-11	76	260D-ESD	79
20-S	27	52-MW	18	177	76	262	81
20-SA-PI	27	52A-SA	24	177-10	76	263	81
20A-S-SE	27	54-MW	18	177-11	76	263A	81
21-6-SA	26	57EI	57	177-12	76	264	81
21-8-SA	26	60-SA	29	177-15	76	264A	81
21-SA-PI	26	61	46	177A	76	265	81
21-SA-SE	26	64-SA	29	179A-RT	43	265A	81
21-SA-SE-12	26	65A-SA	23	179A-RTX	43	266	81
22	27	66-SA	23	179D-RT	43	266A	81
22-SA	27	76EI	56	179D-RTX	43	267	81
24-SA-PI	27	77EI	56	179DN-RT	43	267A	81

INDEX

PART #	PAGE #	PART #	PAGE #	PART #	PAGE #	PART #	PAGE #
268	81	390L-SA	34	530GE-US	71	907-13A	68
268A	81	390L-SA-PI	34	531-US	73	907-59	72
270	77	390T-SA	34	531A-US	73	907-88	67
271	77	390T-SA-PI	34	532-US	73	907-88C	67
276-CE	41	391-SA	34	533-US	73	907-89	68
277-CE	41	391-SA-PI	34	549E-US	71	907-101	70
288	77	401	85	554-US	70	907-104	69
289	77	407	85	554-3RB-US	67	909-4	66
290	77	408	85	554-3RT-US	67	909-4B	66
291	77	415	84	554A-US	66	930E-1	72
297	77	416	84	554AJ-US	70	954A	66
298	77	417	84	554B-US	66	954B	66
298A	77	455A	85	554BJ-US	70	1003EH	49
298B	77	475A	78	554F-US	66	1006EH	49
299	77	475B	78	554N-US	70	1200EH	49
299D-G	77	490-SA	34	554TX-US	70	2000A	86
299P	77	490-SA-PI	34	554TXB-US	70	2000C	86
300	46	490B-SA	34	554TXC-US	66	2000DA	86
309	77	490B-SA-PI	34	590-SA	35	2000P	86
330A	78	490L-SA	34	590-SA-PI	35	2000RK	86
330B	78	490L-SA-PI	34	590L-SA	35	2000V	86
330C	78	490T-SA	34	590L-SA-PI	35	2000WP	86
330D	78	490T-SA-PI	34	590T-SA	35	2020	86
330E	78	491-SA	34	590T-SA-PI	35	2021	86
330K	78	491-SA-PI	34	591-SA	35	2022	86
331A	78	500-11-US	69	591-SA-PI	35	2023	86
331B	78	500-12-US	69	591B-SA	35	2024	86
331C	78	500-13A-US	68	591B-SA-PI	35	2040	86
331D	78	500-13B-US	68	609	46	2041	86
332A	78	500-88-US	67	609A	46	2043	86
332B	78	500-89-US	68	609-ESD	46	2044	86
332C	78	500-89B-US	68	690-SA	35	2050	86
332D	78	500-95B-US	68	690-SA-PI	35	2051	86
332E	78	500-101-US	73	690L-SA	35	2052	86
333A	78	500-101A-US	73	690L-SA-PI	35	2060	86
335A	78	500-103-US	69	690T-SA	35	2071	86
335B	78	500-103B-US	69	690T-SA-PI	35	2080	86
339	77	500-104-US	69	691-SA	35	2629	62
340	77	500-104B-US	69	691-SA-PI	35	2642	62
341	77	500-108-US	71	691B-SA	35	2643	62
342	84	500-210-US	69	691B-SA-PI	35	2644	62
343	84	500-210A-US	69	743	59	2644D	62
345	84	502E-US	73	744	59	2647	62
346	77	505-US	74	744D	59	2647D	62
346A	77	505A-US	74	759-RT	45	2818	62
346B	77	505B-US	74	759-RTX	45	2829	63
349	77	505BG-US	74	761A-RT	42	2829L	63
349A	77	505C-US	74	761A-RTX	42	2842	63
349B	77	505D-US	74	808	46	2842D	63
361	76	505E-US	74	815-SA-SE	31	2842L	63
362	76	505F-US	74	890L-SA	35	2843	63
363	76	505G-US	74	891-SA	35	2843L	63
364	76	505J-US	74	900-3RB	67	2844	63
379A	74	505K-US	74	900-3RT	67	2844D	63
379B	74	508-US	73	900-10	68	2844L	63
379C	74	508C-US	73	900-88B	67	2847	63
381	80	508D-US	73	900-100	70	2847D	63
382	80	510E-US	73	900-100A	70	2847L	63
383	80	522-US	74	903	72	2904	64
384	80	530E-US	71	903A	72	2904D	64
385	80	530E-1-US	71	903A-L	72	2905	64
386	80	530E-4-US	71	907	72	2905D	64
390-SA	34	530E-5-US	71	907-1	72	2910	64
390-SA-PI	34	530E-5-USL	71	907-4	72	2910D	64
390B-SA	34	530E-15-US	71	907-5	72	2914	64
390B-SA-PI	34	530EA-US	71	907-7	72	2914D	64

INDEX

PART #	PAGE #	PART #	PAGE #	PART #	PAGE #	PART #	PAGE #
2949	64	7145E	51	7231E	50	7250EM	54
2949D	64	7146E	51	7231EH	49	7251E	54
4000-FS	87	7147E	51	7232E	50	7251EM	54
4000-GP	87	7148E	51	7234E	50	7252E	54
4000-H	87	7149E	53	7235E	50	7252EM	54
4000-HP	87	7150E	54	7237E	50	7270E	53
4000-RF	87	7150EM	54	7237EH	49	7271E	53
7104E	52	7151E	54	7238E	50	7272E	52
7130E	50	7151EM	54	7240E	51	7274E	53
7131E	50	7152E	54	7241E	51	7275E	52
7132E	50	7152EM	54	7242E	51	7282E	52
7134E	50	7170E	53	7243E	51	7282EH	49
7135E	50	7171E	53	7244E	51	8140E-I	55
7137E	50	7172E	52	7245E	51	8141E-I	55
7138E	50	7174E	53	7246E	51	8150E-I	55
7140E	51	7175E	52	7247E	51	8151E-I	55
7141E	51	7182E	52	7247EHT	49	8160E-I	55
7142E	51	7204E	52	7248E	51	8161E-I	55
7143E	51	7230E	50	7249E	53		
7144E	51	7230EH	49	7250E	54		

Visit us on the internet
at
www.excelta.com

