



**BERNSTEIN**<sup>®</sup>  
TOOLS FOR ELECTRONIC



## ESD TOOLS FOR ELECTRONIC

PLIERS



TWEEZERS



SPANNFIX





## Why ESD Tools?

High potential differences lead to electrostatic discharge - ESD.

Electrostatic discharges are causing heavy damages while working at resp. with electrical components. Consequently components as well as electrical units etc. have to be protected against electrostatic discharges (ESD). As injuries resulting from these discharges are not always visible immediately they can finally produce „latent failures“ in transistors and circuit boards.

Components with „latent failures“ or „walking wounded“ are not directly damaged. They are only wounded. Breakdowns resp. reduced performances first occur later with the consequence of guarantee cases in much bigger dimensions.

In order to avoid uncontrolled discharges professional dissipative equipment around the operation area is absolutely necessary. Due to the importance of the so called EPA area (electrostatical protected area) the entrance is only allowed for persons dissipative equipped and dressed. Only so the controlled discharging to ground is ensured.

In the majority of cases the hand tools are the connection between human and assembly. For this reason there is a high standard demand to the hand tools in order to protect human and assembly.

### Conclusion:

Using high quality ESD hand tools is always a basic requirement and always a right economical decision.

## Bernstein ESD Hand Tools

As a tool manufacturer with a long tradition Bernstein provides for those operations an almost complete range of high quality ESD hand tools. ESD pliers and ESD screwdrivers are equipped with dissipative handles. ESD tweezers and ESD vices are coated with a high grade dissipative powder burnt in by 200° Celsius. All ESD tools are manufactured according to ESD standard IEC 61340-5-1. Accordingly the surface resistance range of all Bernstein ESD tools correspond to the optimum targets between  $10^6$  and  $10^9$  Ohm. This resistance area guarantees a „soft discharge“ in a defined time space for human and assembly and prevents damages on sensitive components.

Those tools may not be used in cases of existing tension! For those applications BERNSTEIN offers a range of isolated tools according VDE-rules.

conductive	static dissipative	insulating
$10^3$	$10^5$	$10^{12}$

The common values for surface resistance in EPA's are:

<b>conductive</b>	Surface resistance between $< 1 \times 10^3$ Ohm and $> 1 \times 10^5$ Ohm
<b>dissipative</b>	Surface resistance between $< 1 \times 10^5$ Ohm and $1 \times 10^{12}$ Ohm

The bigger the electrical resistance the stronger the discharge is reduced. The lower the resistance the faster the discharge takes place.



Warning symbol denoting a device's susceptibility to electrostatic discharge



Symbol for an Electrostatic Protected Area



Symbol for an ESD protection device - EPA



Symbol of an ESD grounding point for all components





**ELECTRONIC  
SERVICE  
SETS**

## ELECTRONIC SERVICE CASE EPA 6900

the service case for maintenance and installation tasks in ESD protected areas



# ELECTRONIC SERVICE CASE EPA



the service case made from conductive material for maintenance and installation tasks in ESD protected areas with a full assortment of special ESD-tools. For use at electrostatically endangered components and plants.

**6900**  **BERNSTEIN** EPA with tool set

**6915**  **BERNSTEIN** EPA without tool set

## Description

The body of the case, the tool trays as well as the bottom tray with adjustable partitions are made from conductive material according to DIN EN IEC Norm 10 00 15 part 5. The tools of this set have been tested with good results by several testing laboratories adequate to DIN EN 61340-5-1, 61340-2-1, 61340-2-3 for work in ESD protected areas. The sturdy shells are pressed with the stable double aluminium frame.

32 tools are clearly arranged on two tool trays, one of it on both sides. The lid of the case has a pocket for documentations etc. The bottom tray allows with its partitions a clear arrangement of additional tools and instruments. The case has two locks and one combination lock.

**Outside dimensions:** 500 x 370 x 210 mm

**Weight without tools:** 5.800 kg

**Weight with tools:** 7.100 kg

No.	Description of individual tools	No.	Description of individual tools
2-101	Tin knife with ceramic blade, 115 mm	4-633	Slotted screwdriver with dissipative special-square pattern handle, blade from chrome vanadium, chrome-plated, with black tip, 125 x 5.5 mm
2-265	2 Test prods, red and black, extremely slim, pointed and flexible, blade made from 1 mm steel wire	4-662	Cross-recess screwdriver Pozidriv size 1, with dissipative special-square pattern handle, blade from chrome vanadium, chrome-plated, with black tip, blade length 80 mm
2-620	PLCC extractor	4-663	Cross-recess screwdriver Pozidriv size 2, with dissipative special-square pattern handle, blade from chrome vanadium, chrome-plated, with black tip, blade length 100 mm
3-654-15	Side cutters EUROline-Conductive, 125 mm, semi flush, for soft wire up to 1.5 mm Ø, for hard wire up to 0.4 mm Ø, slim rounded head, box joint, double leaf spring, fine polished and bright burnished, dissipative bicoloured hand guard	5-191	Tweezers, made from conductive and acid-resistant black plastic material, reinforced with glass fibre, 120 mm, with straight, rounded tips
3-671-15	End cutters EUROline-Conductive, 130 mm, flush, for soft wire up to 0.8 mm Ø, extremely slim, straight, box joint, double leaf spring, fine polished and bright burnished, dissipative bicoloured hand guard	5-192	Tweezers, made from conductive and acid-resistant black plastic material, reinforced with glass fibre, 120 mm, with straight, 3 mm flat-hand tips
3-682-15	Flat nose pliers EUROline-Conductive, 130 mm, extremely slim, box joint, double leaf spring, fine polished and bright burnished, dissipative bicoloured hand guard	5-194	Tweezers, made from conductive and acid-resistant black plastic material, reinforced with glass fibre, 120 mm, with bent, pointed tips
3-133-13	Side cutters, 145 mm, for soft wire up to 2.5 mm Ø, for hard wire up to 1.25 mm Ø, chrome-plated, conductive black hand guard	6-612	Socket wrench with dissipative handle, blade from chrome vanadium, nickel-plated, A/F 2.0 mm
3-245-13	Telephone pliers, 200 mm, snipe nose, with cutting edge for hard wire, chrome-plated, dissipative black hand guard	6-617	Socket wrench with dissipative handle, blade from chrome vanadium, nickel-plated, A/F 4.0 mm
3-732-13	Combination pliers, 165 mm, chrome-plated, dissipative black hand guard	6-621	Socket wrench with dissipative handle, blade from chrome vanadium, nickel-plated, A/F 4.0 mm
4-603	Slotted screwdriver with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip, 50 x 1.5 mm	6-659	TORX-screwdriver T 5, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip
4-605	Slotted screwdriver with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip, 60 x 2.0 mm	6-661	TORX-screwdriver T 5, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip
4-606	Slotted screwdriver with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip, 60 x 2.5 mm	6-662	TORX-screwdriver T 6, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip
4-621	Cross-recess screwdriver size 000, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip	6-663 L	TORX-screwdriver T 7 with hole, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip
4-622	Cross-recess screwdriver size 00, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip	6-665 L	TORX-screwdriver T 9 with hole, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip
4-623	Cross-recess screwdriver size 0, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip	7-422	ESD brush, bristles width 20 mm
4-632	Slotted screwdriver with dissipative special-square pattern handle, blade from chrome vanadium, chrome-plated, with black tip, 100 x 4.0 mm		

# ESD PROFI-SET TRENDY 2280 AND 2285



the professional kit for ESD-Specialists for local and mobile use



Outside dimensions: 350 x 310 x 65 mm (closed)

- 2280**
 **BERNSTEIN**
ESD Profi-Set **TRENDY** with 18 Tools and ESD-Handling Set
**Weight:** 1.650 kg
- 2285**
 **BERNSTEIN**
ESD Profi-Set **TRENDY** with 18 Tools
**Weight:** 1.500 kg

Selected ESD-tools in handy plastic case made from conductive material. The tools are clearly arranged in accurate-sized cutouts in conductive hardfoam. For individual accessories are one resp. two empty cutouts available.

No.	Description of individual tools	No.	Description of individual tools
2-620	PLCC extractor	4-622	Cross-recess screwdriver size 00, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip
3-133-13	Side cutters, 145 mm, for soft wire up to 2.5 mm Ø, for hard wire up to 1.25 mm Ø, chrome-plated, conductive black hand guard	4-623	Cross-recess screwdriver size 0, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip
3-651-15	Mini side cutters EUROline-Conductive, 120 mm, flush, for soft wire up to 1.5 mm Ø, medium hard wire up to 0.8 mm Ø, box joint, double leaf spring, fine polished and bright burnished, dissipative bicoloured hand guard	5-049-13	SMD-tweezers, 110 mm, straight, very sharply pointed, ESD-coating
3-682-15	Flat nose pliers EUROline-Conductive, 130 mm, finish as above	5-055-13	SMD-tweezers, 120 mm, sickle-shaped, very sharply pointed, as above
3-683-15	Snipe nose pliers EUROline-Conductive, 130 mm, short jaws, finish as above	5-059-13	SMD-tweezers, 120 mm, flat, rounded tips, 2.0 mm width, as above
4-601	Slotted screwdriver 50 x 0.8 mm, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip	6-661	TORX screwdriver T 5, with dissipative handle, blade made from chrome vanadium, chrome-plated, with black tip
4-603	Slotted screwdriver 50 x 1.5 mm, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip	6-662	TORX screwdriver T 6, with dissipative handle, blade made from chrome vanadium, chrome-plated, with black tip
4-605	Slotted screwdriver 60 x 2.0 mm, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip	6-663 L	TORX screwdriver T 7, with bore-hole in the tip, with dissipative handle, blade made from chrome vanadium, chrome-plated, with black tip
4-621	Cross-recess screwdriver size 000, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip	7-422	ESD brush, bristles width 20 mm
		9-354	ESD handling set (only in set 2280), consisting of: foldable, green workbench pad (surface resistance according to DIN 53482: approx. 10 <sup>8</sup> ohm), 500 x 400 x 0.35 mm, contact bracelet with spiral cord, earth wire 2500 mm long with 1 Mohm safety resistor including crocodile clip



# ESD TOOL SERVICE-SETS



ESD Tool Sets for various operations in ESD areas, in handy cases from conductive material. The tools are clearly arranged in accurate-sized cutouts in conductive hardfoam.



2230 Outside dimensions: 250 x 210 x 60 mm (closed)



2210 Outside dimensions: 178 x 160 x 42 mm (closed)

## 2230 BERNSTEIN<sup>®</sup> ESD Tool-Set **ELITE** with 20 tools

**Weight:** 0.870 kg

No.	Description of individual tools
3-651-15	Mini side cutters EUROline-Conductive, 120 mm flush, for soft wire up to 1.5 mm Ø and medium hard wire up to 0.8 mm Ø, box joint, double leaf spring, fine polished and bright burnished, dissipative bicoloured hand guard
3-672-15	End cutters EUROline-Conductive, 130 mm, flush, for soft wire up to 1.5 mm Ø and medium hard wire up to 0.8 mm Ø, cutting edge 20° angular, finish as above
3-682-15	Flat nose pliers EUROline-Conductive, 130 mm, finish as above
3-683-15	Snipe nose pliers EUROline-Conductive, 130 mm, short jaws, finish as above
4-901	ESD-handle from dissipative material, with metal clamping sleeve for following reversible blades:
4-905	Hex blade slotted 1.5 / 3.0 mm, matt chrome-plated, black tip
4-906	Hex blade slotted 2.0 / 3.5 mm, matt chrome-plated, black tip
4-907	Hex blade slotted 2.5 / 4.0 mm, matt chrome-plated, black tip

No.	Description of individual tools
4-911	Hex cross-recess blade PH 000 / PH 00, matt chrome-plated, black tip
4-912	Hex cross-recess blade PH 0 / PH 1, matt chrome-plated, black tip
4-921	Hex cross-recess blade TORX T 5 / T 6, matt chrome-plated, black tip
4-922 L	Hex cross-recess blade TORX T 7 / T 8, with bore hole, matt chrom plated, black tip
4-923 L	Hex cross-recess blade TORX T 9 / T 10, with bore hole, matt chrome plated, black tip
5-049-13	SMD-tweezers, 110 mm, straight, very shaply pointed, with ESD-coating
5-055-13	SMD-tweezers, 120 mm, sickle-shaped, very sharply pointed, as above
5-059-13	SMD-tweezers, 120 mm, flat, rounded tips, 2.0 mm width, as above
5-067-13	SMD-tweezers, 120 mm, tip 45° angled, 2.0 mm width, as above
5-068-13	SMD-tweezers, 120 mm, tip angled, 1.6 mm width, as above
5-078-13	SMD-tweezers, 130 mm, tapering, chisel, 1.0 mm width, as above
7-422	ESD-brush, bristles width 20 mm

## 2210 BERNSTEIN<sup>®</sup> ESD-SERVICE-SET **PRECISE** with 6 tools

**Weight:** 0.390 kg

No.	Description of individual tools
3-653-15	Mini side cutters EUROline-Conductive with very slim, pointed head and special flat cutting edge, 120 mm, flush for soft wire up to 1.5 mm and medium hard wire up to 0.8 mm Ø, box joint, double leaf spring, fine polished and bright burnished, dissipative bicoloured hand guard
5-055-13	SMD-tweezers, 120 mm, sickle-shaped, very sharply pointed with ESD-coating

No.	Description of individual tools
5-062-13	SMD-tweezers, 115 mm, 35° angled, 2.0 mm width, with gripping cavity Ø 0.8 mm, with ESD-coating
5-065-13	SMD-tweezers, 120 mm, straight, 3 mm width, with gripping cavity Ø 0.8 mm, with ESD-coating
5-066-13	SMD-tweezers, 120 mm, 30° angled, 2.5 mm width, with ESD-coating
5-068-13	SMD-tweezers, 120 mm, tip angled, 1.6 mm width, with ESD-coating

## ELECTRONIC SERVICE TOOL-SETS



special service sets for the maintenance and repairing of mobile phones and other high sensitive IT-Instruments. The tools are clearly arranged in cases made from dissipative black imitation leather, with zip fastener. 2251 Case with zip fastener, without tools, Outside dimensions: 190 x 135 x 35 mm (when closed)



CARAT

### 2250 BERNSTEIN<sup>®</sup> Carat

9-piece set dissipative tools from the series EUROline-Conductive to meet highest quality standards.

**Weight:** 0.360 kg

No.	Description of individual tools	No.	Description of individual tools
3-672-15	End cutters EUROline-Conductive, 130 mm, flush, for soft wire up to 0.8 mmØ cutting edge 20° angular, box joint, double leaf spring, fine polished and bright burnished, dissipative bicoloured hand guard	4-621	Cross-recess screwdriver size 000, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip
3-683-15	Snipe nose pliers EUROline-Conductive, 130 mm, plain jaws, box joint, double leaf spring, fine polished and bright burnished, dissipative bicoloured hand guard	4-623	Cross-recess screwdriver size 0, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip
4-601	Slotted screwdriver with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip, 50 x 0.8 mm	5-191	Tweezers, made from conductive and acid-resistant black plastic material, reinforced with glassfibre, 120 mm, with straight, rounded tips
4-603	Slotted screwdriver with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip, 50 x 1.5 mm	6-661	TORX-screwdriver T 5, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip
		6-663 L	TORX-screwdriver T 7, with bore-hole in the tip, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip



ACCENT



EUROline

**2270**  **BERNSTEIN** Accent

9-piece set dissipative tools with bright steel polished pliers.

**Weight:** 0.360 kg

No.	Description of individual tools
3-601-13	Side cutters, 120 mm, semi flush, for soft wire up to 1.5 mm and hard wire up to 0.4 mm Ø, bright steel-polished, box joint, double leaf spring, with dissipative black hand guard
3-633-13	Snipe nose pliers, 120 mm, plain jaws, bright steel-polished, box joint, double leaf spring, with dissipative black hand guard
4-601	Slotted screwdriver with dissipative handle, blade from chrome vandum, chrome-plated, with black tip, 50 x 0.8 mm
4-603	Slotted screwdriver with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip, 50 x 1.5 mm
4-621	Cross-recess screwdriver size 000, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip
4-623	Cross-recess screwdriver size 0, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip
5-191	Tweezers, made from conductive and acid-resistant black plastic material, reinforced with glassfibre, 120 mm, with straight, rounded tips
6-661	TORX-screwdriver T 5, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip
6-663 L	TORX-screwdriver T 7, with bore-hole in the tip, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip

**3-680**  **BERNSTEIN** EUROline-Conductive Set of pliers

4-piece set dissipative pliers from the series EUROline-Conductive to meet highest quality standards. **Weight:** 0.390 kg

No.	Description of individual tools
3-651-15	Mini side cutters EUROline-Conductive, 120 mm, flush, for soft wire up to 1.5 mm and medium hard wire up to 0.8 mm Ø, box joint, double leaf spring, fine polished and bright burnished, dissipative bicoloured hand guard
3-672-15	End cutters EUROline-Conductive, 130 mm, flush, for soft wire up to 0.8 mm Ø, cutting edge 20° angular, box joint, double leaf spring, fine polished and bright burnished, dissipative bicoloured hand guard
3-682-15	Flat nose pliers EUROline-Conductive, 130 mm, plain jaws, finish as before
3-683-15	Snipe nose pliers EUROline-Conductive, 130 mm, plain jaws, finish as before

# ELECTRONIC-SERVICE TOOL SETS



the tool sets for mobile use at electrostatically endangered components



Outside dimensions: 320 x 250 x 50 mm (closed)

## 2220 BERNSTEIN Service-Set Antistatic

Elegant zipper case, made from dissipative black imitation leather and dissipative pockets for 12 ESD-tools and foldable ESD-workbench pad with accessories. **Weight with tools:** 0.950 kg

No.	Description of individual tools	No.	Description of individual tools
2-620	PLCC-extractor	4-621	Cross-recess screwdriver size 000, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip
3-601-13	Side cutters, 120 mm, semi flush, for soft wire up to 1.5 mm Ø and hard wire up to 0.4 mm Ø, bright steel-polished, box joint, double leaf spring, with dissipative black hand guard	4-622	Cross-recess screwdriver size 00, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip
3-632-13	Flat nose pliers, 120 mm, plain jaws, bright steel-polished, box joint, double leaf spring, with dissipative black hand guard	4-623	Cross-recess screwdriver size 0, with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip
3-633-13	Snipe nose pliers, 120 mm, plain jaws, bright steel-polished, box joint, double leaf spring, with dissipative black hand guard	5-191	Tweezers, made from conductive plastic material, reinforced with glass fibre, 120 mm, with straight, rounded tips
4-601	Slotted screwdriver with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip, 50 x 0.8 mm	5-192	Tweezers, made from conductive plastic material, reinforced with glass fibre, 120 mm, with straight, 3 mm flat-hand tips
4-605	Slotted screwdriver with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip, 60 x 2.0 mm	9-354	ESD-handling-set, consisting of: foldable green workbench pad (surface resistance according to DIN 53482: approx. 10 <sup>8</sup> ohm), 500 x 400 x 0.35 mm, contact bracelet 9-342, earth wire 2500 mm long with 1 Mohm safety resistor
4-606	Slotted screwdriver with dissipative handle, blade from chrome vanadium, chrome-plated, with black tip, 60 x 2.5 mm		



Outside dimensions: 330 x 240 x 20 mm (closed)

## 2300 Service-Set ESD

The green tool folder serves as an electrical dissipative workbench pad of 680 x 680 x 0.35 mm. The surface resistance according to DIN 53482 is approx.  $10^8$  ohm. The workbench pad has 3 press-stud receptacles for connecting the contact bracelet and the earth wire. With 2 additional press buttons the pad may be closed as tool bag. The 2 patch pockets carry the contact bracelet and the earth wire. Furthermore 16 dissipative tools are placed in pockets, ready to hand. **Weight with tools:** 0.850 kg

No.	Description of individual tools	No.	Description of individual tools
2-166	Glass fibre contact cleaner, with rotary mechanism, plastic casing	5-191	Tweezers made from conductive, black plastic material, reinforced with glass fibre, 120 mm, with rounded tips
2-620	PLCC-extractor	5-194	Tweezers made from conductive, black plastic material, reinforced with glass fibre, 120 mm with bent, pointed tips
3-601-13	Side cutters, 120 mm, semi flush, for soft wire up to 1.5 mm Ø and hard wire up to 0.4 mm Ø, bright steel-polished, box joint, double leaf spring, with dissipative black hand guard	6-616	Socket wrench with dissipative handle, blade made from chrome vanadium, nickel-plated, A/F 3.5 mm
3-633-13	Snipe nose pliers, 120 mm, plain jaws, bright steel-polished, box joint, double leaf spring, with dissipative black hand guard	6-661	TORX screwdriver T 5, with dissipative handle, blade made from chrome vanadium, chrome-plated, with black tip
4-601	Slotted screwdriver with dissipative handle, blade made from chrome vanadium, chrome-plated, with black tip, 50 x 0.8 mm	6-664 L	TORX screwdriver T 8 with bore-hole in the tip, with dissipative handle, blade made from chrome vanadium, chrome-plated, with black tip
4-605	Slotted screwdriver with dissipative handle, blade made from chrome vanadium, chrome-plated, with black tip, 60 x 2.0 mm	6-666 L	TORX screwdriver T10 with bore-hole in the tip, with dissipative handle, blade made from chrome vanadium, chrome-plated, with black tip
4-606	Slotted screwdriver with dissipative handle, blade made from chrome vanadium, chrome-plated, with black tip, 60 x 2.5 mm	9-342	Contact bracelet cloth armband, allergy-free, edges and surface insulating, spiral cord, 1 Mohm safety resistor, combined press-stud and terminal connection, to DIN EN 100 015/1
4-621	Cross-recess screwdriver size 000, with dissipative handle, blade made from chrome vanadium, chrome-plated, with black tip	9-346	Earth wire with 1 Mohm safety resistor, 2500 mm long, with terminal connection resp. press-stud, for connecting workbench pad and floor cover and connection to an earth potential
4-622	Cross-recess screwdriver size 00, with dissipative handle, blade made from chrome vanadium, chrome-plated, with black tip		
4-623	Cross-recess screwdriver size 0, with dissipative handle, blade made from chrome vanadium, chrome-plated, with black tip		



A large, solid orange shape that starts as a triangle on the left and curves into a rounded form on the right, occupying the left half of the page. The rest of the page is white.

**ELECTRONIC  
SPECIAL  
PLIERS**

# PLIERS



Pliers of today's generation were continuously optimized together with the end-users.  
A proof for our excellent brand.





## MATERIAL

Depending on model and technical requirements we use high-alloyed tool steels or high grade ball bearing steel (chrome steel) from selected suppliers which fully comply with our needs.

## MANUFACTURING TECHNOLOGY

Our high quality blank steels are either hot forged in forging dies or laser cutted. So we achieve structural conditions which ensure quality and long life time for our final products.

According to our strict internal rules we handle the production process on top modern machines. Finally the pliers are oil hardened and the tips get an additional inductive hardening. Result is a hardness value of 63 - 65 HRC for highest efforts.

## CONSTRUCTIONS

We manufacture electronic pliers with 4 different joint constructions depending on application and execution of the pliers series.

The simplest joint is the lay-on construction. Both pliers parts are simply riveted together. This execution is only for bigger sized pliers.

In case of the lap joint solution both pliers joint planes are milled out, bedded together and subsequently riveted.

The most complex solution is the box joint construction. In a very special process the joint is made by sliding one pliers head through the under heat opened joint of the other pliers part. After that the joint is pressed together and tightened by a rivet. This construction ensures best parallel guidance of pliers' tips and an extremely long life time.

The high precise manufactured joint planes of the screw joint construction provides an accurate jaw adjustment without backlash and a smooth friction free open-close movement. In combination with the basic hardness of the chrome vanadium ball bearing steel the screw system ensures a very high cutting capacity with a long life time.

Either a pressure or an interchangeable double leaf spring from stainless steel provides a smooth and equal open-close movement. The life time of all pliers can be extended by a drop of acidfree oil on the polished planes and in the joint.



## CUTTING SHAPE AND CUTTING CAPACITY

The life time of the cutting tips depend among others on the sharpness. The sharper the tip (Ultra Flush) the faster the wear. Out of this reason pliers in Semi Flush or Flush are preferable so far no ultra flush and shock reduced cut is necessary.

### SEMI FLUSH

applicable in case of hard and soft steel wires as well as for soft materials, e.g. copper wire; the cut leaves at the end of the wire a peak similar a pyramid.



### FLUSH

nearly a flush cut with fine tips; applicable for soft steel wires and copper wire; cut slightly shock reduced; at the end of the wire only a small peak



### ULTRA FLUSH

cut absolutely flush; extremely sharp tips; exclusively for soft wires and copper wires; shock reduced cut; absolutely plane-parallel



### SPECIAL FLUSH

for cutting of glass fibre, Kevlar etc.

### HARD METAL EXECUTION

with inserted hard metall tips, for continuous heavy work, also for tough nickel and electrode wires



## WIRE CLASSES (N/mm<sup>2</sup> = tensile strength)

soft wire: copper, plastic, aluminium, 220 - 250 N/mm<sup>2</sup>

medium hard wire: nail, wire pin, 750 - 800 N/mm<sup>2</sup>

hard wire: steel wire, steel pin, 1600 - 1800 N/mm<sup>2</sup>

Piano wire: hardened spring wire, 2200 - 2300 N/mm<sup>2</sup>



## QUALITY MANAGEMENT

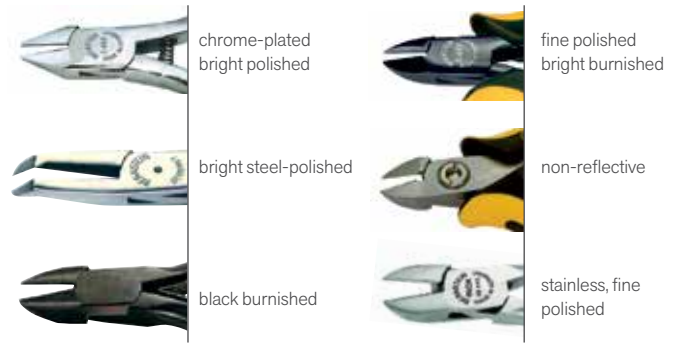
All manufacturing steps starting from the material choice until the final inspection of each pliers are managed by our quality control system. All quality features are under permanent control with modern measurement technology.



## SURFACES

Since several centuries we have developed surface characteristics for different applications and standards.

Those characteristics are protection against corrosion, hardness, wear, break-offs, smoothness and surface roughness which are suitable for the specific applications and optimum operation results.



## OUR MANIFOLD HANDLE SELECTION

- 1- transparent (BERNSTEINIT isolation) sturdy and durable
- 2- coloured and transparent dip isolation especially slim and slip resistant
- 6- plastic coating
- VDE- safety isolation, isolated according to VDE regulations EN 60.900, piece checked, 1000 V AC resp. 1500 V DC
- VDE- two-colour multilayered safety isolation, outside red - inside yellow for an easy and safe security check according to EN 60.900, piece checked for 1000 V AC resp. 1500 V DC
- 7- dissipative black dip isolation, especially slim and slip resistant
- 13- dissipative black handguards, sturdy and durable
- 15- dissipative black-yellow handguards, ergonomically formed, two-component material, soft and slip resistant touch surface



-1



-2



-VDE



-VDE



-13



-15

# SPECIAL ELECTRONIC PLIERS EUROLINE-CONDUCTIVE



box joint double leaf spring

high quality steel fine polished and bright burnished, for dazzle free working

ergonomically formed bicoloured hand guard from dissipative anti-slide material

The pliers of this program have been tested with good results by several testing laboratories adequate to DIN EN 61340-5-1, 61340-2-1, 61340-2-3 for work in ESD protected areas.

## CUTTING PLIERS

No.	Length mm	Head- width mm	Finish	Cutting capacity			Weight g
				Wire soft	mm medium	Ø hard	

### Mini side cutters EUROline-Conductive

with very slim, rounded head for finest operations

3-651-15	120	10	flush	1.5	0.8	-	65
3-651-15 DR	120	10	flush with retaining spring	1.5	0.8	-	65

### Mini side cutters EUROline-Conductive

with very slim, pointed head for finest operations

3-652-15	120	9,3	flush	1.5	0.8	-	60
3-653-15	120	9,6	flush with special flat cutting edge	1.5	0.8	-	60

### Side cutters EUROline-Conductive

with slim, rounded head

3-654-15	125	11	semi flush	1.5	1.0	0.4	70
3-655-15	125	11	flush	1.5	1.0	-	70

### Side cutters EUROline-Conductive

with slim, pointed head

3-656-15	125	11	semi flush	1.5	1.0	0.3	70
3-657-15	125	11	flush	1.5	1.0	-	70

### End cutters EUROline-Conductive

extremely slim, without side face, for precision work at points difficult to reach

3-671-15	130	10	straight	0.8	0.6	-	65
3-672-15	130	10	cutting edge 20° angular	0.8	0.6	-	70

### Top cutters EUROline-Conductive

extremely slim, flush, head 45° angular, for flush cutting directly in front of and behind the components

3-673-15	130	9,5	cutting edge inside	0.8	0.6	-	60
3-674-15	130	9,5	cutting edge outside	0.8	0.6	-	60

### Oblique top cutters EUROline-Conductive

cutting plane 29° angular, flush cutting for horizontal and vertical use

3-675-15	115	11	flush	1.2	1.0	0.4	65
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3-651-15



3-652-15



3-651-15 DR



3-654-15



3-653-15



3-671-15



3-656-15



3-673-15



3-672-15



3-675-15



3-674-15

## CUTTING PLIERS

No.	Length mm	Head- width mm	Finish	Cutting capacity			Weight g
				Wire soft	mm hard	Ø piano	

### Carbide mini side cutters EUROline-Conductive

for continuous heavy work, with inserted carbide cutting edges, also for tough nickel and electrode wires

3-661-15	120	11	semi flush very slim rounded head	2.0	1.0	0.6	70
3-663-15	120	11	flush, very slim pointed head with special flat cutting edge	1.8	0.8	0.4	65

### Carbide oblique top cutters EUROline-Conductive

for continuous heavy work, with inserted carbide cutting edges, cutting plane 29° angular, for horizontal and vertical use, also for tough nickel and electrode wires

3-667-15	115	11	flush	2.0	1.0	0.6	65
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### Glas fibre mini side cutters EUROline-Conductive

for continuous heavy work, with inserted carbide cutting edges, with special side face, for cutting glass fibre only, max. 2.0 mm Ø

3-665-15	120	11	very slim rounded head				70
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## ROUND, FLAT, SNIPE NOSE PLIERS

No.	Length mm	Head-width mm	Finish	Weight g
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### Round nose pliers EUROline-Conductive

extremely slim

3-681-15	130	10	short plain jaws	65
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### Flat nose pliers EUROline-Conductive

extremely slim

3-682-15	130	10	short plain jaws	70
3-688-15	130	8.5	short, ultra slim plain jaws	60

### Snipe nose pliers EUROline-Conductive

extremely slim

3-683-15	130	10	short plain jaws	70
3-685-15	140	10	long plain jaws	70
3-686-15	140	10	long serrated jaws	70
3-687-15	130	9	short plain jaws, ultra slim pointed, for precise handling of tiny components	70



3-661-15



3-667-15



3-663-15



3-682-15



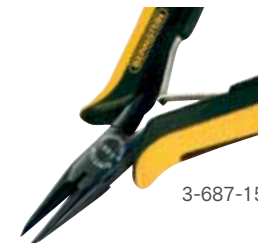
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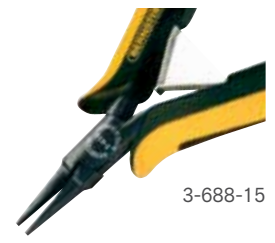
3-683-15



3-681-15



3-687-15



3-688-15



3-685-15

# TECHNIC line ELECTRONIC PLIERS



from high quality ball bearing steel (Chrome-steel) for extreme high efforts.  
 The inductive hardened cutting edges achieve a value of 63 - 65 HRC.  
 Precision joint with screw system - precise jaw adjustment without backlash,  
 non-reflective surface. Double leaf spring in stainless steel.  
 Ergonomically formed bicoloured hand guard from dissipative anti-slide material.

No.	Length mm	Head- width mm	Finish	Cutting capacity			Weight g
				Wire soft	mm medium	Ø hard	

## Side cutters

with slim, rounded head

3-961-15	120	10	Semi Flush	1.3	0.8	0.5	75
3-963-15	120	10	Ultra Flush	1.3	0.7	-	75

## Side cutters

with slim, pointed head

3-964-15	120	10	Semi Flush	1.2	1.0	0.5	75
3-966-15	120	10	Ultra Flush	1.0	0.8	-	75

## Side cutters

with slim, pointed and relieved head

3-967-15	120	10	Semi Flush	0.8	0.6	-	75
3-969-15	120	10	Ultra Flush	0.8	-	-	75

## Side cutters

with rounded head

3-971-15	125	12,5	Semi Flush	1.6	1.0	0.5	80
3-973-15	125	12,5	Ultra Flush	1.6	0.8	-	80

## End cutters

with slim, pointed head, special flat cutting edge  
 and adjustable stop screw

3-981-15	135	10	Ultra Flush	0.8	0.6	-	80
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## Wire lead catcher

3-999-1	3-961-15 until 3-969-15 ( 10 mm Head-width )						9
3-999-2	3-971-15 until 3-973-15 ( 12.5 mm Head-width )						9

## Round nose pliers

extremely slim

3-991-15	130	10	short plain jaws				75
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## Flat nose pliers

extremely slim

3-992-15	130	10	short plain jaws				75
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## Snipe nose pliers

extremely slim

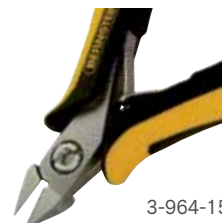
3-996-15	140	10	long plain jaws				80
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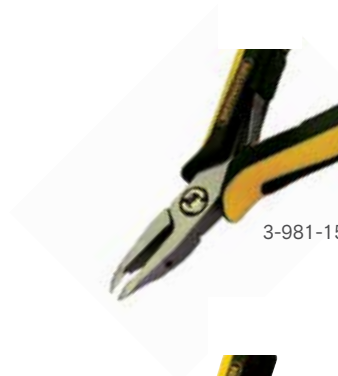
3-961-15



3-967-15



3-964-15



3-981-15



3-971-15



3-992-15



3-991-15



3-999



3-996-15

3-970  **BERNSTEIN** TECHNICline Set of pliers

4-piece set dissipative pliers from the series TECHNICline in cases made from dissipative black imitation leather, with zip fastener

No.	Description of individual tools	Weight: 0.400 kg
3-963-15	Mini side cutters TECHNICline, 120 mm, ultra flush, for soft wire up to 1.3 mm Ø, medium hard wire up to 0.7 mm Ø, precision joint with screw system, double leaf spring, non-reflective surface, dissipative bicoloured hand guard	
3-971-15	Side cutters TECHNICline, 125 mm, semi flush, for soft wire up to 1.6 mm Ø, medium hard wire up to 1.0 mm Ø, hard wire up to 0.5 mm Ø, precision joint with screw system, double leaf spring, non-reflective surface, dissipative bicoloured hand guard	
3-992-15	Flat nose pliers TECHNICline, 130 mm, short plain jaws, finish as above	
3-683-15	Spitzzange TECHNICline, 140 mm, long plain jaws, finish as above	



3-970

## SIDE CUTTERS, TELEPHONE AND COMBINATION PLIERS

lap joint, bright polished – chrome–plated with dissipative black hand guard

No.	Length mm	Head- width mm	Finish	Cutting capacity		Weight g
				Wire soft	mm Ø hard	

### Side cutters

swedish design

3-133-13	145	19	special steel	2.5	1.25	155
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### Telephone pliers

snipe nose, long straight jaws, with cutting edges for hard wire

3-245-13	200	18.5	serrated jaws			180
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### Combination pliers

with wire cutter, for hard wire

3-732-13	165	23	serrated jaws			185
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3-133-13



3-245-13



3-732-13

# ESD ELECTRONIC PLIERS



lap joint, black burnished, double leaf spring with dissipative black hand guard

## CUTTING PLIERS

No.	Length mm	Head- width mm	Finish	Cutting capacity			Weight g
				Wire soft	mm medium	Ø hard	

### Side cutters

with slim, rounded head

3-901-7	120	12	semi flush	1.5	1.0	0.4	65
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### Side cutters

with slim, pointed head, special flat cutting edge

3-902-7	120	11,5	flush	1.5	0.8	-	65
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### Top cutters

with 3 mm wide cutting edge, jaw length 20 mm, for flush cutting

3-905-7	125	13	flush	0.8	0.6	-	75
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### End cutters

with angular tips and oblique cutting edge, for flush cutting

3-906-7	125	13	flush	0.8	0.6	-	75
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## ROUND-FLAT-SNIPE NOSE PLIERS

No.	Length mm	Head-width mm	Finish	Weight g
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### Round nose pliers with short jaws

3-931-7	120	12	plain jaws	70
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### Flat nose pliers with short jaws

3-932-7	120	11	plain jaws	60
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### Snipe nose pliers with short jaws

3-933-7	125	11	plain jaws	60
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### Snipe nose pliers with long jaws, angular, slim model

3-945-7	145	12,5	serrated jaws	85
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3-901-7



3-902-7



3-905-7



3-906-7



3-931-7



3-932-7



3-933-7



3-945-7



## ESD ELECTRONIC PLIERS

box joint, double leaf spring, bright steel-polished,  
with dissipative black hand guard

### CUTTING PLIERS

No.	Length mm	Head- width mm	Finish	Cutting capacity			Weight g
				Wire soft	mm medium	Ø hard	

#### Side cutters

with slim, rounded head

3-601-13	120	11	semi flush	1.5	1.0	0.4	70
3-602-13	120	11	flush	1.5	1.0	-	70

#### Side cutters

with slim, pointed head

3-603-13	120	11	semi flush	1.5	1.0	0.3	65
3-604-13	120	11	flush	1.5	1.0	-	65

#### End cutters

with angular tips and oblique cutting edge, for flush cutting

3-606-13	120	10.5	flush	1.0	0.8	-	55
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### ROUND, FLAT AND SNIPE NOSE PLIERS

No.	Article	Length mm	Head-width mm	Finish	Weight g
3-631-13	Round nose pliers	120	10	plain jaws	55
3-632-13	Flat nose pliers	120	9	plain jaws	60
3-633-13	Snipe nose pliers	120	9.5	plain jaws	60
3-634-13	Snipe nose pliers, angular	120	9.5	plain jaws	60



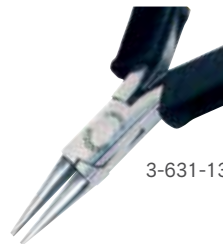
3-601-13



3-603-13



3-606-13



3-631-13



3-632-13



3-633-13



3-634-13

# SET OF ESD PLIERS



## 3-960 BERNSTEIN Set of ESD pliers

4-piece set black burnished pliers with dissipative hand guard, in a wallet of nylon



No.	Description of individual tools	Weight: 350 g
3-901-7	Side cutters, 120 mm, semi flush for soft wire up to 1.5 mm, for hard wire up to 0.4 mm Ø	
3-906-7	End cutters, 125 mm, with angular tips and oblique cutting edge, flush, for flush cutting, for soft wire up to 0.8 mm Ø	
3-932-7	Flat nose pliers, 120 mm	
3-933-7	Snipe nose pliers, 125 mm	

3-960

## 3-650 BERNSTEIN Set of conductive pliers

5-piece set bright steel-polished pliers with dissipative black handguard in a practical table support from conductive material



No.	Description of individual tools	Weight: 350 g
3-601-13	Side cutters, 120 mm, flush, for soft wire up to 1.5 mm, for hard wire up to 0.4 mm	
3-631-13	Round nose pliers, 120 mm, plain jaws	
3-632-13	Flat nose pliers, 120 mm, plain jaws	
3-633-13	Snipe nose pliers, 120 mm, plain jaws	
3-634-13	Snipe nose pliers, angular, 120 mm, plain jaws	

3-650

# INOX HIGH-GRADE STEEL PLIERS



for use in cleanrooms (autoclavable) antiseptic or in ESD protected areas. Stainless steel, swaged, box joint construction with screwed stainless double leaf spring. Extremely fine polished, abrasionproof, easy to clean, on request with inserted carbide cutting edges, on request with ESD hand guard.

The perfect pliers for works in following industries: aerospace - chemical - electronic - medical and dental technique - food production - shipbuilding - oil and gas production

No.	Length mm	Head- width mm	Finish	Wire	Cutting capacity			Weight g
					mm	Ø	hard	
				soft	medium	hard		

## Side cutters

with very slim rounded head for finest operations

33-115	110	10	flush	1.1	0.4	-	36
33-116	110	10	with inserted carbide cutting edges	1.1	0.4	-	36

## Side cutters

with very slim rounded head

33-215	115	11.5	sem iflush	1.1	0.6	0.2	53
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## Oblique top cutters

straight head, flush cutting

33-135	110	10.5	flush	0.8	0.6	0.2	40
33-136	110	10.5	with inserted carbide cutting edges	0.8	0.6	0.2	40

## Top end cutters

bent, extremely slim, flush cutting

33-235	120	11	flush	0.4	0.2	-	43
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## Snipe nose pliers

extremely slim, straight, short jaws

33-255	120	9.5	with plain jaws				43
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## Flat nose pliers

extremely slim, straight, short jaws

33-275	120	9.5	with plain jaws				44
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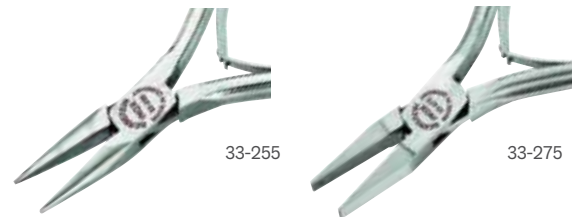
33-115

33-215



33-135

33-235



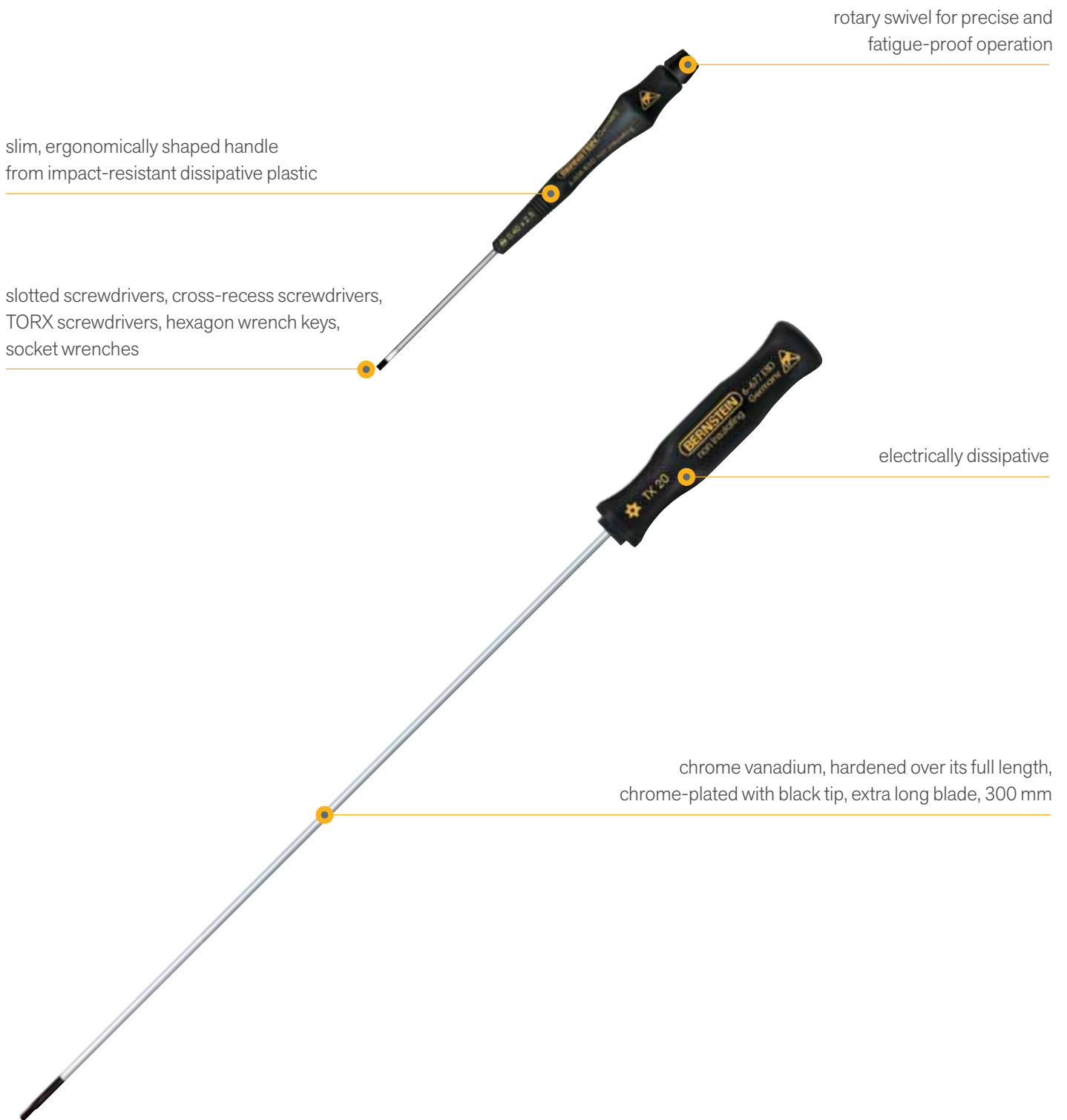
33-255

33-275



**SCREWDRIVER**

# SCREWDRIVER



rotary swivel for precise and fatigue-proof operation

slim, ergonomically shaped handle from impact-resistant dissipative plastic

slotted screwdrivers, cross-recess screwdrivers, TORX screwdrivers, hexagon wrench keys, socket wrenches

electrically dissipative

chrome vanadium, hardened over its full length, chrome-plated with black tip, extra long blade, 300 mm

# ESD INTERCHANGEABLE SCREWDRIVER-SETS



practical tool rolls made from dissipative material are equipped with double-ended screw-driver-blades and ESD handle with brass clamping sleeve, suitable for hexagon blades of A / F 4 mm

Blade: chrome vanadium, hexagon material, A / F 4 x 120 mm, hardened over its full length, matt chrome-plated, black tip

**4-920**  **BERNSTEIN** interchangeable screwdriver set  
9-pieces with ESD-handle

**Contents:** ESD-handle  
3 slotted blades 1.5 / 3.0 mm, 2.0 / 3.5 mm, 2.5 / 4.0 mm  
2 cross-recess blades PH 000 / PH 00, PH 0 / PH 1  
3 TORX blades T 5 / T 6, T 7 L / T 8 L, T 9 L / T 10 L („L“ with bore hole)

**Weight:** 190 g

**4-960**  **BERNSTEIN** interchangeable screwdriver set  
11-pieces with ESD-handle

**Contents:** ESD-handle  
2 slotted blades 1.5 / 3.0 mm, 2.0 / 4.0 mm,  
2 cross-recess blades PH 000 / PH 00, PH 0 / PH 1,  
4 TORX blades T 3 / T 4, T 5 / T 6, T 7 L T 8 L, T 9 L / T 10 L („L“ with bore hole)  
2 Tri Wing / Four Wing blades TW 1 / FW 1, TW 2 / FW 2

**Weight:** 210 g



4-960

## ESD SCREWDRIVERS

with special-square pattern handle from impact-resistant, dissipative black plastic

**Blade:** chrome vanadium, hardened over its full length, matt chrome-plated, with black tip  
**Handle:** impact-resistant, dissipative, black plastic, electrostatic discharge according to DIN EN 100015/1

### Slotted screwdrivers

No.	Blade length mm	Blade width mm	Blade thickness mm	Handle size mm	Weight
4-632	100	4.0	0.8	92 x 21	40 g
4-633	125	5.5	1.0	100 x 23	65 g
4-643	300	6.0	1.2	100 x 23	100 g

### Cross-recess screwdrivers PH

No.	Size	Blade length mm	Blade Ø mm	Handle size mm	Weight
4-652	1	80	4.5	92 x 21	40 g
4-653	2	100	6.0	100 x 23	75 g

### extra long cross-recess screwdrivers

4-656	1	300	4.5	100 x 23	80 g
4-657	2	300	6.0	100 x 23	115 g

### Cross-recess screwdrivers Pozidriv PZ

4-662	1	80	4.5	92 x 21	40 g
4-663	2	100	6.0	100 x 23	70 g

### Tri Wing screwdrivers

6-641	TW 0	70	4.5	92 x 21	42 g
6-642	TW 1	70	4.5	92 x 21	42 g
6-643	TW 2	70	4.5	92 x 21	42 g
6-644	TW 3	70	4.5	92 x 21	42 g
6-645	TW 4	70	6.0	92 x 21	53 g
6-646	TW 5	70	6.0	92 x 21	54 g



# ESD ELECTRONIC SCREWDRIVERS



with slim, ergonomically formed handles from black dissipative plastic.

The swivel top guarantees a precise working without exhaustion.

Blade: chrome vanadium, hardened over its full length, chrome-plated, with black tip

Handle: impact-resistant dissipative, black plastic

## Slotted screwdrivers



No.	Blade Length mm	Blade width mm	Blade thickness mm	Blade Ø mm	Handle length mm	Weight
4-601	50	0.8	0.20	2.5	100	12 g
4-602	50	1.2	0.25	2.5	100	12 g
4-603	50	1.5	0.25	2.5	100	12 g
4-604	50	1.8	0.30	2.5	100	12 g
4-605	60	2.0	0.40	2.5	100	12 g
4-606	60	2.5	0.40	2.5	100	12 g
4-607	60	3.0	0.50	3.0	100	14 g



## Cross-recess screwdrivers PH



No.	Size	Blade length mm	Blade Ø mm	Handle size mm	Weight
4-621	000	50	2.5	100	12 g
4-622	00	50	2.5	100	12 g
4-623	0	50	3.0	100	14 g

### 4-610 6-piece slotted screwdriver set

in a practical table support from conductive material

**Contents:** 3 screwdrivers No. 4-602, 4-605, 4-607, 3 cross-recess screwdrivers No. 4-621, 4-622, 4-623

**Weight:** 145 g

### 4-620 6-piece slotted screwdriver & cross-recess screwdriver set

in a practical table support from conductive material

**Contents:** 3 screwdrivers Nr. 4-602, 4-605, 4-607

3 cross-recess screwdrivers Nr. 4-621, 4-622, 4-623

**Weight:** 145 g



4-610

## Wrench Keys



No.	A/F mm	Blade length mm	Handle length mm	Weight
6-631	0.7	50	100	12 g
6-632	0.9	50	100	12 g
6-633	1.3	50	100	12 g
6-634	1.5	50	100	12 g
6-635	2.0	60	100	12 g
6-636	2.5	60	100	14 g

### 6-630 6-piece wrench key set

in a practical table support from conductive material

**Contents:** 6 wrench keys No. 6-631, 6-632, 6-633, 6-634, 6-635, 6-636

**Weight:** 145 g



6-630



# ESD TORX SCREWDRIVERS AND SOCKET WRENCHES



with slim, ergonomically formed handles from black, dissipative plastic.

The swivel top guarantees a precise working without exhaustion.

Blade: chrome vanadium, hardened over its full length, chrome-plated, black tip

Handle: impact-resistant, dissipative black plastic

## TORX-screwdrivers

L = with bore-hole in the tip



No.	Size	Blade length mm	for metric thread	Handle length mm	Weight
6-656	T 1	50	M 0.9	100	12 g
6-657	T 2	50	M 1.0-1.2	100	12 g
6-658	T 3	50	M 1.2-1.4	100	12 g
6-659	T 4	50	M 1.4-1.6	100	12 g
6-661	T 5	50	M 1.6-2	100	12 g
6-662	T 6	50	M 2	100	16 g
6-663 L	T 7	50	M 2.5	100	16 g
6-664 L	T 8	60	M 2.5	100	16 g
6-665 L	T 9	60	M 3	100	19 g
6-666 L	T 10	60	M 3-3.5	100	21 g



6-660

### 6-660 6-piece TORX-screwdriver set

in a practical table support from conductive material

**Contents:** 6 TORX-screwdrivers No. 6-661, 6-662, 6-663 L, 6-664 L, 6-665 L, 6-666 L

**Weight:** 163 g

## Extra long TORX-screwdrivers

with dissipative special-square pattern handle

6-675 L	T 10	300	M 3-3.5	92 x 21	60 g
6-676 L	T 15	300	M 3.5-4	92 x 21	65 g
6-677 L	T 20	300	M 4-5	100 x 21	75 g



## Socket wrenches



No.	A/F mm	Blade length mm	Handle length mm	Weight
6-611	1.5	70	100	15 g
6-612	2.0	70	100	15 g
6-613	2.5	70	100	18 g
6-614	3.0	70	100	18 g
6-615	3.2	70	100	18 g
6-616	3.5	70	100	18 g
6-617	4.0	70	100	18 g
6-618	4.5	70	100	19 g
6-619	5.0	70	100	19 g
6-621	5.5	70	100	20 g



6-610

### 6-610 6-piece socket wrench set

in a practical table support from conductive material

**Contents:** 6 Socket wrenches Nr. 6-612, 6-614, 6-617, 6-618, 6-619, 6-621

**Weight:** 180 g



**TWEEZERS**

# TWEEZERS



Chrome-nickel high-grade-steel  
stainless - antimagnetic  
matt finish - acid-resisting

different tip shapes  
for each application



ESD-coating,  
for all SMD tweezers

optimum sharpness and  
extremely strong by Carbon steel



interchangeable tips,  
anti-magnetic, acid resistant

soft plastic or Delrin tips  
for sensitive assemblies

## MATERIALS

Depending on the requirements the tweezers are manufactured from different material. The selection covers high quality special steel, stainless high grade steel and Titan alloys. In the electronic industry the tweezers are preferable manufactured out of stainless high grade steel. The advantages of this material are the excellent corrosion immunity with a very high consistency. Out of this reason the tiny tips of the SMD/ESD tweezers are extremely hard and tough. The advantage of Titan tweezers is their tremendous heat resistant. The melting point is about 1677° C. Above all these tweezers are super light.

## SURFACES

We manufacture tweezers with different surface treatments.

### Steel tweezers

All non-stainless steel tweezers are nickel-plated and so far protected against corrosion.

Additionally there are some special executions available:

- polished, with anti-allergical coating for persons with nickel allergy
- nickel-plated strong PVC-insulated for works under voltage
- with VDE insulation for works under voltage up to 1000 V
- teflon-coated, no adherence of solder

### High grade tweezers

All tweezers of this high grade execution are matt finished. The tweezers are stainless, anti-magnetic and acid-resistant.

For the special ESD protection these tweezers are available with a dissipative ESD surface coating.

### Titan tweezers

All Titan tweezers are matt finished. Material-caused they are anti-magnetic, anti-bacterial, solder-repellent and immunity to corrosion and to aggressive acids.

### Ceramic tweezers

We distinguish between full ceramic tweezers and plastic tweezers with ceramic tips. Ceramic tweezers are anti-magnetic, antistatic, solder-repellent, acid- and heat-resistant and very hard.

### Plastic tweezers

consist of conductive black plastic material, reinforced with glass fibre.

## TWEEZERS EXECUTIONS

Bernstein manufactures different executions of tweezers.

The selection includes finest SMD tweezers, engineer's tweezers, wafer and cutting tweezers.

### Component tweezers

The pick-up jaws of the component tweezers are dimensional shaped for exact positioning of round and cubical assemblies.

### SMD tweezers

Because of the filigran assemblies the SMD technique requires finest precision tweezers. The variety of shapes and jaw executions enables an easy and precise handling of the assembly even in smallest space.

### Wafer tweezers

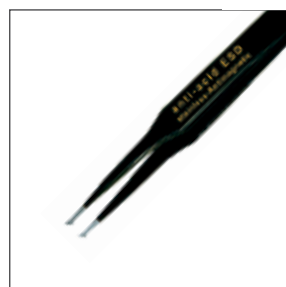
are special tweezers for the careful handling of sensitive semiconductors.

### Cutting tweezers

are destined for cutting of fine and soft wires and tiny assemblies. Hardened tips guarantee a long life time.

### Engineer's tweezers

are used for different handlings.



# SPECIAL-TWEEZERS FOR SMD-TECHNIQUE

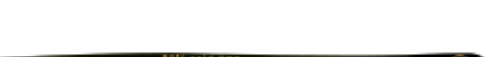


high precision tweezers from special steel stainless – matt finish – anti-magnetic – acid –resisting - alternative with ESD coating (-13) -

No.	Length		Finish / Model	Weight g
	mm	inches		
5-048	110	4 3/8"	straight, very sharply pointed, 5 SA	12 g
5-049	110	4 3/8"	straight, very sharply pointed, 4 SA	12 g
5-049-13	110	4 3/8"	as above, with ESD coating	12 g
5-051	115	4 1/2"	straight pointed, 2 SA	15 g
5-051-13	115	4 1/2"	as above, with ESD coating	15 g
5-052	110	4 3/8"	bent, very sharply pointed, 5b SA	13 g
5-052-13	110	4 3/8"	as above, with ESD coating	13 g
5-059	120	4 3/4"	flat, rounded tips, 2.0 mm width, 2a SA	15 g
5-059-13	120	4 3/4"	as above, with ESD coating	15 g
5-078	130	5 1/8"	tapering, chisel, 1.0 mm width, PSF SA	16 g
5-078-13	130	5 1/8"	as above, with ESD coating	16 g
5-053	110	4 3/8"	obliquely angled, very sharply pointed, 51 SA	13 g
5-053-13	110	4 3/8"	as above, with ESD coating	13 g
5-054	120	4 3/4"	sickle-shape-curved, very sharply pointed, 7abb SA	16 g
5-054-13	120	4 3/4"	as above, with ESD coating	16 g
5-055	120	4 3/4"	sickle-shaped, very sharply pointed, 7a SA	15 g
5-055-13	120	4 3/4"	as above, with ESD coating	15 g
5-056	120	4 3/4"	slightly bent, very sharply pointed, 7 SA	15 g
5-056-13	120	4 3/4"	as above, with ESD coating	15 g
5-057	120	4 3/4"	self-locking, straight-pointed, 31 SA	13 g
5-058	120	4 3/4"	self-locking, bent, pointed, 31b SA	13 g
5-061	115	4 1/2"	bent, flat rounded tips, 2ab SA	16 g
5-062	115	4 1/2"	35° angled, 2.0 mm width, with gripping cavity Ø 0.8 mm, 59 SA	16 g
5-062-13	115	4 1/2"	as above, with ESD coating	16 g
5-063	115	4 1/2"	35° angled, 3.5 mm width, with gripping cavity Ø 0.8 mm, 58 SA	16 g
5-063-13	115	4 1/2"	as above, with ESD coating	16 g



No.	Length		Finish / Model	Weight g
	mm	inches		
5-065	120	4 3/4"	straight, 3.0 mm width, with gripping cavity Ø 0.8 mm, 50 SA	16 g
5-065-13	120	4 3/4"	as above, with ESD coating	16 g
5-066	120	4 3/4"	30° angled, 2.5 mm width, 8b SA	15 g
5-066-13	120	4 3/4"	as above, with ESD coating	15 g
5-067	120	4 3/4"	tip 45° angled, 2.0 mm width, 12 SA	15 g
5-067-13	120	4 3/4"	as above, with ESD coating	15 g
5-068	120	4 3/4"	tip angled, 1.6 mm width, 13 SA	13 g
5-068-13	120	4 3/4"	as above, with ESD coating	13 g
5-071	85	3 3/8"	thin, straight-pointed, OC SA	8 g
5-072	110	4 3/8"	thin, straight-pointed, 3c SA	11 g
5-073	140	5 1/2"	long-thin, straight, very sharply pointed, SS SA	13 g
5-073-13	140	5 1/2"	as above, with ESD coating	13 g
5-074	120	4 3/4"	straight, pointed, 1 SA	14 g
5-075	140	5 3/4"	straight, very sharply pointed, grip surface offset, 60 SA	13 g
5-076	120	4 3/4"	rigid, straight, pointed, 00 SA	19 g
5-076-13	120	4 3/4"	as above, with ESD coating	19 g
5-077	130	5 1/8"	wide, tapering, pointed, AA SA	16 g
5-077-13	130	5 1/8"	as above, with ESD coating	16 g



## CUTTING TWEEZERS

made from Carbon Steel, extremely hard, excellent sharpness at the cutting edges. For cutting of soft copper, gold and silver wires up to 0.25 mm Ø.

5-079	115	4 1/2"	Carbon Steel, matt finish 15 AGW	25 g
5-079-13	115	4 1/2"	as above, with ESD coating	25 g



## ESD-TWEEZERS



made from conductive, black plastic material, reinforced with glass fibre, conductive and acid-resistant

No.	Length		Finish	Weight g
	mm	inches		
5-191	120	4 3/4"	straight, rounded tips	5 g
5-192	120	4 3/4"	straight, 3 mm flat-hand tips, grip surface offset	4 g
5-193	120	4 3/4"	straight, flat, 6 mm wide tips	5 g
5-194	120	4 3/4"	bent, pointed tips	5 g
5-195	120	4 3/4"	straight, pointed tips, grip surface offset	4 g



### 5-190 6-piece set of ESD tweezers

in a practical table support from conductive material

**Contents:** 5 tweezers made from conductive black plastic material, No. 5-191, 5-192, 5-193, 5-194, 5-195, 1 tweezers with ceramic tips No. 5-095

**Weight:** 125 g

### 5-090 5-piece set of ESD tweezers

in a practical table support from conductive material

**Contents:** 5 tweezers made from conductive black plastic material, No. 5-191, 5-192, 5-193, 5-194, 5-195

**Weight:** 94 g



5-190

## CERAMIC-TIPPED TWEEZERS

characteristics of the Ceramic tips: antimagnetic, solder-repellent, acid- and heat-resistant.

(each separately in a plastic case)

5-095	130	5 1/8"	especially slim and pointed	6 g
5-096	130	5 1/8"	slim, 2mm flat tips	6 g



## TITAN TWEEZERS

tweezers made from Titan are for highest demands, have a light weight, immunity to corrosion, even to aggressive acids, they are antimagnetic, antibacterial, solder-repellent, and non-reflective. The melting point is 1677°C.

5-031	110	4 3/8"	matt-stainless, sharply pointed	9 g
5-035	120	4 3/4"	matt-stainless, sharply pointed	9 g
5-036	145	5 3/4"	matt-stainless, straight - round - wide tips with fine serration	15 g
5-037	150	6"	matt-stainless, fine bent tips tips with fine serration	12 g



## IC-TWEEZERS

for gripping, inserting and removing of IC's

2-601-13	125	5"	with ESD-coating	22 g
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# SETS OF TWEEZERS IN A WALLET



## 5-030 3-piece set of electronic tweezers from titan non-reflective, stainless, solder-repellent in a wallet of recyclable nylon

No.	Description of individual tools	Weight: 60 g
5-031	Titan-tweezers, sharply pointed, 110 mm	
5-036	Titan-tweezers, straight, round, wide, 145 mm, with serration	
5-037	Titan-tweezers, fine bent tips, 150 mm	



5-030

## 5-050 6-piece set of special tweezers for the SMD-technique, matt finish, stainless, anti-magnetic in a wallet of recyclable nylon

No.	Description of individual tools	Weight: 135 g
5-051	SMD-tweezers, straight pointed, 115 mm	
5-052	SMD-tweezers, bent, very sharply pointed, 110 mm	
5-054	SMD-tweezers, sickle-shaped curved, very sharply pointed, 120 mm	
5-058	SMD-tweezers, crossed, bent, pointed, 120 mm	
5-061	SMD-tweezers, bent, flat tips 2 mm wide, 115 mm	
5-062	SMD-tweezers, bent, flat tips, with gripping cavity, 115 mm	



5-050

## 5-060 6-piece set ESD-Tweezers for the SMD-Technique in a wallet made from dissipative material

No.	Description of individual tools	Weight: 155 g
5-049-13	SMD-tweezers, straight, very sharply pointed, 110 mm	
5-055-13	SMD-tweezers, sickle-shaped, very sharply pointed, 120 mm	
5-059-13	SMD-tweezers, flat, rounded tips, 2 mm width, 120 mm	
5-067-13	SMD-tweezers, tip 45° angled, 2,0 mm width, 120 mm	
5-068-13	SMD-tweezers, tip angled, 1,6 mm, 120 mm	
5-078-13	SMD-tweezers, tapering, chisel, 1.0 mm width, 130 mm	



5-060

## 5-110 3-piece set of Engineer's Tweezers made from steel, nickel-plated in a wallet of recyclable nylon

No.	Description of individual tools	Weight: 95 g
5-107	Engineer's tweezers, fine, bent tips, finely serrated, 150 mm	
5-121	Engineer's tweezers, narrow pointed tips, finely serrated, 120 mm	
5-155	Crossed tweezers, (self-locking) jaws 5 mm wide, finely serrated, 160 mm	



5-110

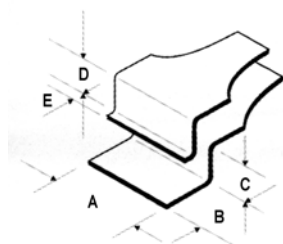
# WAFER-TWEEZERS



for positioning of flat and fine components, e.g. extremely sensitive and breakable wafer (glass-wafer etc.) fine PCB's and LCD's, very smooth and non-reflective surface, high grade steel SA anti-magnetic

No.	Length		Finish / Model	Weight g
	mm	inches		
5-411	130	5 1/8"	with graduated lower paddle and 3 teeth 3 DWF small	14
5-411-13			as above, with ESD coating	
5-412	130	5 1/8"	with graduated lower paddle and 3 teeth 3 DWF	14
5-412-13			as above, with ESD coating	
5-413	130	5 1/8"	with graduated lower paddle and 4 teeth 4 DWF	17
5-413-13			as above, with ESD coating	
5-414	130	5 1/8"	with graduated lower paddle and 5 teeth 5 DWF	20
5-414-13			as above, with ESD coating	
5-415	130	5 1/8"	with graduated lower paddle and 6 teeth 6 DWF	20
5-415-13			as above, with ESD coating	
5-421	130	5 1/8"	with graduated lower paddle, no teeth 3 DW small	14
5-421-13			as above, with ESD coating	
5-422	130	5 1/8"	with graduated lower paddle, no teeth 4 DW	17
5-422-13			as above, with ESD coating	
5-423	130	5 1/8"	with graduated lower paddle, no teeth 5 DW	20
5-423-13			as above, with ESD coating	
5-424	130	5 1/8"	with graduated lower paddle, no teeth 6 DW	20
5-424-13	130	5 1/8"	as above, with ESD coating	

	Dimension					for
	A	B	C	D	E	Wafer size
	mm	mm	mm	mm	mm	inch
5-411	6	6	4	4	3.2	2"
5-412	9	6	2.5	3	3.2	2"
5-413	12	8	4	5	3.2	3"
5-414	16	6	4	5	3.2	4" - 5"
5-415	20	8	4	5	3.2	6"
5-421	6	6	4	5	3	2"
5-422	12	8	4	5	3	3"
5-423	16	8	4	4	3	4" - 5"
5-424	20	8	4	5	3.5	6"



## TWEEZERS WITH INTERCHANGEABLE PLASTIC TIPS



Special tweezers with soft and ESD safe tips

Tweezers: anti-magnetic, acidfree, ESD safe

Tips: soft, conductive plastic tips for very sensitive assemblies

No.	Length		Finish / Model	Weight g
	mm	inch		
5-431	125	5"	rounded tips 1.5 mm wide, 70 CV	17
5-432	125	5"	flat tips 2 mm wide, 72 CV	17
5-433	125	5"	fine flat tips 1 mm wide, 74 CV	17
5-434	125	5"	very finr rounded tips, 76 CV	17
5-435	125	5"	fine rounded tips, 80 CV	17



## SPECIAL TWEEZERS WITH „DELRIN“ TIPS

Tweezers: anti-magnetic, acidfree

Tips from Delrin: highest consistency, stiffness and hardness, ductile, fatigue-steady

No.	Length		Finish / Model	Weight g
	mm	inch		
5-441	125	5"	rounded tips 1.5 mm wide, 70 DV	17
5-443	125	5"	fine flat tips 1 mm wide, 74 DV	17



Replacement tips available on request













# TOOLS FOR CERAMIC



antistatic – antimagnetic - material: zirconium oxide

**1-750**  **BERNSTEIN** Ceramic adjusting screwdrivers set  
13-pieces in a box with hinged lid

**Contents:** double-ended handle 1-735 and 12 ceramic bits, Weight: 90 g

No.	Blade length mm	Blade tip	mm	Weight g
1-751	32		0.90 x 0.30	1
1-752	32		1.30 x 0.30	1
1-753	32		1.50 x 0.30	1
1-754	32		1.80 x 0.30	1
1-755	32		1.95 x 0.35	1
1-756	32		2.50 x 0.70	1
1-757	32		3.00 x 0.30	1
1-761	32		1.95 SW	1
1-762	32		2.45 SW	1
1-765	32		KS Gr.00	1
1-766	32		KS Gr.0	1
1-767	32		2.40 x 0.80	1






















## Adjusting screwdrivers and bits blades from ceramic

Adjusting screwdrivers with conductive handle No.: 1-851 – 1-876

Bits No.: 1-751 – 1-776 to use with screwdriver handle No.: 1-735



No.	Length mm	Bit No.	Length mm	Blade tip	mm	Weight g
1-851	110	1-751	32		0.90 x 0.30	10 / 1
1-852	110	1-752	32		1.30 x 0.30	10 / 1
1-853	110	1-753	32		1.50 x 0.30	10 / 1
1-854	110	1-754	32		1.80 x 0.30	10 / 1
1-855	110	1-755	32		1.95 x 0.35	10 / 1
1-856	110	1-756	32		2.50 x 0.70	10 / 1
1-857	110	1-757	32		3.00 x 0.30	10 / 1
1-858	110	1-758	32		3.00 x 0.70	10 / 1
1-861	110	1-761	32		1.95 SW	10 / 1
1-862	110	1-762	32		2.45 SW	10 / 1
1-863	110	1-763	32		2.60 SW	10 / 1
1-864	110	1-764	32		KS Gr.000	10 / 1
1-865	110	1-765	32		KS Gr.00	10 / 1
1-866	110	1-766	32		KS Gr.0	10 / 1
1-867	110	1-767	32		2.40 x 0.80	10 / 1
1-873	110	1-773	32		0.70 x 1.40	10 / 1
1-874	110	1-774	32		3.00 x 1.00	10 / 1
1-875	110	1-775	32		1.20 x 1.20	10 / 1
1-876	110	1-776	32		1.30 x 0.40	10 / 1



**2-101 Tin knife with ceramic blade**

for working at printed circuit boards, 105 mm long, handle from conductive black plastic, Weight: 9 g



**5-353 Ceramic blade scissors**

for cutting e.g. aramid yarns and fiber optic cables, antistatic and electrically insulating, black plastic handles reinforced with glass-fibre, 140 mm long, blade length 50 mm, Weight 26 g



**7-421 ESD Brush**

with conductive handle, natural bristles with conductive fibres, round, bristles 6 mm Ø, total length 150 mm, weight 9 g



**7-422 ESD Brush**

with conductive handle, natural bristles with conductive fibres, flat, bristles 20 mm wide, total length 150 mm, weight 26 g



**8-238 SMD Vakuumpick-up Vampire**

For easy, safe and precise handling of SMD components, dissipative execution, set including angled suction nozzle and 3 suction cups 4, 6 and 9 mm



**5-542 Precision Wise Stripper ESD Plus**

Working range 0.25 - 0.80 mm Ø  
Weight: 28 g

For applications in the electronic and computer technology, with wire cutter and adjustable stripping length up to 15 mm. Body made from dissipative plastic for PVC, Teflon, and similar materials.



**9-125 ESD Magnifier luminaire**

- wide field magnifying glass with special film (190.5 x 158mm)
- with cover
- energy-saving fluorescent lamps
- distortion-free magnifying
- lamp and magnifying glass completely mobile
- 3 dioptries glass 1.75 x
- table clamp





A large, solid orange shape that starts as a triangle on the left and curves into a semi-circle on the right, occupying the left half of the page.

# **ESD-COVERINGS AND ACCESSORIES**



## 9-342 Contact bracelet with spiral cord

adjustable elastically bracelet with woven silvered synthetic fibres, allergy-free, with 3 mm press-stud; high elastical spiral cord, 2400 mm long, 2 x 1 Mohm safety resistor, press-studs 3 mm for bracelet and 10 mm for earth wire; additionally insulated crocodile clip No. 9-353. (Weight: 60 g)



9-342



9-343

## 9-342-1 Contact bracelet

adjustable elastically bracelet with woven silvered synthetic fibres, allergy-free, with 3 mm press-stud (Weight: 13 g)

## 9-342-2 Spiral cord

high elastical spiral cord, 2400 mm long, 2 x 1 Mohm safety resistor, press-studs 3 mm for bracelet and 10 mm for earth wire (Weight: 25 g)

## 9-343 Earth wire

with 1 Mohm safety resistor, 1500 mm long, with 2 press-studs 10/10 mm, for connecting workbench pad and floor cover and connection to an earth potential; additionally insulated crocodile clip No. 9-353. (Weight: 40 g)

## 9-346 Earth wire

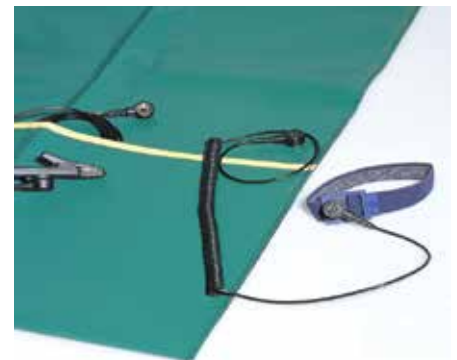
with 1 Mohm safety resistance, 2500mm long, with 2 press-studs 10/10mm, for connecting workbench pad and floor cover and connection to an earth potential; additionally crocodile clip No. 9-353. (Weight: 50 g)

## 9-353 Crocodile clip

insulated clip with banana plug connection socket and 10 mm press-stud. (Weight: 18 g)

## 9-354 ESD-handling set foldable - especially for mobile use -

consisting of: workbench pad, 500 x 400 x 0.35 mm, green, electrically dissipative, grained surface, (leakage resistance to DIN IEC 61340-4-1  $R_s$ : ca.  $10^9$  ohm), with 2 press-studs 10/10 mm; contact bracelet No. 9-342-1, spiral cord 9-342-2 and earth wire No. 9-346 including crocodile clip No. 9-353. (Weight: 170 g)



9-354

## 9-357 Earthing module

earthing box with 2 x 10mm press-stud inputs and 1 x 4mm safety socket input, per input 1 Mohm safety resistance, earth wire 2000 mm, with dummy Schuko-plug. (Weight: 90g)



9-357

## 9-359 Earth wire with dummy Schuko-plug

spiral cord 2400 mm long, 1 Mohm safety resistance, one side press-stud 10 mm, other side dummy Schuko-plug. (Gewicht: 50 g)



9-359



**9-360 ESD-handling set**

consisting of: workbench pad, resistant to soldering tin, 800 x 600 x 1.5 mm, black, from homogeneous, electrically conductive synthetic caoutchouc, slightly grained surface, (leakage resistance to DIN IEC 61340-4-1 RA:  $10^3 - 10^6$  ohm), with 2 press-studs 10/10 mm; contact bracelet No. 9-342-1, spiral cord 9-342-2 and earth wire No. 9-343 including crocodile clip No. 9-353. (Weight: 1160 g)



9-360

**9-361 ESD-handling set**

consisting of: workbench pad, resistant to soldering tin, 800 x 600 x 2.0 mm platinum grey, from dissipative synthetic caoutchouc, slightly grained, with homogeneous, electrically dissipative black rear, (leakage resistance to DIN IEC 61340-4-1 RA:  $10^5 - 10^7$  ohm), with 2 press-studs 10/10 mm; contact bracelet No. 9-342-1, spiral cord No. 9-342-2 and earth wire No. 9-343 including crocodile clip No. 9-353. (Weight: 1300 g)



9-361

**9-367 ESD-Set**

Pad 600x450 mm especially for CPU (central processing units), printer, scanner consisting of: workbench pad with 1 press-stud 10 mm for the earthing connection; earth wire with dummy Schuko-plug No. 9-359 (Gewicht: 800 g)

**9-334 Assembly grid mat**

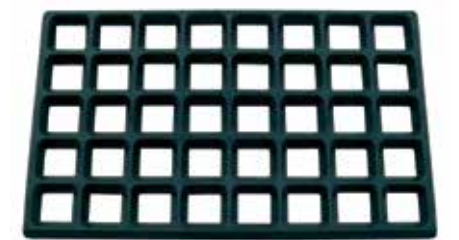
Sturdy supporting mat which prevents the damage of components by e.g. screws and the loss of small parts.

Dimensions: 610 x 370 x 20 mm

Cell dimensions: 50 x 45 mm

Resistance to ground:  $10^3 - 10^4$  Ohm

Colour: black (Weight: 3.2 kg)



9-334

**Boxes for SMD components**

from black, conductive plastic, to be fit into one another at random, hinged cover, closed tightly by spring pull, in 3 different sizes

**9-321 SMD box** 16 x 12 x 15mm (internal dimensions)

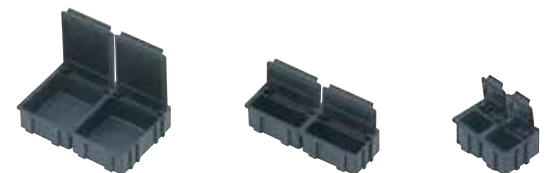
**9-322 SMD box** 37 x 12 x 15mm (internal dimensions)

**9-323 SMD box** 41 x 37 x 15mm (internal dimensions)

**Chip Container**

electrically conductive, black, with lid and pin-cushion lining 5 mm thick, for pins of electrostatically endangered components

**9-316 Chip container** 118 x 32 x 14mm (internal dimensions)



9-323

9-322

9-321



9-316

# SPANNFIX VICES



with dissipative surface

BERNSTEIN clamping vices SPANNFIX constructed on ball-and-socket joints are rotatable easily in all directions and capable of being set securely with maximum working capacity by simple operation. A set screw below the ball socket allows an individual adjusting of the ball power. Long life is guaranteed by highest black powder-coated aluminium casting and surface-refined steel-parts. With a surface resistance between  $10^7$  and  $10^8 \Omega$  the ESD types ensure a safe dissipation of static charges.

## 9-205 ESD BERNSTEIN

### SPANNFIX screw-on vice with dissipative surface

for work benches or laboratory tables  
with max. table thickness of 80 mm

Technical data:

Clamping pressure	150 kp
Clamping capacity	70 mm
Clamping depth	38 mm
Jaw width	50 mm

interchangeable plastic jaws from  
dissipative material - Art.-No. 9-206-50 ESD

Weight: 1.450 kg

## 9-251 ESD Universal clamp base with dissipative surface

with ball joint and threaded stud M 12 x 1.5, for work benches  
or laboratory tables with max. table thickness of 80 mm

Weight: 0.950 kg

## 9-252 ESD Screw-on mounting vice with dissipative surface

Technical data: see 9-205 ESD

Weight: 0.560 kg

## 9-253 ESD Circuit board holder

adjustable from 25 mm to 270 mm clamping capacity, correct setting by  
adjusting the centre position, firm clamping of the printed circuit by built-in  
resilience in the locating arms, height of locating arms 70 mm

Weight: 0.280 kg

## 9-255 ESD Angular adapter with dissipative surface

to permit a larger turning circle when using 9-253

Gewicht: 0.095 kg

## 9-256 Clamping lid for circuit boards with components

covered with 20 mm thick ESD foam

Components of different sizes are pressed in such a way that soldering can  
be carried out correctly after the circuit board holder has been turned.

Size of cover: 240 x 130 mm

Use: in conjunction with circuit board holder 9-253

Weight: 0.260 kg

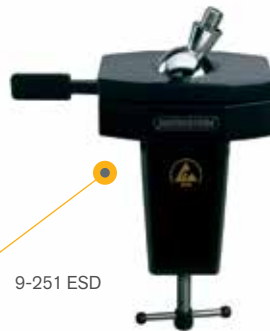
## 9-257 ESD Rapid turning device with dissipative surface

with permanently connected angular adapter, permits swift rotation of the  
circuit board holder with the PCB and clamping lid through  $180^\circ$ .

Weight: 0.270 kg



9-205 ESD



9-251 ESD



9-252 ESD



9-253 ESD



9-255 ESD



9-256



9-257 ESD

