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# Screw Removal

# SCREW REMOVAL PLIERS SERIES

PATENTED TECHNIQUE

## Remove all kinds of screws, fasteners, pins, etc. easily!

**PZ-22**

RoHS SCREW EATER

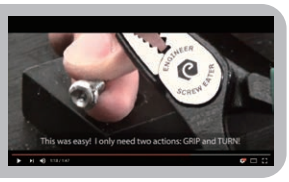
### Finally, the world-standard model of the Screw Removal Pliers!

- Vertical serrations bite and grip a screw head without slippage.
- Also good for Truss head screw. *Truss: Lower-profile dome head
- Also ideal for situations when the correct size or type of screwdriver is not available.
- Serrated side teeth lined consecutively, inter-meshed with each other. Good for holding a thin plate securely.
- Owing to T-shaped forging handles, the handle sleeve will not twist or slip off during heavy duty use.

**International Patents**

JAPAN [PAT.3486776] [PAT.4471315] [PAT.5726365]
EU [PAT.2436488]
USA [PAT.6923097] [PAT.8656812B2]
TAIWAN [PAT.178742] [PAT.363675]
KOREA [PAT.919966]
CHINA [PAT.201080014706.3]

PRODUCT VIDEO



Stripped

Dome head (Truss)

Rusted

Non-standard


Vertical serrations

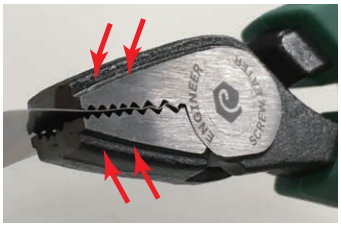
T-shaped handle

**Vertical Serrations (PAT.)**

You can remove damaged screws in seconds. Just grip and turn!

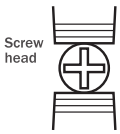
**Inter-meshed Teeth (PAT.)**

Need to hold a thin material? Get a firm grip!



**How does it work?**

**Ordinary pliers**




*Ordinary plier jaws are lined with horizontal serrations. When you grasp and turn a screw head with ordinary pliers, the jaws slip and the screw remains stuck.*

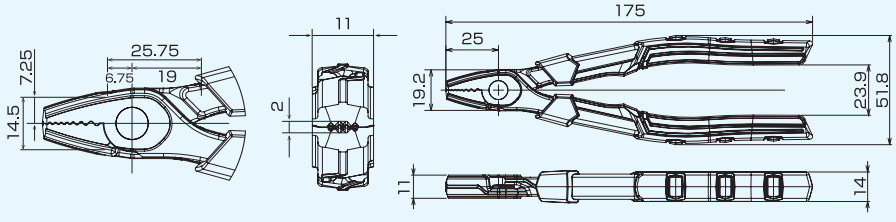
**"Vertical serrations"**

*Specially-designed jaws generate gripping power.*

**"Maximizes the friction"**

*Perfect fitting serrations maximize friction with no slippage.*

(mm)




| Item No. | Material | Hardness | Wgt.(g) |
|---|---|---|---|
| PZ-22 | Carbon Steel | HRC60±2 | 165 |

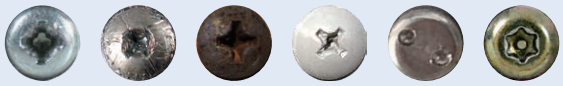
■ Screw head size

| Top Jaws |
|---|
| φ3~φ11㎜ |

### Rust Remover (ZC-28)

Screw stuck due to rust? Try our Rust Remover to remove the rust off screws within seconds!

Turn to page 84 for further information.



## Remove all kinds of screws, fasteners, pins, etc. easily!

## PZ-58 SCREW REMOVAL PLIERS GT

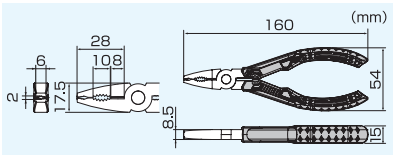
### The best selling Screw Removal Pliers in the whole world!!

- Elaborately-designed serration fits the profile of screw head at the best angle.
- Also good for Truss head screw. *Truss: Lower-profile dome head
- with wire cutter (Capacity: copper wire ϕ1.2㎜)
- Owing to T-shaped forging handles, the handle sleeve will not twist or slip off during heavy duty use.

GOOD DESIGN 2009

product design award 2011

**PZM-58** PLIERS MASK FOR PZ-58

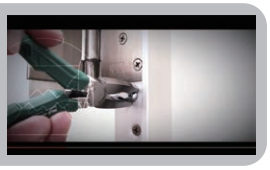



■ Screw head size

| Top Jaws |
|---|
| ϕ3～ϕ9.5㎜ |

| Item No. | Material | Hardness | Wgt. (g) |
|---|---|---|---|
| PZ-58 | Carbon Steel | HRC58±2 | 130 |

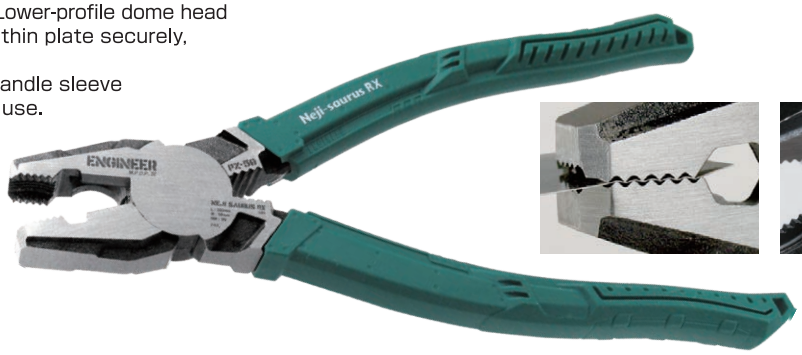
PRODUCT VIDEO

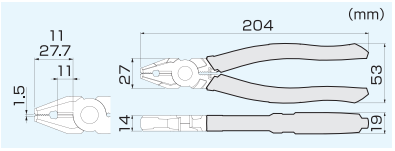


## PZ-59 SCREW REMOVAL PLIERS RX

- Removes screws with stripped or rusted heads or stubborn fasteners in seconds
- Also good for Truss head screw. *Truss: Lower-profile dome head
- Inter-meshed side teeth even hold a very thin plate securely, no slippage !
- Owing to T-shaped forging handles, the handle sleeve will not twist or slip off during heavy duty use.

GOOD DESIGN AWARD 2014






■ Screw head size

| Top Jaws |
|---|
| ϕ3～ϕ15㎜ |

| Item No. | Material | Hardness | Wgt.(g) |
|---|---|---|---|
| PZ-59 | Carbon Steel | HRC60±2 | 300 |

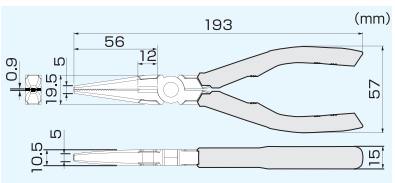
PRODUCT VIDEO

## PZ-60 SCREW REMOVAL PLIERS Z

- Long nose ideal for a hard-to-reach small screws up to 5.5㎜
- Vertical serrations bite a screw head without slippage.
- Also good for Truss head screw. *Truss: Lower-profile dome head
- Inter-meshed teeth to hold even a thin plate securely, so no slippage.
- Owing to T-shaped forging handles, the handle sleeve does not twist or slip off the handle.

GOOD DESIGN AWARD 2016

DESIGN AWARD 2017




■ Screw head size

| Top Jaws |
|---|
| ϕ2～ϕ5.5㎜ (Head Height < 2.2㎜) |

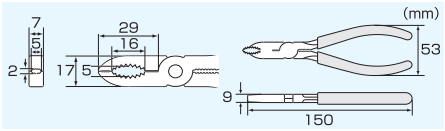
| Item No. | Material | Hardness | Wgt.(g) |
|---|---|---|---|
| PZ-60 | Carbon Steel | HRC60±2 | 180 |

## PZ-55 SCREW REMOVAL PLIERS

### The basic Screw Removal Pliers: Powerful and simple!

- Serrated jaw inside bites screw head firm and unfastens it with no slip.
- More powerful torque than screwdriver toward screw & nut
- Also ideal for rotating nut in case of no space to drive wrench in arc

※ For screw whose head was damaged and transformed
※ For screw whose slot on the head is special, unique or tamper-proof
※ For screw frozen with rust



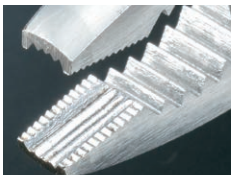

■ Screw head size

| Top Jaws |
|---|
| φ3~φ8mm |

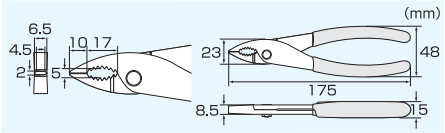
| Item No. | Material | Hardness | Wgt.(g) |
|---|---|---|---|
| PZ-55 | S58C | HRC56±2 | 125 |

## PZ-56 SCREW REMOVAL PLIERS XP

### Feel the powerful and extensive work !!



- Slip joint function makes it possible to select two points of opening jaws.
- Reverse cross-jointed structure to reduce the load which is imposed at joint bolt while unfastening work.




■ Screw head size

| Top Jaws |
|---|
| φ3~φ10mm |

| Item No. | Material | Hardness | Wgt.(g) |
|---|---|---|---|
| PZ-56 | Cr-V | HRC56±2 | 187 |

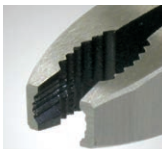
## PZ-57 SCREW REMOVAL PLIERS M2

### Slender jaws and pocket-sized body

ESD SAFE

- Ideal for unfastening frozen or special screws of tiny size
- ESD-Safe handle made of thermoplastic Elastomer (TPR) featuring comfortable grip

with strap hole

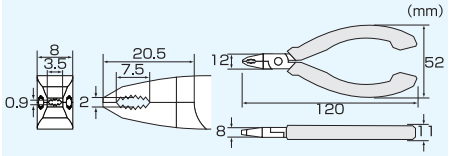


PCB

Hard Disk Drive

Damaged screw

Torx screw




■ Screw head size

| Top Jaws |
|---|
| φ2~φ3.5mm |

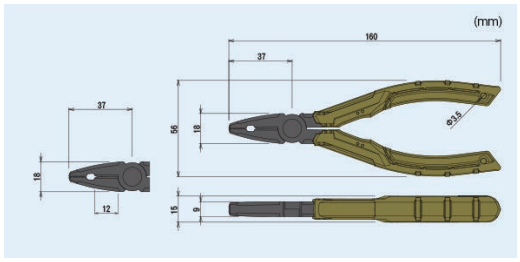
| Item No. | Material | Hardness | Wgt.(g) |
|---|---|---|---|
| PZ-57 | S58C | HRC56±2 | 100 |

## PZ-32 SCREW REMOVAL PLIERS JS

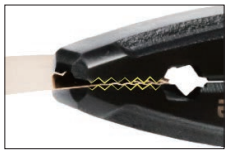
- Vertical serrations bite and grip a screw head without slippage.
- Also good for Truss head screw. *Truss: Lower-profile dome head
- Serrated side teeth lined consecutively, inter-meshed with each other
- Black oxide finish to increase rust-resistance!
- Owing to T-shaped forging handles, the handle sleeve will not twist or slip off during heavy duty use.

### PZM-30 PLIERS MASK FOR PZ-32






Inter-meshed, never let go.



Strap hole goes through the steel handle.

| Item No. | Size | Material | Hardness | Cutting Capacity | Wgt. | Safety Hole |
|---|---|---|---|---|---|---|
| PZ-32 | 160㎜ | Body:Carbon Steel<br>Handles:TPR | HRC60±2 | φ1.2㎜<br>(copper wire) | 125g | φ3.5㎜ |

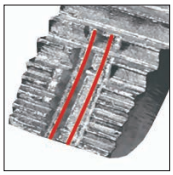
■ Screw head size

| Top Jaws |
|---|
| φ3~φ9.5㎜ |

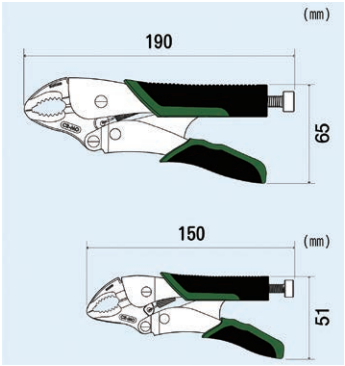
## PZ-64・65 SCREW REMOVAL LOCKING PLIERS

- Vertically serrated jaws bite a screw head while locking it securely. It helps to optimize your hand strength for twisting off stubborn screws.
- Also good for Truss head screw. *Truss: Lower-profile dome head
- Quick release mechanism, just open the handles to unlock the gripping jaws
- Rubber handles provide you with a comfortable grip.

PRODUCT VIDEO



PZ-65



PZ-64

| Item No. | Max.Jaws | Cutting Capacity | O.A. Length | Hardness (Jaws) | Wgt. | Material |
|---|---|---|---|---|---|---|
| PZ-64 | 38㎜ | Steel wire φ1.6㎜ | 150㎜ | HRC57±3 | 205g | Body:Cr-Mo<br>Handles:TPR |
| PZ-65 | 48㎜ | Steel wire φ2.3㎜ | 190㎜ | | 400g | |

■ Screw head size

| Item No. | Top Jaws |
|---|---|
| PZ-64 | φ3~φ9.5㎜ |
| PZ-65 | φ7~φ12㎜ |

## KS-34 SCREW EMERGENCY TOOL KIT

### The all-in-one solution for your screw troubles!

- Screw Eater + Rapid Screw Extractor with 3 bits
- Lightweight and stylish bundle case

*Turn to page 08 for more information on the Rapid Screw Extractor

Compact and lightweight!

■ Contents

| Item No. | Description |
|---|---|
| PZ-22 | Screw Eater |
| DBZ-50G | Handle Grip for DBZ (Green) |
| DBZ-51 | ⊕#2 (Press & Twist type bit) |
| DBZ-52 | ⊕#2 (Strike & Turn type bit) |
| DBZ-57 | ⊕#1 (Press & Twist type bit) |
| | Bundle case |

| Item No. | Case Size (When unfold) | Wgt. |
|---|---|---|
| KS-34 | 380×220㎜ | 394g |

## PDS-01 SCREW REMOVAL TOOL KIT

### Screw Removal Pliers GT with Mask + Rapid Screw Extractor with 5 bits in a compact heavy duty case

*Turn to page 08 for more information on the Rapid Screw Extractor

■ Contents

| Item No. | Description |
|---|---|
| PZ-58 | Screw Removal Pliers GT |
| PZM-58 | Pliers Mask for PZ-58 |
| DBZ-50B | Handle Grip For DBZ (Black) |
| DBZ-51 | ⊕#2 (Press & Twist type bit) |
| DBZ-52 | ⊕#2 (Strike & Turn type bit) |
| DBZ-53 | Hex socket screw(⬣:2.5-3.0㎜) |
| DBZ-54 | Hex socket screw(⬣:4.0㎜) |
| DBZ-56 | Hex socket screw(⬣:5.0㎜) |
| | Bit holder |

| Item No. | Case Size | Wgt. |
|---|---|---|
| PDS-01 | 300×63×200㎜ | 896g |

## PGT-03 GT PACK(PAULOWNIA BOX)

### The perfect gift for tool lovers!

- The Screw Removal Pliers GT and the Combination Scissors GT in a beautiful box made of paulownia wood.

■ Contents

| Item No. | Description |
|---|---|
| PZ-58 | Screw Removal Pliers GT |
| PZM-58 | Pliers Mask for PZ-58 |
| PH-55 | Combination Scissors GT |

| Item No. | Case Size | Wgt |
|---|---|---|
| PGT-03 | 252×132×32㎜ | 372g |

## DBZ-60G — RAPID SCREW EXTRACTOR

### The unique extracting tool, especially designed to remove damaged countersunk screws!

- Special screw driver for screw extraction
- No power supply or drilling required
- 2 bits for more possibilities
- High-torque handle grip
- Shock-absorbable rubber sleeve included

PRODUCT VIDEO

Contents:
- Handle Grip for DBZ(Green)(DBZ-50G)
- ⊕#2 Press & Twist type bit (DBZ-51)
- ⊕#2 Strike & Turn type bit (DBZ-52)
- Rubber Sleeve for DBZ-52

Handle grip

DBZ-52

DBZ-51

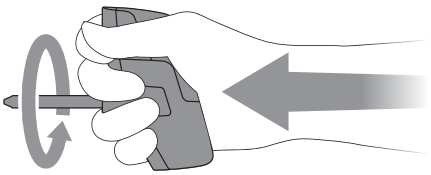
| Item No. | Material | Wgt. |
|---|---|---|
| DBZ-60G | Bit:Carbon Steel<br>Sleeve: TPR<br>Grip: ABS, Nylon | 135g |

## DBZ-50B — HANDLE GRIP FOR DBZ(BLACK)

High-torque handle grip

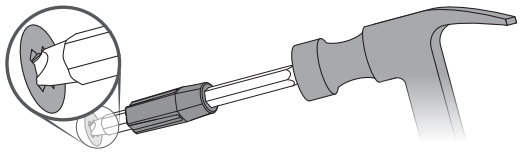
| Item No. | Material | Width | Wgt. |
|---|---|---|---|
| DBZ-50B | Grip: ABS, Nylon | 100㎜ | 83g |

## How to



**Press & Twist type** (for slightly damaged screws)

1) Insert the bit into the handle grip.
2) Place the bit tip into the screw head, then scrape away burs in the recess by twisting it back and forth lightly.
   *Do not attempt to hit the bit with a hammer.
3) After you feel the bit tip catches the corner of recess, give a jerk counterclockwise while pressing firmly downward.



**Strike & Turn type** (for heavily damaged screws)

1) Clean out any steel chips left in the screw recess.
2) Fix the rubber sleeve to the Strike & Turn bit and position the tip in the recess.
3) Strike the end of the bit with a hammer to stick the tip into the recess.
4) Make sure the bit is self-standing upright, and then affix the grip onto the bit.
   *Do not hit the grip with a hammer.
5) Give a jerk counterclockwise while pressing firmly downward.

# DBZ-51～65

## RoHS REPLACEMENT AND OPTIONAL BITS FOR DBZ-60G



### Press & Twist type

Slightly damaged Philips screws

■DBZ-51

■DBZ-57

Slightly damaged Hex screws

■DBZ-62

■DBZ-63

■DBZ-64

■DBZ-65

### Strike & Turn type

Heavily damaged Philips screws

■DBZ-52

Heavily damaged Hex screws

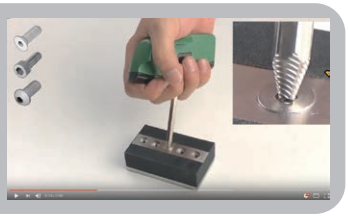
■DBZ-53

■DBZ-54

■DBZ-56

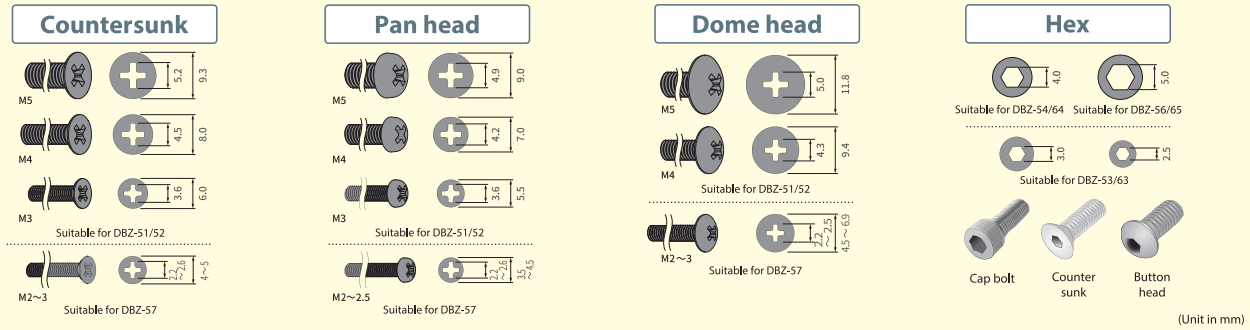
| Item No. | Screw type/size | Bit type | Length | Wgt. |
|---|---|---|---|---|
| DBZ-51 | ⊕#2 | Press & Twist type | 105mm | 27g |
| DBZ-52 | | Strike & Turn type | | |
| DBZ-53 | Hex socket screw (⬢: 2.5-3.0mm) | Strike & Turn type | | 26g |
| DBZ-54 | Hex socket screw (⬢: 4.0mm) | Strike & Turn type | | |
| DBZ-56 | Hex socket screw (⬢: 5.0mm) | Strike & Turn type | | |
| DBZ-57 | ⊕#1 | Press & Twist type | | 25g |
| DBZ-62 | Hex socket screw (⬢: 2.0mm) | Press & Twist type | | |
| DBZ-63 | Hex socket screw (⬢: 2.5-3.0mm) | Press & Twist type | | 27g |
| DBZ-64 | Hex socket screw (⬢: 4.0mm) | Press & Twist type | | |
| DBZ-65 | Hex socket screw (⬢: 5.0mm) | Press & Twist type | | |

PRODUCT VIDEO



DBZ-62～65 can be used with your power driver

## Screw types



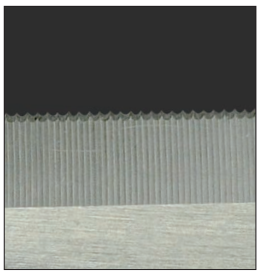
# Scissors

# PH-57•PH-57R•PH-57G•PH-57Y

## COMBINATION SCISSORS DP

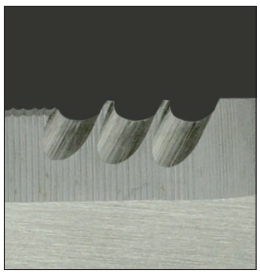
- 2-in-1 anti-slip serrations and U-shaped blade
- 3㎜-thick durable blades, made of stainless steel

### Micro-serrations



Hold the object without slippage such as Aramid fiber, plastic plate, etc.

### U-shaped blade



Ideal for power supply cord, coaxiale cable, rope, etc.

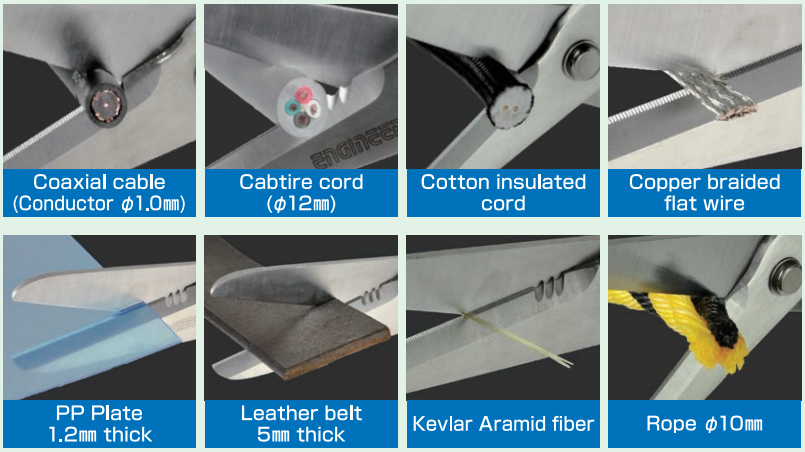
### TPR cushioned handles

Comfort gripping

### Finger pinch guard

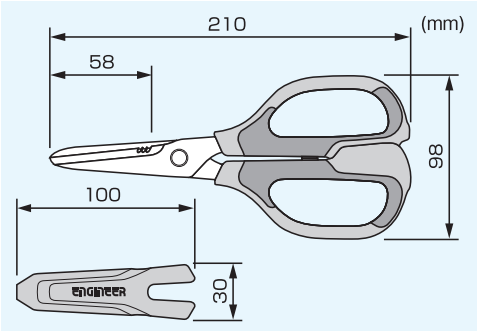
The overlapping guard prevents your fingers from being pinched PAT.

## Cutting capacity (Reference only)




※Do not apply Copper or Steel wire to the Micro-serration to keep the life of main blades.
※Heat-treated or specially-hardened wire is not applicable for cutting. It may damage the blades.

## Color variations




| Item No. | Size | Hardness | Material | Wgt. |
|---|---|---|---|---|
| PH-57 | 210㎜ | HRC56±2 | Blades:Steinless Steel<br>Handles:ABS & TPR<br>Cap:ABS | 136g |
| PH-57R | | | | |
| PH-57G | | | | |
| PH-57Y | | | | |

# PH-56R•PH-56G•PH-56Y

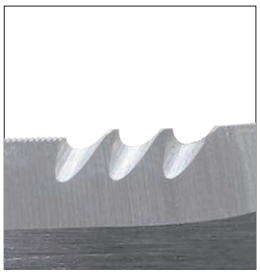
## COMBINATION SCISSORS MP

- 2-in-1 anti-slip serrations and U-shaped blade
- 2.5㎜-thick blades, made of stainless steel

### Nano-serrations

Hold the object without slippage such as Aramid fiber, plastic plate, etc.

### U-shaped blade

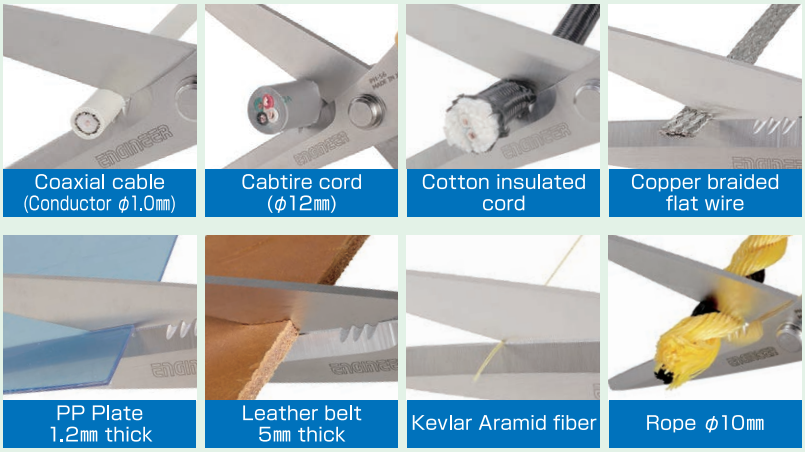


Ideal for power supply cord, coaxiale cable, rope, etc.

### Finger pinch guard

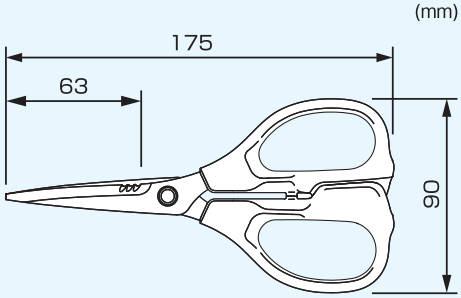
The overlapping guard prevents your fingers from being pinched PAT.

### Cutting capacity (Reference only)




※Do not apply Copper or Steel wire to the Micro-serration to keep the life of main blades.
※Heat-treated or specially-hardened wire is not applicable for cutting. It may damage the blades.

### Color variations

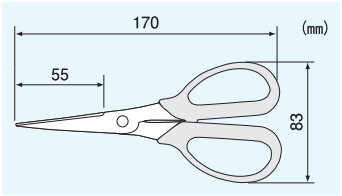



| Item No. | Size | Hardness | Material | Wgt. |
|---|---|---|---|---|
| PH-56R<br>PH-56G<br>PH-56Y | 175㎜ | HRC56+2 | Blades: Stainless Steel<br>Handles: ABS | 75g |

## PH-50 COMBINATION SCISSORS

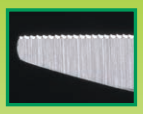
### 2-in-1 Unique cutting blade

- Trimming various objects which you could not cut with ordinary scissors such as nylon fiber, cabtire cord, etc.
- Fine and flush cut in finish even compared with cut with cutting pliers
- Ideal for professional electricians as well as for hobby use.

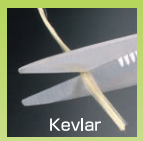



**Notched Blade**

Notched blades prevent the object from slipping



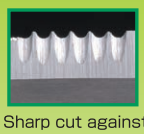
Trimming Nylon or Kevlar fiber without slipping



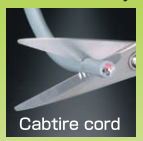
| PH-50 Notched Blade Cutting Capacity | |
|---|---|
| Nylon/Kevlar fiber | Various types |
| Copper braided wire | |
| Aluminum/Copper sheet | 0.5mm max. |
| Plastic plate / PET | 1.0mm max. |

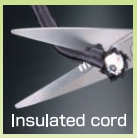
**U-type Blade**

U-type notches hold cord firmly



Sharp cut against insulated cord with rubber or cotton braided






| PH-50 U-type Blade Cutting Capacity | |
|---|---|
| Copper wire | φ1.5mm max. |
| Cabtire cord | Various types |
| Cotton braided cord | |
| Cotton insulated cord | |

※Do not use U-type blade for cutting Aluminum or Copper sheet, which may damage the blade.

| Item No. | Size | Hardness | Material | Wgt. |
|---|---|---|---|---|
| PH-50 | 170mm | HRC54±2 | Handles:PE<br>Blades:Stainless Steel | 58g |

## PH-55 COMBINATION SCISSORS GT

### 4-in-1 Blade combination, Compact Body to Generate More Force!!

- Cut various materials cleanly
- Safely-designed and comfortable handles
- Blade cap with vent & drain holes
- Rust proof stainless steel body
- Applicable to professional users and hobbyist

**Micro-serration**

Holds the object without slipping

**Finger Pinch Guard**



The overlapping guard prevents your fingers being pinched in the handles.
PAT.

**Anti-slip Handle**

You can grasp the outer rim of the handles safely when the work requires a strong grip.

INTERNATIONAL DESIGN EXCELLENCE AWARDS '12 FINALIST

**Flat Blade**

Smooth cutting not only of cloth but also of paper

**S-shaped Design**

The unique form transmits gripping power efficiently to the shears.

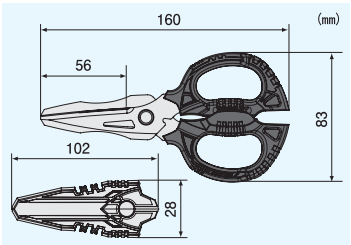
**Wire Cutter**

Handy cutting blades for copper or steel wire

**Safety Box Opener**



Convenient to open carton boxes with ease




### Cutting Capacity (Reference)

| Micro-serration | | | Wire Cutter |
|---|---|---|---|
| Rope | Cabtire cord | Cotton insulated | Copper wire |
| | | | |
| φ10mm | φ9mm | φ8mm | φ1.6mm |
| Leather belt | CD·Card | Carpet | Wire |
| | | | |
| 4mm thick | 1.2mm thick | 5mm thick | φ1.2mm |

| Item No. | Size | Hardness | Material | Wgt. |
|---|---|---|---|---|
| PH-55 | 160mm | HRC56±2 | Handles:PBT<br>Blades:Stainless Steel | 120g |

※Do not apply Copper or Steel wire to the Micro-serration to keep the life of main blades.
※Heat-treated or specially-hardened wire is not applicable for cutting. It may damage the blades.

## PH-33•34 ELECTRONIC SNIPS

- Ideal for delicate cutting for PCB related work.
- PH-33 (straight)／PH-34 (curved)
- Length: 145㎜
- Material: Stainless Steel
- Serrated shears for anti-slipping

PH-33

PH-34

## PK-50•51 CABLE SHEARS

- Makes a fine cut surface owing to the curved blades
- High leverage for easy operation

PK-50

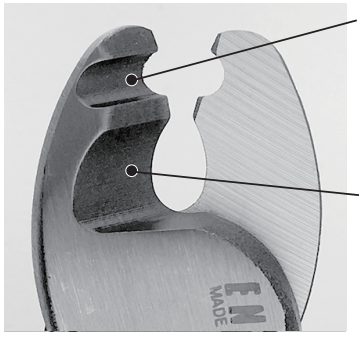
PK-51

Vinyl Insulated

Cabtire Cable

Flat Cable

Coaxial Cable

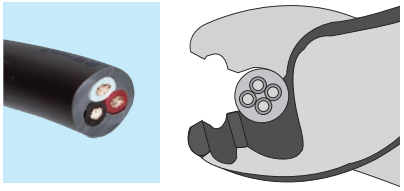


■Foremost Blades
Wire cutter suitable for copper wires

■Main Blade (Rearmost)
Curved blades suitable for insulated cables, make a fine cut surface.
Flat cables, Coaxial cables, Power supply cords, LAN cables, etc. are also applicable.

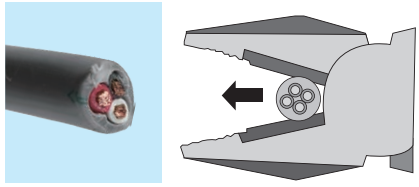
### Comparison of Cut Surface

**Cable Shears**



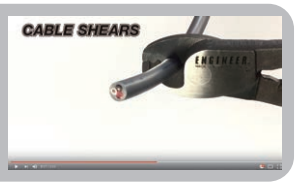
The curved blades can hold a cable securely and the shears mechanism enables you to make a cut surface finely.

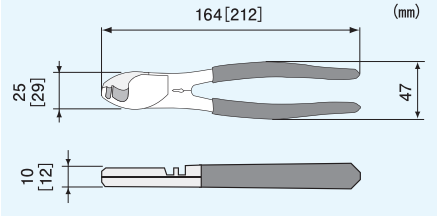
**Conventional Pliers**



The pressure given from flat blades crushes a cable or it may slip sideways.

PRODUCT VIDEO




[ ]:PK-51

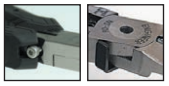
| Item No. | Size | Hardness | Cutting Capacity | | | Wgt. |
|---|---|---|---|---|---|---|
| | | | Vinyl insulated Cable | | Flat Cable | |
| PK-50 | 164㎜ | HRC58±4 | 9㎜ outside diameter | 22 ㎟ | 2.0㎜×2core | 150g |
| PK-51 | 212㎜ | HRC58±4 | 11㎜ outside diameter | 38 ㎟ | 2.0㎜×3core | 250g |

# Nippers

# NS & NZ SERIES

**Features**

- Our micro nippers are ideal for precise PCB work.
- Made of special steel and specially heat treated for excellent cutting capacity and durability.
- Full-flush cutting edge recommended for cutting copper and soft lead wires.
- Soft touch grip insulation and spring ensure long comfortable work.

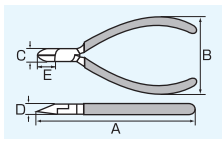


- With opening angle adjuster or stopper

## NS-03 RoHS MICRO NIPPERS

- Ideal for small PCB related work
- With opening angle adjuster
- Material: S58C
- Hardness: HRC 58±4
- Capacity: copper wire ϕ1.4mm

Spring




(mm)

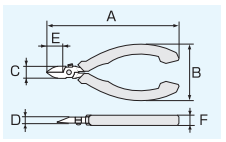
| Size | A | B | C | D | E |
|---|---|---|---|---|---|
| 125 | 128 | 52 | 13 | 7 | 14 |

## NS-04 RoHS MICRO NIPPERS

- Ideal for small PCB related work
- With opening angle adjuster
- ESD-Safe handles made of Elastomer (TPR)
- Material: S58C
- Hardness: HRC 58±4
- Capacity: copper wire ϕ1.2mm

Spring

ESD SAFE



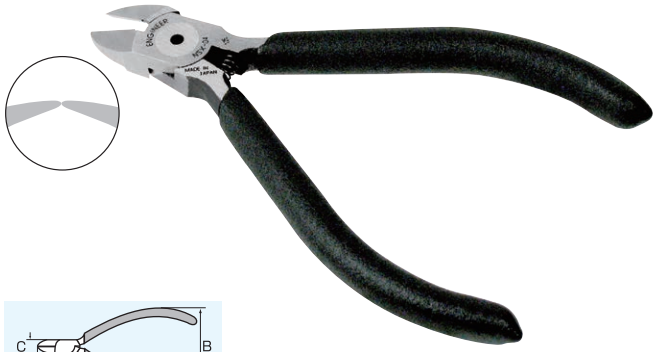

(mm)

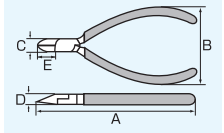
| Size | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| 115 | 120 | 50 | 13 | 7 | 14 | 11 |

## NSX-04 RoHS MICRO NIPPERS

- Cost-saving simple structure
- With side stopper
- Material: S58C
- Hardness: HRC 58±4
- Capacity: copper wire ϕ1.2mm
- Especially for production line owing to economical and ecology package in poly bag

Spring






(mm)

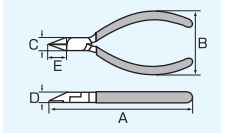
| Size | A | B | C | D | E |
|---|---|---|---|---|---|
| 115 | 117 | 51 | 13 | 7 | 14 |

## NS-06 RoHS MICRO NIPPERS

- Undercut design featuring thin blade
- Ideal for precise PCB related work
- With opening angle adjuster
- Material: S58C
- Hardness: HRC 58±4
- Capacity: copper wire ϕ0.8mm

Spring

Under cut




(mm)

| Size | A | B | C | D | E |
|---|---|---|---|---|---|
| 105 | 107 | 48 | 10 | 7 | 10 |

## ■Nippers cutting capacities (Reference only)

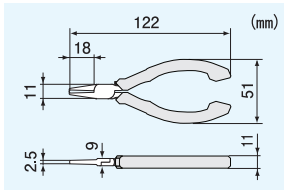
(mm)

| Item No. | Commodity | Size | Copper wire | | Steel wire (⌀) | Others | Page |
|---|---|---|---|---|---|---|---|
| | | | Solid (ϕ) | Stranded | | | |
| NS-03 | Micro Nippers | 125 | 1.4 | 2 | | | 16 |
| NS-04 | Micro Nippers | 115 | 1.2 | 2 | | | 16 |
| NSX-04 | Micro Nippers | 115 | 1.2 | 2 | | | 16 |
| NS-06 | Micro Nippers | 105 | 0.8 | | | | 16 |
| NZ-03 | Chip Cutter | 125 | 0.6 | | | | 17 |
| NZ-05 | Chip Cutter | 125 | 0.6 | | | also applicable to plastic gate | 17 |
| NZ-12 | Parallel Nippers | 125 | 0.6 | | | | 17 |
| NZ-13 | Parallel Nippers | 125 | 0.6 | | | | 17 |
| NP-03 | Plastic Nippers | 125 | | | | Injection molding gate ⌀3mm | 19 |
| NP-04 | Plastic Nippers | 150 | | | | Injection molding gate ⌀3mm | 19 |
| NP-05 | Plastic Nippers | 115 | 0.8 | | | Injection molding gate ⌀3mm | 19 |
| NK-15 | Diagonal Nippers | 125 | 2.6 | 2 | 1.5 | | 18 |
| NK-16 | Diagonal Nippers | 150 | 3 | 2 | 1.9 | | 18 |
| NK-25 | Diagonal Nippers | 125 | 2.6 | 2 | 1.5 | Stripping hole ⌀1.2 & 1.6mm | 18 |
| NK-26 | Diagonal Nippers | 150 | 3 | 2 | 1.9 | Stripping hole ⌀1.2 & 1.6mm | 18 |
| NK-36 | Diagonal Nippers | 150 | 3.2 | | 2 | Vinyl isulated cable ⌀1.6mm | 18 |
| NN-45 | Slant Edge Nippers | 125 | 2 | 2 | 1.2 | Stripping hole ⌀1.2 & 1.6mm | 19 |
| NN-46 | Slant Edge Nippers | 150 | 2.6 | 2 | 1.4 | Stripping hole ⌀1.2 & 1.6mm | 19 |
| NN-56 | Slant Edge Nippers | 150 | 2.6 | 2 | 1.4 | | 19 |

## NZ-03 CHIP CUTTER

- Opening angle adjuster (Max. 5㎜) with 1.5㎜ hex key wrench included
- Sharp & slender design of jaws for work on dense circuit board
- ESD-Safe handles made of Elastomer (TPR)
- Material: S58C
- Hardness: HRC 58±4
- Capacity: copper wire ϕ0.6㎜
- Applications: Removal of chip resistance, IC, etc. on SMD

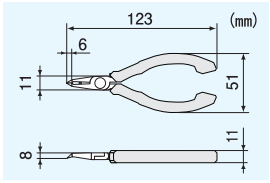
Spring



## NZ-05 CHIP CUTTER

- Opening angle adjuster (Max. 5㎜) with 1.5㎜ hex key wrench included
- Sharp & slender design of jaws for work on dense circuit board
- ESD-Safe handles made of Elastomer (TPR)
- Material: S58C
- Hardness: HRC 58±4
- Capacity: copper wire ϕ0.6㎜
- Applications: Leads of Dual In-line Package or Single In-line Package IC on SMD

Spring

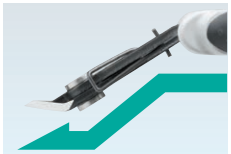


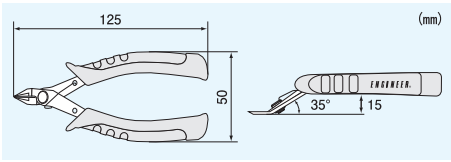
## NZ-12•13 PARALLEL NIPPERS

### Full flush & super-fine cutting edge

- Ideal to cut an IC lead of a narrow-pitch QFP or SOP with slender shears (0.3㎜+0.3㎜ width at top)
- Ergonomic elastomer handle for comfort gripping
- Cutting capacity : Copper wire ϕ0.6㎜
- Light weight of 45g only

Spring

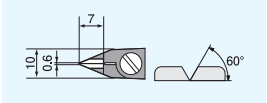


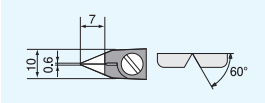



*SHEARS & GRIP IN PARALLEL*

NZ-12

NZ-13



NZ-12 : Normal Blade
Enables you to make flush cut of a lead easily so as to prevent resist stripping or solder crack on the circuit board

NZ-13 : Reverse Blade
Enables you to cut IC lead in front of user with the best view while holding nippers vertically against circuit board

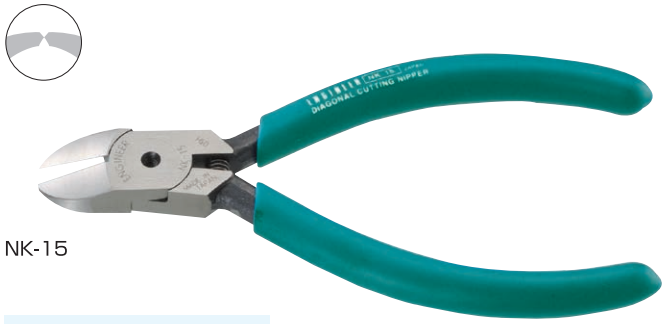
## NK-15・16

RoHS

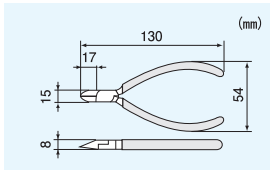
## DIAGONAL NIPPERS

### Sharp & durable cutting for precision wiring work

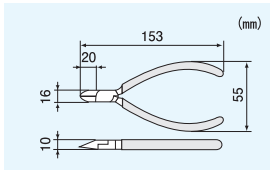
- With opening angle adjuster & coiled spring
- Material: S55C
- Hardness: HRC 58±4
- Capacity (copper wire) : NK-15 φ2.6mm
  NK-16 φ3mm




NK-15



NK-16



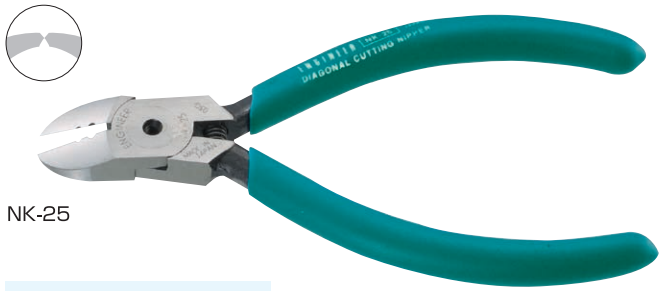

## NK-25・26

RoHS

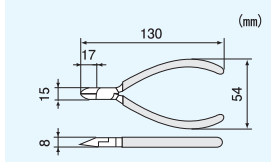
## DIAGONAL NIPPERS

### Precision cutter with wire stripper

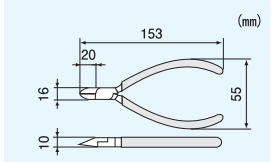
- With opening angle adjuster & coiled spring
- Stripping holes: φ1.2 & 1.6mm
- Material: S55C
- Hardness: HRC 58±4
- Capacity (copper wire) : NK-25 φ2.6mm
  NK-26 φ3mm




NK-25



NK-26




## NK-36

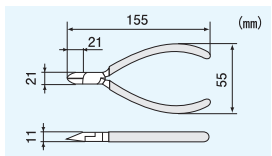
RoHS

## HEAVY DUTY DIAGONAL NIPPERS

JIS

### Heavy-duty durable cutter

- Material: S58C
- Hardness: HRC 60±4
- Capacity: copper wire φ3.2mm



## NN-45・46 RoHS SLANT EDGE NIPPERS

### Professional type for sharp & easy use

- Stripping holes: φ1.2 & 1.6㎜
- Material: S58C
- Hardness: HRC 58±4

NN-45

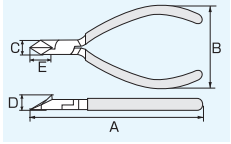
(mm)

| Item No. | Size | A | B | C | D | E | Capacity |
|---|---|---|---|---|---|---|---|
| NN-45 | 125 | 133 | 51 | 14 | 10 | 23 | copper wire φ2㎜ |
| NN-46 | 150 | 159 | 51 | 16 | 11 | 26 | copper wire φ2.6㎜ |

## NN-56 RoHS SLANT EDGE NIPPERS

### Sharp cutting & easy handling

- Material : S58C
- Hardness : HRC 58±4
- Capacity : copper wire φ2.6㎜




(mm)

| Size | A | B | C | D | E |
|---|---|---|---|---|---|
| 150 | 159 | 51 | 16 | 11 | 26 |

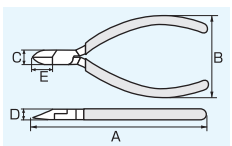
## NP-03・04 RoHS PLASTIC NIPPERS

- Ideal for cutting plastic mold gates & burns
- With opening angle adjuster & coiled spring
- Material: S58C
- Hardness: HRC 58±4

Spring

NP-03

NP-04




(mm)

| Item No. | Size | A | B | C | D | E |
|---|---|---|---|---|---|---|
| NP-03 | 125 | 130 | 54 | 14 | 8 | 17 |
| NP-04 | 150 | 152 | 55 | 16 | 10 | 20 |

## NP-05 RoHS PLASTIC NIPPERS

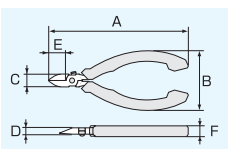
### Tapered and slender head for work in restricted area

Spring

ESD SAFE

- Ideal for cutting and trimming various gates of injection molding
- Also capable of cutting thin copper wire (φ0.8㎜ max.)
- ESD-Safe handles made of Elastomer (TPR)
- With side stopper & coiled spring
- Material: S58C
- Hardness: HRC 59±3

NP-05




(mm)

| Item No. | Size | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|
| NP-05 | 115 | 123 | 52 | 11 | 7 | 12 | 11 |

# Pliers

## PS-01

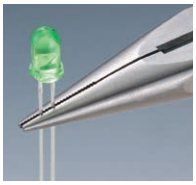
### MINIATURE LONG NOSE PLIERS

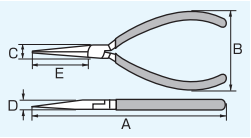
Ideal for precision work

- Jaws with inside serration
- Material: S58C
- Hardness: HRC 58±4
- Capacity: copper wire $\phi$2mm

Point section

Spring






(mm)

| Item No. | Size | A | B | C | D | E |
|---|---|---|---|---|---|---|
| PS-01 | 125 | 132 | 51 | 14 | 8 | 37 |

## PS-03

### MINIATURE NEEDLE NOSE PLIERS

Ideal for forming work

- Jaws without serration
- ESD-Safe handles made of Elastomer (TPR)
- Material: S58C
- Hardness: HRC 46±4

ESD SAFE

Point section

Spring

## PS-04

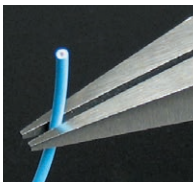
### MINIATURE FLAT NOSE PLIERS

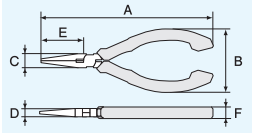
- Jaws without serration
- ESD-Safe handles made of Elastomer (TPR)
- Material: S58C
- Hardness: HRC 46±4

ESD SAFE

Point section

Spring






(mm)

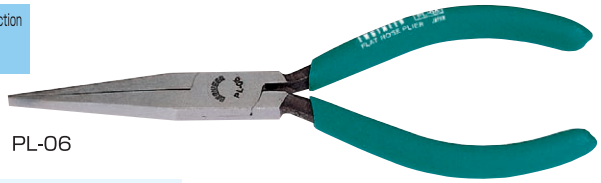
| Item No. | Size | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|
| PS-03 | 125 | 141 | 55 | 11 | 8 | 38 | 11 |
| PS-04 | 125 | 132 | 50 | 11 | 8 | 29 | 11 |

## PL-05・06 LONG FLAT NOSE PLIERS

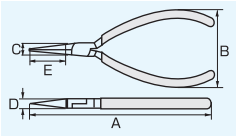
### Thin and flat edge for efficient work

- Jaws without serration
- Long-life box joint structure to avoid loosening
- Material: Stainless steel

Point section



PL-06




(mm)

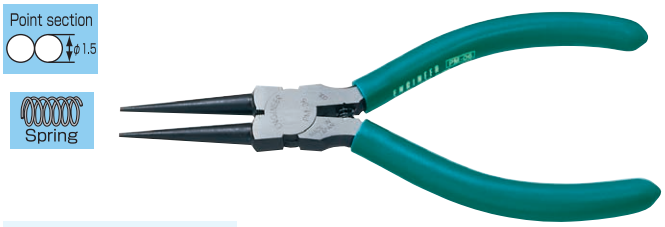
| Item No. | SIZE | A | B | C | D | E |
|---|---|---|---|---|---|---|
| PL-05 | 125 | 143 | 50 | 11 | 7 | 40 |
| PL-06 | 150 | 164 | 53 | 15 | 10 | 43 |

## PM-06 ROUND NOSE PLIERS

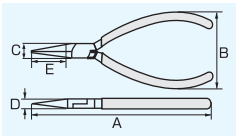
### Ideal for looping & coiling of steel wires

- Material: SCM440H

Point section



Spring




(mm)

| SIZE | A | B | C | D | E |
|---|---|---|---|---|---|
| 150 | 145 | 53 | 15 | 8 | 35 |

## PR-15・16 LONG NOSE PLIERS

### General purpose pliers

- Material: S58C
- Hardness: HRC 58±4

PR-16

Point section

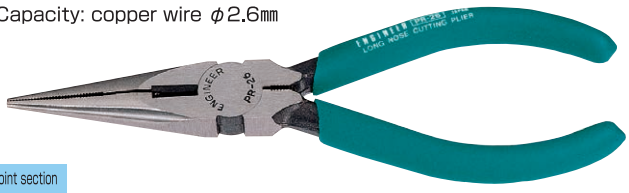
(mm)

| Item No. | SIZE | A | B | C | D | E | Capacity |
|---|---|---|---|---|---|---|---|
| PR-15 | 125 | 142 | 51 | 17 | 10 | 43 | Copper wire φ2.0mm |
| PR-16 | 150 | 160 | 55 | 17 | 10 | 49 | Copper wire φ2.6mm |

## PR-26 LONG NOSE PLIERS

### Professional type pliers

- Material: S58C
- Hardness: HRC 58±4
- Capacity: copper wire φ2.6mm



Point section

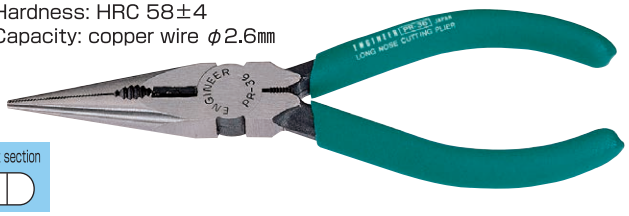
(mm)

| SIZE | A | B | C | D | E |
|---|---|---|---|---|---|
| 150 | 160 | 52 | 17 | 10 | 50 |

## PR-36 LONG NOSE PLIERS

### Multipurpose pliers with gripping jaws, cutter & wire stripper

- Stripping Hole: φ1.2mm
- Material: S58C
- Hardness: HRC 58±4
- Capacity: copper wire φ2.6mm



Point section

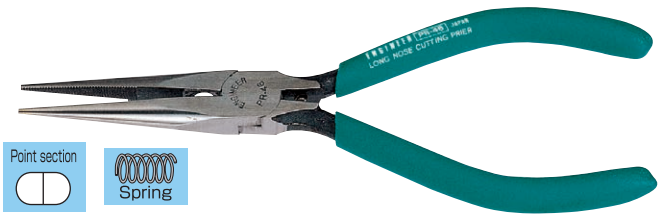
(mm)

| SIZE | A | B | C | D | E |
|---|---|---|---|---|---|
| 150 | 160 | 51 | 17 | 10 | 50 |

## PR-46 NEEDLE NOSE PLIERS

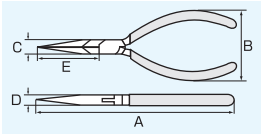
### 50mm-long slender nose ideal for work in deep area

- Material: S58C
- Hardness: HRC 58±4
- Capacity: copper wire φ2.6mm



Point section

Spring




(mm)

| SIZE | A | B | C | D | E |
|---|---|---|---|---|---|
| 160 | 160 | 51 | 13 | 8 | 50 |

# PD SERIES

Features ● Durably constructed Electrician's Pliers

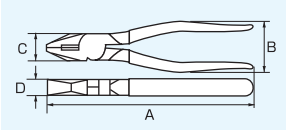
## PD-06~08 SIDE CUTTING PLIERS

PD-06

PD-07

### Heavy duty professional-use pliers

- Material: S58C
- Hardness: HRC 60±4




(mm)

| Item No. | Size | A | B | C | D | Capacity |
|---|---|---|---|---|---|---|
| PD-06 | 150 | 165 | 50 | 22 | 12 | steel wire φ1.6 |
| PD-07 | 175 | 185 | 52 | 24 | 13 | steel wire φ1.8 |
| PD-08 | 200 | 210 | 53 | 27 | 14 | steel wire φ2.0 |

# PC & PW SERIES

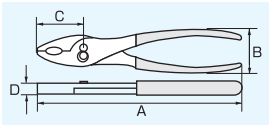
Features ● Slip Joint Pliers and Groove Joint Pliers for maintenance and general purpose

## PC-06・08 COMBINATION PLIERS

● Slip joint for wide-open jaws
● Material: S55C

PC-06

PC-08




(mm)

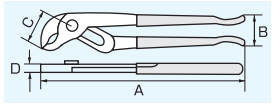
| Item No. | Size | A | B | C | D |
|---|---|---|---|---|---|
| PC-06 | 150 | 165 | 45 | 42 | 9 |
| PC-08 | 200 | 203 | 48 | 46 | 11 |

## PW-05~10 WATER PUMP PLIERS

● Groove-joint leverage for heavy duty work
● Serrated jaws with soft-touch grip
● Material: S55C

PW-05

PW-08



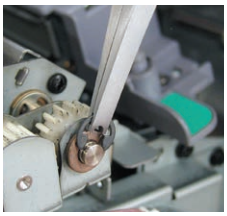

(mm)

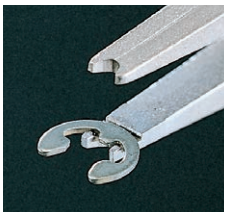
| Item No. | Size | A | B | C | D | Max.Opening |
|---|---|---|---|---|---|---|
| PW-05 | 125 | 127 | 34 | 25 | 5.5 | 15 |
| PW-08 | 200 | 200 | 37 | 38 | 8 | 33 |
| PW-10 | 250 | 250 | 38 | 50 | 11 | 45 |

## PZ-01・02 E-RING PLIERS

### Ideal and smart pliers to remove and fasten E-ring!!

● Place the corner of E-ring into the recess of pliers' jaw for removal, fastening and replacement work.
● Magnetized point for convenient holding
● Long-life box joint structure to avoid loose joint
● Material : Stainless steel

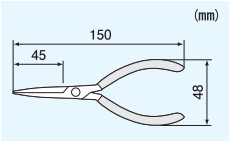


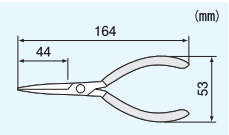


PZ-01

PZ-02

Box joint




(mm)

| Item No. | Ring Size | O.A. Length |
|---|---|---|
| PZ-01 | ϕ3~4 | 150 |
| PZ-02 | ϕ5~9 | 164 |

The Ring Size shown above is the diameter of grooved shaft to which E-ring retains.

Ring Size

## PZ-16~19 SNAP RING PLIERS

● Slender design of jaws ideal for work at a confined area
● The spiked tips are angled outward (PZ-16&17) or inward (PZ-18&19) to hold a snap ring securely without slippage.
● Spring built into the joint screw for smooth and repeated work
● Material: Carbon steel

PZ-16

External ring type

PZ-18

Internal ring type

(mm)

| Item No. | Applicable Ring Size | Tip Diameter | Ring Type | Wgt. |
|---|---|---|---|---|
| PZ-16 | #10-25㎜ | ϕ1.3㎜ | External ring | 90g |
| PZ-17 | #19-60㎜ | ϕ1.8㎜ | | 175g |
| PZ-18 | #10-25㎜ | ϕ1.1㎜ | Internal ring | 90g |
| PZ-19 | #19-60㎜ | ϕ1.8㎜ | | 175g |

# Crimping and Stripping

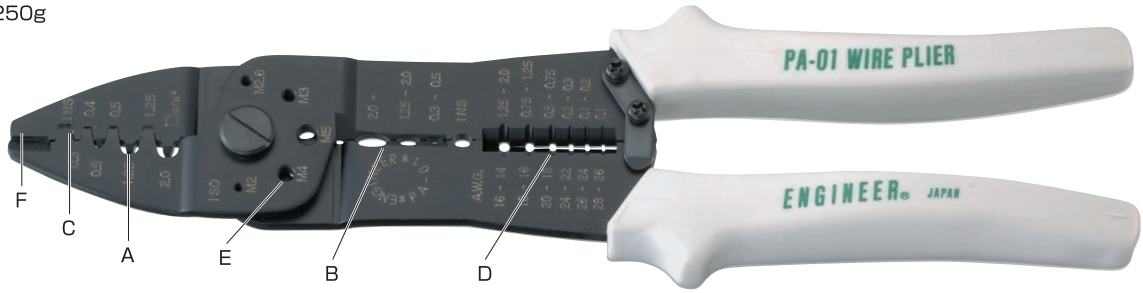
# WIRE PLIERS SERIES

Features ● General purpose & compact wire pliers used for crimping, stripping & cutting for precision wiring work.

## PA-01

RoHS WIRE PLIERS

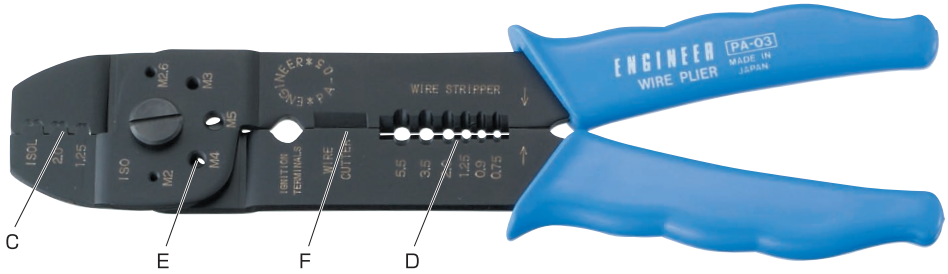
- Six-in-one multipurpose type.
- For bare, insulated terminals & splices (open barrels).
- O.A. length: 245㎜.
- Weight: 250g



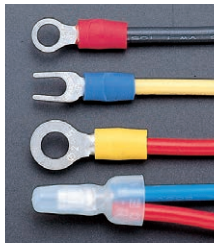

## PA-03

RoHS WIRE PLIERS

- For splices (open barrel terminals) with wire stripper & bolt cutter.
- O.A. Length: 210㎜.
- Weight: 205g

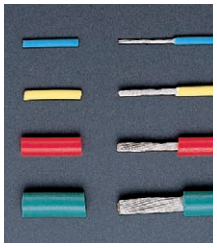


A. For crimping BARE terminals.

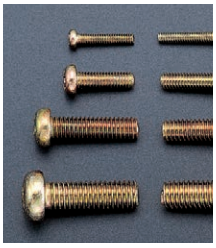


B. For crimping INSULATED terminals.

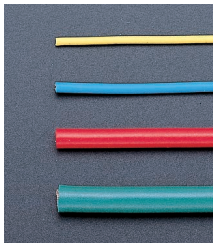
C. For crimping OPEN BARREL(SPLICES)



D. For stripping insulated WIRES.



E. For cutting SCREWS.



F. For cutting WIRES.

(mm²)

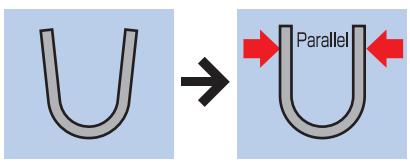
| Item No. | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| | Bare terminals' crimping | Insulated terminals' crimping | Splices' crimping | Wires' stripping | Small screw's cutter(iso) | Wires' cutting |
| PA-01 | 0.5 ~2.0 | 0.3 ~2.0 | 0.3 ~1.25 | 0.1 ~2.0 | M2, M2.6, M3, M4, M5 | ○ |
| PA-03 | – | – | 1.25~2.0 | 0.75~5.5 | M2, M2.6, M3, M4, M5 | ○ |

■Conversion A.W.G. table

| AWG | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 30 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sectional area ㎟ | 8.37 | 5.26 | 3.31 | 2.08 | 1.31 | 0.82 | 0.52 | 0.33 | 0.20 | 0.13 | 0.08 | 0.05 |
| Wire diam ㎜ | 3.26 | 2.59 | 2.05 | 1.63 | 1.29 | 1.02 | 0.81 | 0.64 | 0.51 | 0.40 | 0.32 | 0.25 |

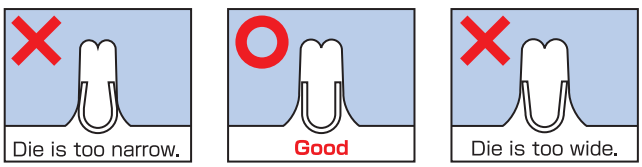
## ■How to select the proper dies for crimping an open-barrel contact

1. Measure the width of conductor barrel with a caliper while both barrel wings are in parallel.




Wings opened → Measure the width

2. Select the die width which is close to the width of barrel wings measured.

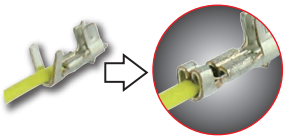



For example: 1.5㎜ measured ➡ Select 1.6㎜ dies.

Turn to page 26 for Crimping Pliers ➡

# CONNECTOR CRIMPING PLIERS

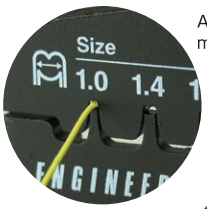
Features
- Our line-up offers you very precise and perfect crimp finish of open-barrel contacts.
- ENGINEER original joint-screw prevents the joint from being loose and realizes easy maintenance.
- Pliers made of S55C high carbon steel for durability
- With locking latch and coiled spring, Light weight for fatigue-free work



## PA-09 MICRO CONNECTOR PLIERS

### Crimp AWG #32 to #20 wires in micro connectors of different makers!!

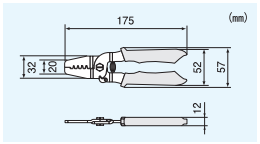
- 4 different crimping dies, 1.0, 1.4, 1.6 & 1.9㎜(W)
- Makes it possible to crimp 1.25 to 2.5㎜ pitch connector pin (Narrow pitch)
- D-sub connector contacts also adaptable
- Weight: 145 g




AWG32 wire in microscopic die

Dies




■Typical terminals applicable

| PH Series(JST) | ZH Series(JST) | Molex 170363(Molex) |
|---|---|---|
| | | |
| **EH Series(JST)** | **NH Series(JST)** | **Molex 170365(Molex)** |
| | | |

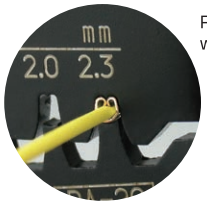
■Specifications

| Item No. | Die Width (㎜) | Die Height (㎜) | Die Thickness (㎜) | Wires applicable (Reference only) | | |
|---|---|---|---|---|---|---|
| | | | | φ㎜ | ㎟ | AWG (conductor) |
| PA-09 | 1.0 | 0.50 | 1.7 | 0.20~0.32 | 0.031~0.08 | #32~#28 |
| | 1.4 | 0.55 | | 0.32~0.51 | 0.08~0.21 | #28~#24 |
| | 1.6 | 0.8 | 2.0 | 0.51~0.64 | 0.21~0.33 | #24~#22 |
| | 1.9 | 0.9 | | 0.51~0.81 | 0.21~0.52 | #24~#20 |

## PA-20 UNIVERSAL CRIMPING PLIERS

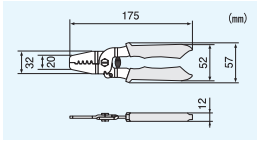
### Crimp AWG #28 to #18 wires in micro connectors of different makers!!

- 4 different crimping dies, 1.6, 1.9, 2.0 & 2.3㎜(W)
- Makes it possible to crimp 2.5 to 5㎜ pitch connector pin (Universal type)
- Weight: 145 g




Precise crimping of wire or insulation

Dies




■Typical terminals applicable

| VH Series(JST) | NH Series(JST) | PH Series(JST) |
|---|---|---|
| | | |
| **EL Series(JST)** | **3191 Series(Molex)** | **MATE-N-LOK(Tyco)** |
| | | |

■Specifications

| Item No. | Die Width (㎜) | Die Height (㎜) | Die Thickness (㎜) | Wires applicable (Reference only) | | |
|---|---|---|---|---|---|---|
| | | | | φ㎜ | ㎟ | AWG (conductor) |
| PA-20 | 1.6 | 0.7 | 2.5 | 0.32~0.64 | 0.08~0.33 | #28~#22 |
| | 1.9 | 0.8 | | 0.51~0.81 | 0.21~0.52 | #24~#20 |
| | 2.0 | 0.9 | | 0.64~1.02 | 0.33~0.82 | #22~#18 |
| | 2.3 | 1.0 | | 0.81~1.02 | 0.52~0.82 | #20~#18 |

## PA-21 UNIVERSAL CRIMPING PLIERS

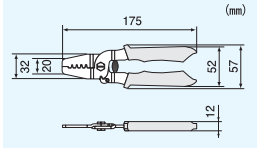
### Precise crimpers for wide range of open-barrel contacts including long barrel wing type

Long wing type is also adaptable.

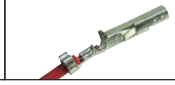
- 4 different crimping dies, 1.6, 1.9, 2.2 & 2.5㎜(W)
- Crimping AWG #26~18 contacts of different connector makers
- Weight: 145 g

Excellent curling of wire and insulation barrels individually

Dies




■Typical terminals applicable

| XH Series(JST) | NH Series(JST) | VH Series(JST) |
|---|---|---|
| | | |
| **PA Series(JST)** | **Mini Fit(Molex)** | **Universal MATE-N-LOK(Tyco)** |
| |  | |

■Specifications

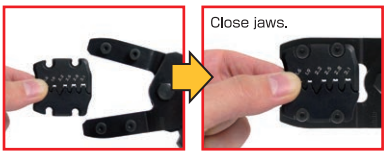
| Item No. | Die Width (㎜) | Die Height (㎜) | Die Thickness (㎜) | Wires applicable (Reference only) | | |
|---|---|---|---|---|---|---|
| | | | | φ㎜ | ㎟ | AWG (conductor) |
| PA-21 | 1.6 | 0.8 | 1.8 | 0.41~0.51 | 0.13~0.21 | #26~#24 |
| | 1.9 | 1.0 | | 0.41~0.64 | 0.13~0.33 | #26~#22 |
| | 2.2 | 1.2 | | 0.51~0.81 | 0.21~0.52 | #24~#20 |
| | 2.5 | 1.4 | | 0.64~1.02 | 0.33~0.82 | #22~#18 |

# PRECISE CRIMPING SERIES – Tool Frame and Die Set

## PAD-11~13 HANDY CRIMP TOOL

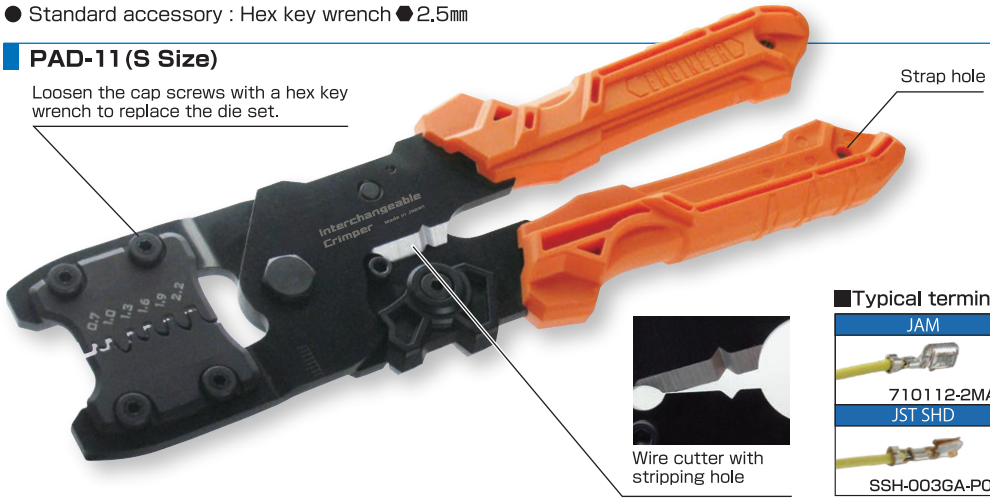
### Ultra-precise crimper forming excellent crimping finish

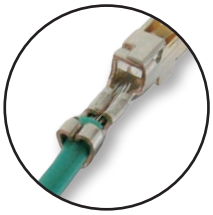
- Interchangeable die set for open-barrel contacts. Easy replacement and perfect fitting to the frame
- Ergonomically-designed handles with strap hole
- Equipped with wire stripper and cutter, spring loaded
- Standard accessory : Hex key wrench ⬣2.5㎜
- Material :
  Frame & Die set – Special alloy steel
  Handles – Elastomer (TPR)



Easy fitting, No need to adjust positioning PAT.

### PAD-11 (S Size)

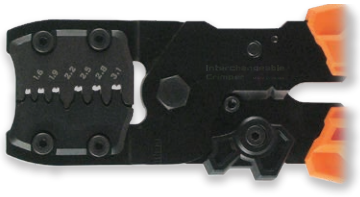


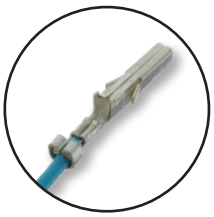



■Typical terminals applicable

| JAM | Molex CLIK-Mate | Tyco D-1000 |
|---|---|---|
| 710112-2MAC | 502381 | 1827586-2 |
| JST SHD | Molex PicoBlade | Tyco D-1000 |
| SSH-003GA-P0.2 | 50079 | 1827587-2 |

### PAD-12 (M Size)

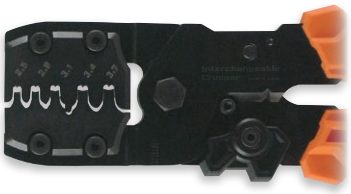




■Typical terminals applicable

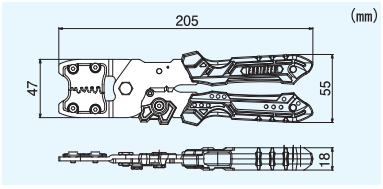
| JST NH | Molex New Mini Fit | Tyco D-3000 |
|---|---|---|
| SHF-001T-0.8BS | 5556T | 175217-2 |
| JST VH | Molex New Mini Fit | Tyco D-3000 |
| SVH-21T-P1.1 | 5558T | 175288-2 |

### PAD-13 (L Size)



■Typical terminals applicable

| JST VL | Molex 3191 | Tyco D-3000 |
|---|---|---|
| BVF-42T-P2.0 | 1189T | 175218-2 |
| JST VL | Molex 3191 | Tyco D-3000 |
| BVF-61T-P2.0 | 1190T | 175289-2 |



■Crimper size (㎜)

| Item No. | PAD-11 | | | | | | PAD-12 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | PAD-13 | | | | |
| Die width | 0.7 | 1.0 | 1.3 | 1.6 | 1.9 | 2.2 | 2.5 | 2.8 | 3.1 | 3.4 | 3.7 |
| Die thickness | 1.0 | | 1.5 | | 2.0 | | 2.5 | | 3.0 | | 3.5 |

## PAD-11S~13S INTERCHANGEABLE DIE SET

### PAD-11S (S Size)

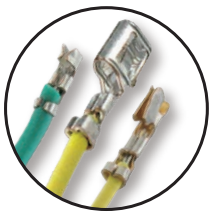
- Over 90 different terminals applicable

### PAD-12S (M Size)

- Over 110 different terminals applicable

### PAD-13S (L Size)

- Over 100 different terminals applicable



■Frame & Dies Combination

| Item No. | Frame | | Die set |
|---|---|---|---|
| PAD-11 | PAD-10 | + | PAD-11S |
| PAD-12 | PAD-10 | + | PAD-12S |
| PAD-13 | PAD-10 | + | PAD-13S |

■Crimper size (㎜)

| Item No. | PAD-11S | | | | | | PAD-12S | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | PAD-13S | | | | |
| Die width | 0.7 | 1.0 | 1.3 | 1.6 | 1.9 | 2.2 | 2.5 | 2.8 | 3.1 | 3.4 | 3.7 |
| Die thickness | 1.0 | | 1.5 | | 2.0 | | 2.5 | | 3.0 | | 3.5 |

## PAD-02 RoHS HANDY CRIMP TOOL COMPLETE SET

- Comes with 3 different interchangeable Die Sets
- Tool Frame & Parts Boxes in a stylish carrying case

■Set Content

| Item No. | Description |
|---|---|
| PAD-11 | Handy Crimp Tool |
| PAD-12S | Interchangeable Die Set (M Size) |
| PAD-13S | Interchangeable Die Set (L Size) |
| | 2.5㎜ Hex. key wrench |
| | Connectable parts box (6 pcs.)<br>Ext. size:20×29×16㎜ |
| | Carrying case (HDPE) |

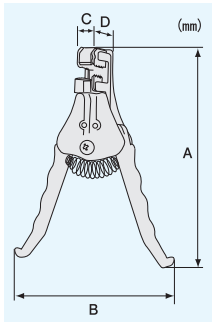
(㎜)

| Item No. | Case Size | Wgt.(g) |
|---|---|---|
| PAD-02 | 300×200×63㎜ | 910g approx. |

## PA-11 RoHS WIRE STRIPPER

- Super-Light weight wire stripper
- Accurate wire stripping with single squeeze action.
- Fatigue-free owing to spring action
- Made of durable plastic

■With strip gauge
Length of wire is adjustable using strip gauge.




■Size applicable

| Hole diameter ㎜ | 0.5 | 1.2 | 1.6 | 2.0 |
|---|---|---|---|---|
| Stranded wire(AWG) | 26 | 18 | 16 | 14 |
| Solid wire AWG | 24 | 16 | 14 | 12 |

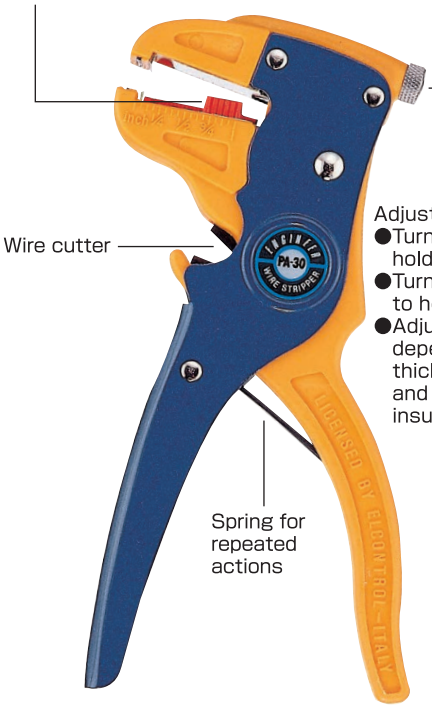
(㎜)

| Item No. | A | B | C | D | Wgt.(g) |
|---|---|---|---|---|---|
| PA-11 | 165 | 128 | 20 | 30 | 140 |

## PA-30 RoHS WIRE STRIPPER

- One-Squeeze operation for easy stripping of applicable flat cables, 12㎜ width max.
- With stopper for adjustment of stripping length, 2~20㎜.
- Applicable sectional area: AWG20~10

●Sliding stopper to adjust length of stripping.




## PA-91~93 RoHS TERMINAL SET

- Popular crimping terminals and connectors in compact plastic case.

PA-91

■PA-91 Set

| Terminal | | Sectional area (㎟) | Screwdiam (㎜) | Contents |
|---|---|---|---|---|
| Bare Terminal | R | 0.5 | 3 | 10 |
| | | 1.25 | 3 | |
| | | 1.25 | 4 | |
| | | 2 | 5 | |
| | | 5.5 | 6 | 5 |
| | Y | 1.25 | 4 | 10 |
| | | 2 | 5 | |
| | | 5.5 | 6 | 5 |

PA-92

■PA-92 Set

| Terminal | | Sectional area (㎟) | Screwdiam (㎜) | Contents |
|---|---|---|---|---|
| Insulated terminal | RV | 1.25 | 3 | 10 |
| | | 1.25 | 4 | |
| | | 2 | 5 | |
| | YV | 1.25 | 3 | |
| | | 1.25 | 4 | |
| | | 2 | 5 | |

PA-93

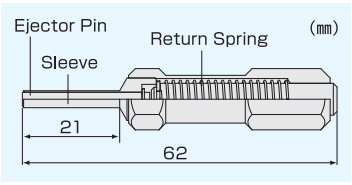
■PA-93 Set

| Terminal | | Sectional area (㎟) | Screwdiam (㎜) | Contents |
|---|---|---|---|---|
| Insulated terminal | RV | 5.5 | 6 | 4 |
| | YV | 5.5 | 6 | |
| Splice terminal | BC | 1.25 | – | 8 |
| | | 2 | – | |
| Twist connector | TC | 1.25~2 | – | 10 |
| | | 1.5 ~4 | – | 8 |

## PAS-30~34 CONNECTOR EXTRACTOR (Spring Loaded Type)

- Perfect and simple work for extracting pin & socket contacts
- Newly designed construction with built-in return spring
- Owing to built-in spring, ejector pin retracts in the sleeve after work. It prevents the ejector pin from being damaged while carrying or not in use.

PRODUCT VIDEO




(mm)

| Item No. | Inner Diam of Sleeve | Outer Diam of Sleeve | Material |
|---|---|---|---|
| PAS-30 | 1.9 | 2.5 | SUS303 Stainless Steel |
| PAS-31 | 2.1 | 2.7 | |
| PAS-32 | 2.4 | 2.9 | |
| PAS-33 | 3.1 | 3.6 | |
| PAS-34 | 2.7 | 3.2 | |

■Reference for extracting typical connectors

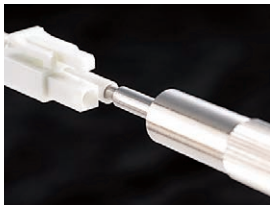
| Brand/Connector | Pin Housing | Socket Housing |
|---|---|---|
| "TE" Mini Universal Mate-N-Lok | PAS-30 | SS-30 |
| "TE" Universal Mate-N-Lok | PAS-34 | PAS-34 |
| "TE" Commercial Mate-N-Lok | PAS-32 | PAS-34 |
| "JST" ML & EL Series | PAS-31 | PAS-31 |
| "JST" L & LL Series | PAS-33 | PAS-33 |
| "MOLEX" 1545 Series | PAS-33 | PAS-34 |
| "MOLEX" 1625 Series | PAS-30 | PAS-31 |
| "MOLEX" 3191 Series | PAS-33 | PAS-33 |

## SS-30~34 PIN EXTRACTOR

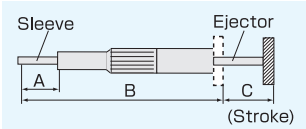
### Perfect for extracting both pin and socket terminals.

- The ejector rod inside the sleeve enables you to knock out both male & female pin easily from socket terminal.

PRODUCT VIDEO



(Shape sizes)




(mm)

| Item No. | Outer Diam of Sleeve | Inner Diam of Sleeve | A | B | C |
|---|---|---|---|---|---|
| SS-30 | 2.5 | 1.9 | 12 | 64 | 21 |
| SS-31 | 2.7 | 2.1 | | | |
| SS-32 | 2.9 | 2.4 | | | |
| SS-33 | 3.6 | 3.1 | | | |
| SS-34 | 3.2 | 2.7 | | | |

■Reference for extracting typical connectors

| Brand/Connector | Pin Housing | Socket Housing |
|---|---|---|
| "TYCO" Mini Universal Mate-N-Lok | SS-30 | SS-30 |
| "TYCO" Universal Mate-N-Lok | SS-34 | SS-34 |
| "TYCO" Commercial Mate-N-Lok | SS-32 | SS-34 |
| "JST" ML & EL Series | SS-31 | SS-31 |
| "JST" L & LL Series | SS-33 | SS-33 |
| "MOLEX" 1545 Series | SS-33 | SS-34 |
| "MOLEX" 1625 Series | SS-30 | SS-31 |
| "MOLEX" 3191 Series | SS-33 | SS-33 |
| "MOLEX" 8980 Series (4-pin connector in PC) | SS-32 | SS-34 |

## PH-01~04 LOCK HOLDER

- Serrated ratchet allows quick disconnect & reconnect for temporary connection.
- Ideal for assembling, soldering & precision clamping work.
- Material: Stainless Steel

Holding component

Clipping oil hose

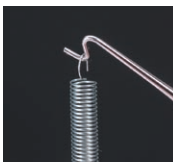
PH-03　　PH-04

(mm)

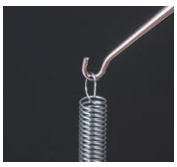
| Item No. | Length | Point shape |
|---|---|---|
| PH-01 | 125 | Straight |
| PH-02 | | Curved |
| PH-03 | 150 | Straight |
| PH-04 | | Curved |

## SS-21・22 SPRING HOOK

- Ideal for inserting, removing and adjusting coil springs of electronic components or precision instruments
- Suitable for removing connector leads, aligning leads of resistor or condenser and testing arrangements of wires
- 3㎜ diam.X215 O.A. length



SS-21



SS-22

SS-21

SS-22

## TP-33・34 PICK-UP TOOL

- 4 spring jaws pick up small and ball bearing type parts easily and firmly.
- Suitable for assembly work of precision instruments.
- Ideal for pick-up work even in hard to reach areas.

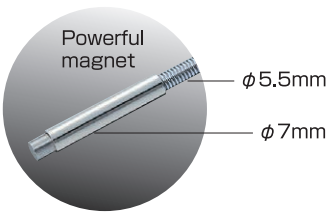
TP-33

(mm)

| Item No. | Housing | O.A. Length |
|---|---|---|
| TP-33 | φ6.2 | 250 |
| TP-34 | φ6.2 | 350 |

## TP-35・36 MAGNETIC PICK-UP TOOL

- Ideal for part retrieval in hard to reach areas
- Flexible shaft conforms to any shape
- Alnico magnet tip



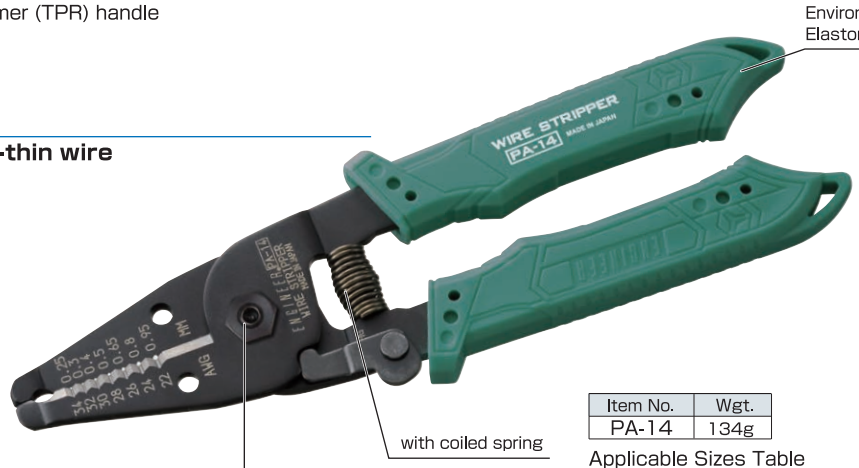

(mm)

| Item No. | O.A. Length |
|---|---|
| TP-35 | 410 |
| TP-36 | 525 |

# PA-05・06・07・14 RoHS WIRE STRIPPER

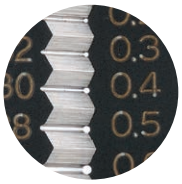
- Giving a very round finish of wires after stripping by sharp and precise edge
- Made of carbon steel alloy withstanding abrasions
- Oil-resistant Elastomer (TPR) handle

Spring



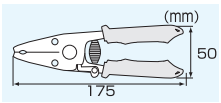
with strap hole

## PA-14 for micro-thin wire



"ENGINEER" original Joint-Screw prevents the joint from being loose and offer you easy maintenance.

| Item No. | Wgt. |
|---|---|
| PA-14 | 134g |




Applicable Sizes Table

| Stripper's Hole Diam(mm) | | | 0.25 | 0.3 | 0.4 | 0.5 | 0.65 | 0.8 | 0.95 |
|---|---|---|---|---|---|---|---|---|---|
| Applicable wire | AWG conversion | Stranded | 34 | 32 | 28~30 | 26 | 24 | 22~24 | 20~22 |
| | | Solid wire | 32 | 30 | 28 | 26 | 24 | 22 | 20 |

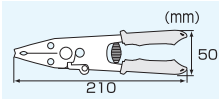
( ) Reference

## PA-05 for thin wire

■Crimping Function (mm²)

| Bare Terminal | Connector Terminal |
|---|---|
| 0.5~2.0 | 0.3~1.25 |

| Item No. | Wgt. |
|---|---|
| PA-05 | 166g |



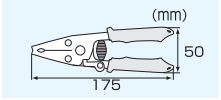

Applicable Sizes Table

| Stripper's Hole Diam(mm) | | | 0.4 | 0.5 | 0.65 | 0.8 | 0.95 | 1.15 | 1.45 |
|---|---|---|---|---|---|---|---|---|---|
| Applicable wire | AWG conversion | Stranded | 28~30 | 26~28 | 24 | 22~24 | 20~22 | 20 | (18) |
| | | Solid wire | 28 | 26 | 24 | 22 | 20 | 18 | 16 |

( ) Reference

## PA-06 for thin wire

| Item No. | Wgt. |
|---|---|
| PA-06 | 134g |



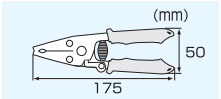

Applicable Sizes Table

| Stripper's Hole Diam(mm) | | | 0.4 | 0.5 | 0.65 | 0.8 | 0.95 | 1.15 | 1.45 |
|---|---|---|---|---|---|---|---|---|---|
| Applicable wire | AWG conversion | Stranded | 28~30 | 26 | 24 | 22~24 | 20~22 | 20 | (18) |
| | | Solid wire | 28 | 26 | 24 | 22 | 20 | 18 | 16 |

( ) Reference

## PA-07 for thick wire

| Item No. | Wgt. |
|---|---|
| PA-07 | 134g |




Applicable Sizes Table

| Stripper's Hole Diam(mm) | | | 0.8 | 0.95 | 1.15 | 1.45 | 1.8 | 2.1 | 2.5 |
|---|---|---|---|---|---|---|---|---|---|
| Applicable wire | AWG conversion | Stranded | 22~24 | 20~22 | 20 | (18) | (16) | 14 | 12 |
| | | Solid wire | 22 | 20 | 18 | 16 | 14 | (12) | (10) |

( ) Reference

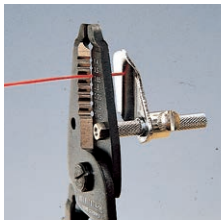
## ■Wire Stripper AWG Conversion (Reference only)

| AWG | | 34 | 32 | 30 | 28 | 26 | 24 | 22 | 20 | 18 | 16 | 14 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Strauded wire diameter(mm) | | 0.19 | 0.23 | 0.29 | 0.37 | 0.47 | 0.59 | 0.74 | 0.94 | 1.18 | 1.49 | 1.88 | 2.37 |
| Conductor diameter(mm) | | 0.16 | 0.2 | 0.25 | 0.32 | 0.40 | 0.51 | 0.64 | 0.81 | 1.02 | 1.29 | 1.63 | 2.05 |
| Sectional area(mm²) | | 0.025 | 0.032 | 0.05 | 0.08 | 0.13 | 0.2 | 0.33 | 0.52 | 0.82 | 1.31 | 2.08 | 3.31 |
| Stripping hole φ (mm) | PA-05 | | | 0.4 | 0.5 | 0.65 | 0.8 | 0.95 | 1.15 | 1.45 | | | |
| | PA-06 | | | 0.4 | 0.5 | 0.65 | 0.8 | 0.95 | 1.15 | 1.45 | | | |
| | PA-07 | | | | | | 0.8 | 0.95 | 1.15 | 1.45 | 1.8 | 2.1 | 2.5 |
| | PA-14 | 0.25 | 0.3 | 0.4 | 0.5 | 0.65 | 0.8 | 0.95 | | | | | |

# PA-90 RoHS STRIP GAUGE

## Min. stripping length 1mm!

- Saving time and giving you perfect stripping length every time
- Adjustable stripping length let you work more efficiently and reduces faults.



# Tweezers

# PT SERIES (AISI 304 Stainless Steel)

Features
- Standardized stainless steel (AISI 304), anti-magnetic, anti-acid & anti-corrosive alloy
- Hardened points are finished accurately and tensionized body to provide correct spring action & eliminate strain of fingers.
- Indicates spring action with

★ Soft ★★ Middle ★★★ Hard

## PT-01 RoHS TWEEZERS (AA)

●Length:125㎜

★

## PT-02 RoHS TWEEZERS (RR)

●Length : 150㎜

★★

## PT-03 RoHS TWEEZERS (MM)

●Length : 125㎜

★

## PT-04 RoHS TWEEZERS (I)

●Length : 120㎜

★

## PT-05 RoHS TWEEZERS (GG)

●Length : 120㎜

★

## PT-06 RoHS TWEEZERS (J)

●Length : 120㎜

★

## PT-07 RoHS TWEEZERS (TS)

●Serrated inside point
●Length : 125㎜

★★

## PT-08 RoHS TWEEZERS

●Length : 145㎜

★

## PT-09 RoHS TWEEZERS

●Serrated inside point
●Length : 130㎜

★★

## PT-10 RoHS TWEEZERS

●Serrated inside point
●Length : 150㎜

★★

## PT-11 RoHS TWEEZERS

●Serrated inside point
●Length : 230㎜

★★

## PT-12 TWEEZERS(BS)

●Length : 160㎜

★

## PT-13 TWEEZERS

●Length : 190㎜

★★★

## PT-14 REVERSE ACTION TWEEZERS

●Handles are squeezed to open points.
●Serrated inside points
●Length : 175㎜

★★★

## PT-15 TWEEZERS

●Inside polished points for picking up small sheets.
●Length : 105㎜

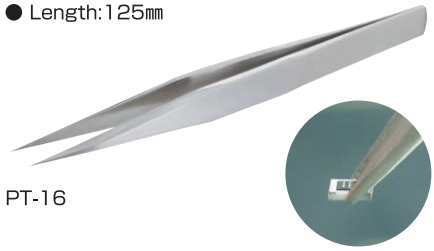
★

# SOLID ARM TWEEZERS SERIES

Features
- 2.2㎜ thickly-designed arms hold IC chip more steadily than conventional tweezers.
- Stiff arms can not bend easily and hold a small component very steadily.
- AISI 304 anti-magnetic stainless steel

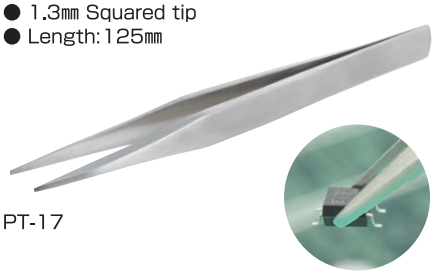
## PT-16•17•31 SOLID ARM TWEEZERS

- 0.5㎜ Fine tip
- Length:125㎜



PT-16

- 1.3㎜ Squared tip
- Length:125㎜



PT-17

- 0.3㎜ Fine tip (GG)
- Length:120㎜

PT-31

# TITANIUM TWEEZERS SERIES(100% ANTI-MAGNETIC)

Features
- Perfect anti-magnetic titanium, safety in work of electronics and computer device. No solder residue left.
- No corrosion, No rusting and Anti-ionization, ideal for chemical & biological fields
- Light weight, 40% less than ordinary stainless steel tweezers, for fatigue-free work

★ Soft ★★ Middle ★★★ Hard

## PTN-01 TYPE AA TITANIUM TWEEZERS

●Length : 125㎜
●with soft case

★

General use tweezers with strong sharply pointed type.

with Soft Case PTK-90

## PTN-02 TYPE GG TITANIUM TWEEZERS

●Length : 120㎜
●with soft case

★

Needle-like, very thin tips for handling microscopic parts.

with Soft Case PTK-90

## PTN-03 TYPE J TITANIUM TWEEZERS

●Length : 120㎜
●with soft case

★★

very thin and curved tips for working on microminiature assemblies.

with Soft Case PTK-90

# ENGINEERING PLASTIC, PPS (Polyphenylenesulfide) TIP

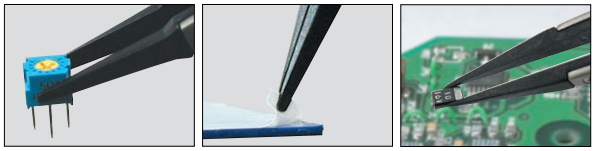
Features
- ESD-Safe tip ideal for handling static sensitive components
- Holding the object softly without any possibility of damage like metal tweezers
- Totally anti-magnetic body including stainless steel shank
- Anti-acid chemical resistance
- High wear-resistant and replaceable tip
- Heat resistance up to 270℃ (ASTM D648)

※ The above is Deflection temperature and is not to guarantee performance of tip against heated object.

STATIC SAFE MILD CONTACT

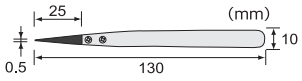
SOFT SPRING ACTION

ESD SAFE



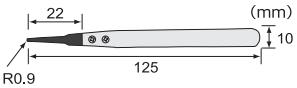
## PTZ-41·42·43 ESD PLASTIC-TIPPED TWEEZERS

PTZ-41



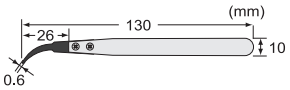

▲ Fine Tip PTZ-41

PTZ-42




▲ Duckbill Tip PTZ-42

PTZ-43




▲ Curved Nose (J) PTZ-43

■ PPS-TIPPED STAINLESS TWEEZERS

| Item No. | Overall Length | Tip | Shank Width | Wgt. |
|---|---|---|---|---|
| PTZ-41 | 130㎜ | 0.5㎜ Fine Tip | 10㎜ | 16g |
| PTZ-42 | 125㎜ | R0.9㎜ Duckbill | 10㎜ | 16g |
| PTZ-43 | 130㎜ | 0.6㎜ Fine Tip | 10㎜ | 16g |

## PTZ-91 SPARE TIP FOR PTZ-41

Fine tip

■ Contents : tip 2 pcs. & screw 4 pcs./set

| Item No. | Material | Surface Resistivity |
|---|---|---|
| PTZ-91 | PPS | $1\times10^{5}\sim10^{7}\Omega$ |

## PTZ-92 SPARE TIP FOR PTZ-42

Duckbill tip

■ Contents : tip 2 pcs. & screw 4 pcs./set

| Item No. | Material | Surface Resistivity |
|---|---|---|
| PTZ-92 | PPS | $1\times10^{5}\sim10^{7}\Omega$ |

## PTZ-93 SPARE TIP FOR PTZ-43

■ Contents : tip 2 pcs. & screw 4 pcs./set

| Item No. | Material | Surface Resistivity |
|---|---|---|
| PTZ-93 | PPS | $1\times10^{5}\sim10^{7}\Omega$ |

## PTZ-45·46 ESD PLASTIC TIPPED TWEEZERS

▲ Fine Tip PTZ-45

▲ Squared Tip PTZ-46

■ PPS-TIPPED STAINLESS TWEEZERS

| Item No. | Overall Length | Tip | Shank Width | Wgt. |
|---|---|---|---|---|
| PTZ-45 | 130㎜ | 0.4㎜ Fine tip | 10㎜ | 16g |
| PTZ-46 | 125㎜ | 2.3㎜ Squared | 10㎜ | 16g |

## PTZ-95 SPARE TIP FOR PTZ-45

Fine tip

■ Contents : tip 2 pcs. & screw 4 pcs./set

| Item No. | Material | Surface Resistivity |
|---|---|---|
| PTZ-95 | PPS | $1\times10^{5}\sim10^{7}\Omega$ |

## PTZ-96 SPARE TIP FOR PTZ-46

Squared tip

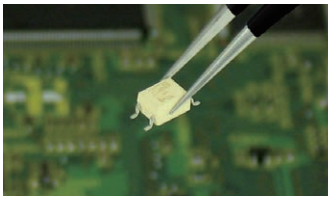
■ Contents : tip 2 pcs. & screw 4 pcs./set

| Item No. | Material | Surface Resistivity |
|---|---|---|
| PTZ-96 | PPS | $1\times10^{5}\sim10^{7}\Omega$ |

## PTZ-61~63 BLACK-COATED ESD TWEEZERS

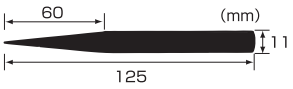
### Static dissipative black-coated tweezers

- ESD-safe body ideal for handling static sensitive components ($1\times10^{5}$~$10^{8}\Omega$)
- Anti-magnetic and non-corrosive stainless steel body
- Non-slip and anti-glare rugged surface for easy handling



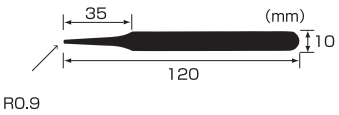
PTZ-61

▲ Fine tip PTZ-61



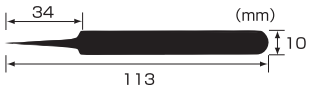

PTZ-62

▲ Duckbill tip PTZ-62




PTZ-63

▲ Type GG PTZ-63



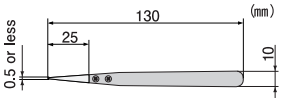

(mm)

| Item No. | Overall Length | Tip Length | Shank Width |
|---|---|---|---|
| PTZ-61 | 125 | 60 | 11 |
| PTZ-62 | 120 | 35 | 10 |
| PTZ-63 | 113 | 34 | 10 |

## PTZ-51 CERAMIC-TIPPED TWEEZERS

### High-temperature resistant ceramic tip featuring less solder adhesive

- Heat resistance : 1,000 ℃ (Tip)
- High wear-resistant and anti-acid tip
- Excellent electrical insulation
- Material : Anti-Magnetic stainless body with zirconia ceramic fine tip



## PTZ-94 SPARE TIP FOR PTZ-51

■ Contents : tip 2 pcs. & screw 4 pcs./set

# PTS SERIES

Features ● Anti-corrosive stainless steel

## PTS-01 TWEEZERS

- Straight AA type
- Length:125㎜

## PTS-03 TWEEZERS

- Curved with serrated inside
- Length:125㎜

## PTS-02·04~08 TWEEZERS

- Straight with serrated inside

| Item No. | Length(㎜) |
|---|---|
| PTS-02 | 125 |
| PTS-04 | 150 |
| PTS-05 | 180 |
| PTS-06 | 210 |
| PTS-07 | 240 |
| PTS-08 | 300 |

# Screwdrivers

## DG-01～04 PRO GRIP DRIVER

- Soft grip handle provides excellent tightening power without slipping.
- Chrome-vanadium alloy steel, perfectly heat-treated gives it lasting durability.
- Black magnetic oxide tip.
- Chrome plated.

DG-01

DG-04

(mm)

| Item No. | Point Size | Shaft Length | Shaft diam. | Handle diam. | O.A. Length |
|---|---|---|---|---|---|
| DG-01 | ⊖5.5×0.7 | 80 | 5.5 | 28 | 200 |
| DG-02 | ⊕#1 | 80 | 5.5 | 28 | 200 |
| DG-03 | ⊖6.3×0.9 | 76 | 6.3 | 32 | 214 |
| DG-04 | ⊕#2 | 76 | 6.3 | 32 | 214 |

## DG-08・09 MASTER GRIP DRIVER

- Master Cushion grip assures powerful fastening power.
- Bottom marking & color distinguish phillips from slotted tip.
- Special alloy steel blade, tempered & plated for lasting durability.
- Precision black-point finish, magnetic point.

DG-08

DG-09

(mm)

| Item No. | Point Size | Shaft Length | Shaft diam. | Handle diam. | O.A. Length |
|---|---|---|---|---|---|
| DG-08 | ⊕#2 | 70 | 6.3 | 40 | 195 |
| DG-09 | ⊖6×1.0 | 70 | 6.3 | 40 | 195 |

## DG-05 CUSHION DRIVER

- ⊕/⊖Two-in-one reversible blade.
- Comfortable soft-grip handle.
- Can also be used with electric and air drivers.

(mm)

| Item No. | Point Size | Shaft Length | Shaft diam. | Handle diam. | O.A. Length |
|---|---|---|---|---|---|
| DG-05 | ⊕#2/⊖6 | 95 | 6.3 | 34 | 210 |

## DG-11～14 EXTRA LONG GRIP DRIVER

- Cushion grip handle which fits perfect in the hand provides excellent tightening power.
- Shafts are made of chrome vanadium alloy steel, entirely heat treated with black magnetic oxide tip.
- Chrome plated finish.

DG-12

(mm)

| Item No. | Point Size | Shaft Length | Shaft diam. | Handle diam. | O.A. Length |
|---|---|---|---|---|---|
| DG-11 | ⊖6.0×0.8 | 225 | 6.3 | 32 | 362 |
| DG-12 | ⊕#2 | 225 | 6.3 | 32 | 362 |
| DG-13 | ⊖6.0×0.8 | 275 | 6.3 | 32 | 412 |
| DG-14 | ⊕#2 | 275 | 6.3 | 32 | 412 |

## DP-03～64 PRO-USE DRIVER

- Chrome Vanadium alloy steel & complete heat treated blade.
- Black oxide finish blade.
- Knurl shaft for quick rotation

DP-03

DP-13

DP-44

Size table (mm)

| Item No. | Blade size | Shaft length | Shaft diam. | Handle diam. | O.A. Length |
|---|---|---|---|---|---|
| DP-03 | #00 | 75 | 3 | 15 | 146 |
| DP-24 | #0 | 100 | 4.3 | 18 | 183 |
| DP-44 | #1 | 100 | 5.5 | 25 | 200 |
| DP-64 | #2 | 100 | 6.3 | 27 | 213 |
| DP-13 | ⊖3.0×0.35 | 75 | 3 | 15 | 146 |
| DP-34 | ⊖4.3×0.5 | 100 | 4.3 | 18 | 183 |
| DP-54 | ⊖5.5×0.7 | 100 | 5.5 | 25 | 200 |

(Blade size=width×thickness)

## DS-03～64 STANDARD DRIVER

DS-24

DS-34

Size table for ⊕ driver (mm)

| Item No. | ⊕Blade size | Shaft length | Shaft diam. | Handle diam. | O.A. Length |
|---|---|---|---|---|---|
| DS-03 | #00 | 75 | 3 | 11 | 128 |
| DS-23 | #0 | 75 | 4.3 | 16 | 151 |
| DS-24 | #0 | 100 | 4.3 | 16 | 176 |
| DS-44 | #1 | 100 | 5.5 | 18 | 185 |
| DS-46 | #1 | 150 | 5.5 | 18 | 235 |
| DS-64 | #2 | 100 | 6.3 | 22 | 193 |

Size table for ⊖ driver (mm)

| Item No. | ⊖Blade size | Shaft length | Shaft diam. | Handle diam. | O.A. Length |
|---|---|---|---|---|---|
| DS-12 | 2.6×0.35 | 50 | 3 | 11 | 103 |
| DS-13 | 2.6×0.35 | 75 | 3 | 11 | 129 |
| DS-14 | 2.6×0.35 | 100 | 3 | 11 | 154 |
| DS-33 | 4.0×0.5 | 75 | 4.3 | 16 | 150 |
| DS-34 | 4.0×0.5 | 100 | 4.3 | 16 | 175 |
| DS-54 | 5.5×0.7 | 100 | 5.5 | 18 | 184 |

## DG-21~24 MINI SOFT DRIVER

- Comfortable soft-grip handle.
- Chrome-vanadium steel & perfectly heat-treated blade.
- Black oxide point.
- Chrome plated finish.

DG-21

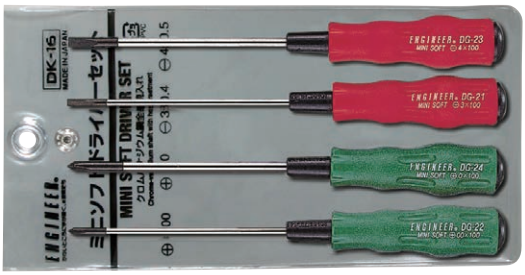
DG-22

(mm)

| Item No. | Blade size | Shaft length | Shaft diam. | Handle diam. | O.A. Length |
|---|---|---|---|---|---|
| DG-21 | ⊖3×0.4 | 80 | 3 | 21 | 167 |
| DG-22 | ⊕#00 | 80 | 3 | 21 | 167 |
| DG-23 | ⊖4×0.5 | 80 | 4 | 21 | 167 |
| DG-24 | ⊕#0 | 80 | 4 | 21 | 167 |

## DK-16 MINI SOFT DRIVER SET

Contents
- DG-21
- DG-22
- DG-23
- DG-24



## DST-01・02 STUBBY DRIVER

DST-01

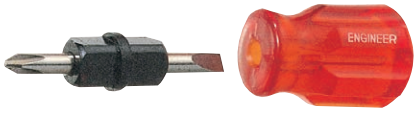
DST-02

(mm)

| Item No. | Tip size | Shaft length | Shaft diam. | Handle diam. | O.A. Length |
|---|---|---|---|---|---|
| DST-01 | ⊖6.3×0.9 | 38 | 6.3 | 30 | 86 |
| DST-02 | ⊕ #2 | 38 | 6.3 | 30 | 86 |

## DST-05 COMBINATION REVERSIBLE STUBBY DRIVER

- 2-in-1 ⊕/⊖ reversible in single hand.
- Extra compact 85㎜ O.A. length.

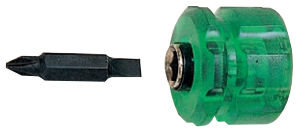


(mm)

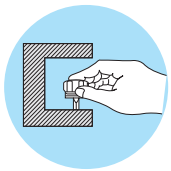
| Item No. | Tip size | Blade length | Blade diam. | Handle diam. | O.A. Length |
|---|---|---|---|---|---|
| DST-05 | ⊕#2/⊖6.3 | 23 | 6.3 | 30 | 85 |

## DST-06・07 MINIATURE REVERSIBLE DRIVER

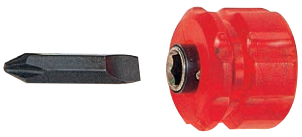
- 2-in-1 ⊕/⊖ reversible in single hand.
- Specially compact design in 42㎜ O.A. length.



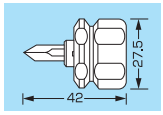
DST-06



Fluted design handle assures perfect thumb and finger grip.



DST-07




(mm)

| Item No. | Tip size | Bit length | Bit diam. | Handle diam. |
|---|---|---|---|---|
| DST-06 | ⊕#1/⊖4.5 | 16 | 6.3 | 27.5 |
| DST-07 | ⊕#2/⊖6 | 16 | 6.3 | 27.5 |

## DK-50 REVERSIBLE DRIVER SET

- ⊕/⊖ Reversible type, 3pcs. set
- Contents: DK-51 ⊕#00/⊖2.6
  DK-52 ⊕#1/⊖4.5
  DK-53 ⊕#2/⊖6

## DK-51~53 REVERSIBLE DRIVER

- ⊕/⊖ Two-in-one

DK-51

DK-52

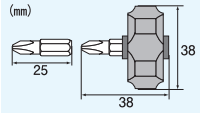
DK-53

(mm)

| Item No. | Tip size | Blade length | Blade diam. | Handle diam. | O.A. Length |
|---|---|---|---|---|---|
| DK-51 | ⊕#00/⊖2.6 | 67 | 3 | 18 | 164 |
| DK-52 | ⊕# 1 /⊖4.5 | 82 | 5 | 24 | 195 |
| DK-53 | ⊕ #2/⊖ 6 | 89 | 6.3 | 26 | 216 |

## DR-54 STUBBY RATCHET DRIVER

- Super compact stubby driver for hard-to-reach areas
- Improved efficiency due to the ratchet mechanism
- Magnet bit socket to attract and hold the bit firmly and securely in place



| Item No. | Bit size | Gear positions | Swing arc | Material | Wgt. |
|---|---|---|---|---|---|
| DR-54 | ⊕#2×25㎜ | 45 | 8 degrees | Handle:Aluminium Bit:Carbon steel | 50g |

## DZ-01・02 MINIATURE DRIVER

DZ-01

DZ-02

(mm)

| Item No. | Point Size | Shaft Length | Shaft diam. | Grip diam. | O.A. Length |
|---|---|---|---|---|---|
| DZ-01 | ⊖1.6×0.3 | 30 | 2 | 6.3 | 55 |
| DZ-02 | ⊕ #000 | 30 | 2 | 6.3 | 55 |

## DR-52 MASTER GRIP DRIVER

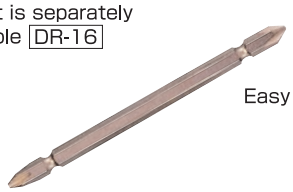
### Provides the most useful and popular magnetic bits.

- Tips also fit most rechargeable and electric drivers.
- Chrome-vanadium steel.
- Cushion grip handle.

Bullet-type bit holder for portable use.

Cushion grip

Bit set is separately available DR-16

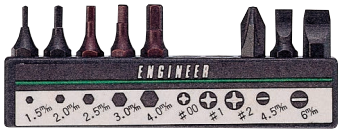


Easy slide-in

## DR-07 TWIN WRENCH DRIVER SET

### Designed for sure-gripped work in restricted areas.

- 10-in-1 combination of the most useful ⊕/⊖tips.
- Knurled cushion handle fits the hand and the job.
- With portable bullet holder.
- Replacement bit sizes ⊕#00,#1,#2 ⊖4.5, 6
  ●1.5, 2, 2.5, 3, 4

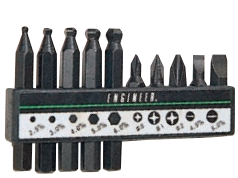



## DR-03 RATCHET STUBBY DRIVER

- Compact 95㎜ O.A. length with a comfortable grip.
- Built-in ratchet mechanism.
- Replacement bits: ⊕#2/⊖6㎜, ⊕#1/⊖4.5㎜.
- Knurl shaft for quick rotation

## DR-04 RATCHET STUBBY DRIVER SET

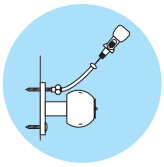
- Versatile driver with common replaceable ⊕/⊖ point bits.
- Built-in ratchet mechanism.
- Replacement set includes : ⊕#00,#1,#2,⊖4.5, 6,
  ●2.5, 3, 4, 5, 6
- Knurl shaft for quick rotation



## DR-08 RATCHET STUBBY DRIVER SET WITH FLEXIBLE SHAFT

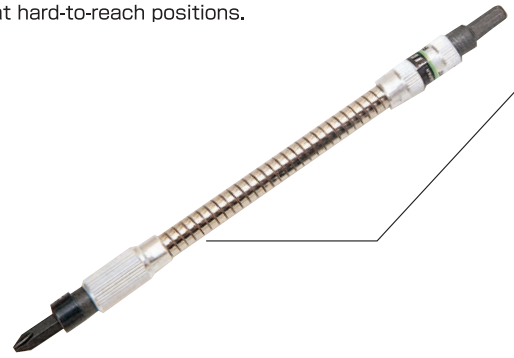
### Versatile flexible shaft makes difficult jobs easy

- 6-in-1 ratchet stubby type comes with most needed⊕/⊖, hex, box bits and flexible shaft.
- Easy access to tighten screws & nuts at hard-to-reach positions.
- Knurl shaft for quick rotation



For use at hard-to-reach positions.

Flexible shaft is workable with rechargeable driver.



Flexible shaft is designed to bend max. 75 degree in double construction. The piano wire is covered with flexible insulation.

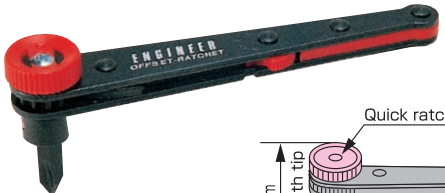
Bullet holder is clipped to belt or tool panel.

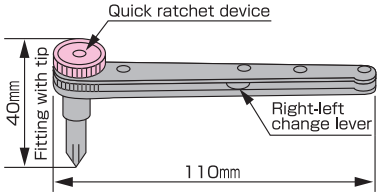
CONTENTS

| | |
|---|---|
| ●Ratchet stubby | O.A.length:80㎜ |
| ●Flexible shaft | O.A.length:182㎜ |
| ●⊕⊖bit | ⊕#2/⊖6, ⊕#1/⊖4.5 |
| ●Hex bit | ●2, 2.5, 3㎜ |
| ●Box bit | ○5.5㎜ |

## DR-05 OFFSET RATCHET DRIVER

- Built-in quick ratchet mechanism increases work productivity.
- Designed to permit work in close areas that are inaccessible with ordinary drivers.
- Tip : ⊕#2/⊖6㎜

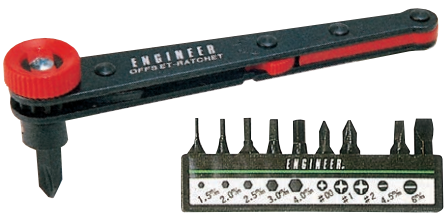


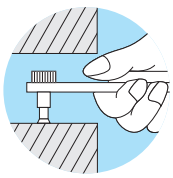




## DR-06 OFFSET RATCHET DRIVER WITH BIT SET

### Excellent for working in close areas!

- Versatile driver with most popular ⊕/⊖ & hex bits.
- Complete with handy bullet holder for carrying.
- Replacement set includes: ⊕#00, #1, #2, ⊖4.5, 6
  ●1.5, 2, 2.5, 3, 4
- Built-in quick ratchet device.

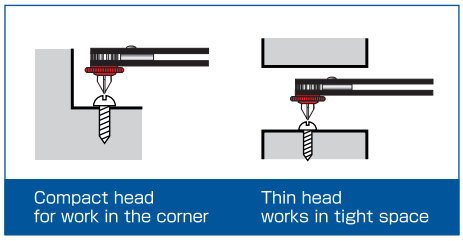


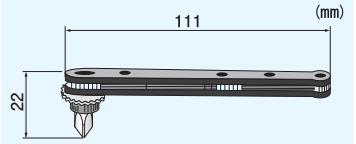
## DR-55 MINI OFFSET RATCHET

### Only 22㎜-high low-profile head accessible to tight space!!

- Built-in quick ratchet device increases work productivity.
- Bit set includes : ⊕#1, #2, #3 &⊖6㎜



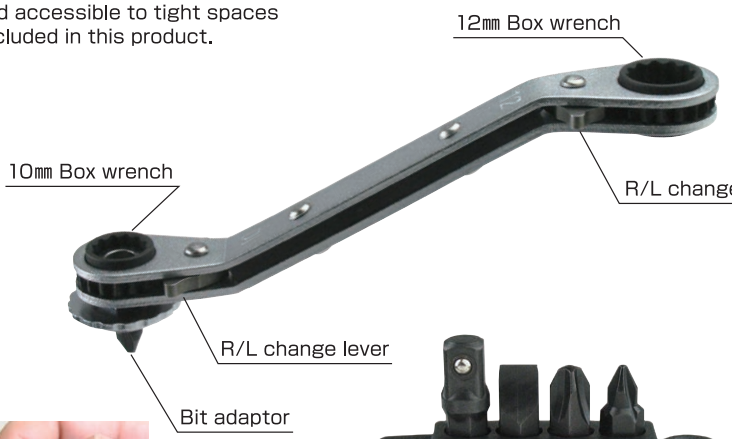
Super-thin Head 22㎜

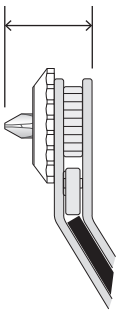


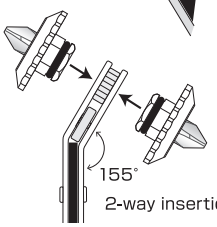

## DR-56 7-in-1 ANGLED RATCHET

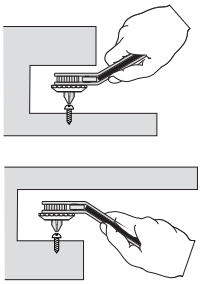
- Ratchet handle with angled heads for ease of operation (Max. torque: 27.4 Nm)
- Use as a screwdriver (adaptor included) with a selection of 5 low-profile bits in a bullet holder.
- Bit adaptor accepts standard 6.35㎜ (1/4") hex bits.
- Low-profile head accessible to tight spaces

※ No socket is included in this product.



(mm)

| Item No. | Bit Sizes | Length | Wgt.(g) |
|---|---|---|---|
| DR-56 | ⊕#1, #2, #3,⊖6<br>¼" socket adapter | 135 | 78 |

## DR-10・11・15~17 BIT SET

- A comprehensive and wide selection of bits to handle any job or application.
- Bullet type bit holder suitable for portable use
- DR-16 bits are also used for rechargeable or electric drivers.

DR-10

DR-11

DR-17

DR-15

DR-16

(mm)

| Item No. | Number of bits | Bit Sizes | Length | Wgt.(g) |
|---|---|---|---|---|
| DR-10 | 10 | ⊕#00 , #1 , #2 , ⊖4.5 , 6 , ⬢2.5 , 3 , 4 , 5 , 6(Ball bit) | | 97 |
| DR-11 | 10 | ⊕#00 , #1 , #2 , ⊖4.5 , 6 , ⬢1.5 , 2 , 2.5 , 3 , 4(Hex bit) | 30 | 67 |
| DR-15 | 6 | ✸/✸ T5/T6, ✸/✡ T7/T8,✡/✡ T9/T10, T15/T20, T25/T27, T30/T40 | 110 | 159 |
| DR-16 | 6 | ⊕ Double end bit…#2×65 #2×110 ⊕Step type…#0×85 #1×100 #2×150<br>⊕⊖bit……#2/⊖6×135 | | 147 |
| DR-17 | 10 | ✡…T8 , T10 , T15 , T20 , T25 , T27 , T30 , T40<br>⊕⊖ Double end bit……#1/ ⊖4.5 , #2/⊖6 (⊕⊖bits are magnetic) | 30 | 68 |

# Special Drivers

## DT/DTC/DTP/DTY SERIES — MOBILE PHONE DRIVER

Made for special screws, ideal for maintenance work of cordless phones, cellular phones, etc.

DT-06

DT-10

DT-20

### ■Torx (Hex-lobe) screws

There may be a projection in the center of screw hole for prevention of theft and tampering.
Torx (Hex-lobe) screws are used for cordless phone, transceiver, precision instruments, etc.

DTC-27

Point size (mm)

| Item No. | Point size | Shaft Length | Shaft diam. | Handle diam | O.A. Length | Main Use |
|---|---|---|---|---|---|---|
| DTC-20 | 3.6 | 90 | 4.5 7.0 | 25 | 190 | Game console/Soft |
| DTC-27 | 4.6 | 90 | 5.9 7.0 | 25 | 190 | Game console |

Applicable to tampering-proof screws (T6~T20) (mm)

| Item No. | Point size | Shaft length | Shaft diam. | Handle diam. | O.A. Length | Main Use |
|---|---|---|---|---|---|---|
| DT-02 | ✱ 0.9 T2 | 75 | 3.0 | 15 | 146 | Game console |
| DTX-04 | ✱ 1.2 TX4 | 75 | 3.0 | 15 | 146 | Smart phone/Mobile phone |
| DT-04 | ✱ 1.3 T4 | 75 | 3.0 | 15 | 146 | Smart phone/Mobile phone |
| DT-05 | ✱ 1.4 T5 | 75 | 3.0 | 15 | 146 | |
| DT-06 | ✡ 1.7 T6 | 75 | 3.0 | 15 | 146 | |
| DTX-08 | ✡ 2.0 TX8 | 75 | 3.0 | 15 | 146 | Smart phone/Mobile phone |
| DT-08 | ✡ 2.3 T8 | 75 | 3.0 | 15 | 146 | |
| DT-10 | ✡ 2.7 T10 | 100 | 5.5 | 25 | 200 | |
| DT-15 | ✡ 3.3 T15 | 100 | 5.5 | 25 | 200 | |
| DT-20 | ✡ 3.8 T20 | 100 | 5.5 | 25 | 200 | |

DAP-01

DTP-05

Point size (mm)

| Item No. | Point size | Shaft Length | Shaft diam. | Handle diam. | O.A. Length | Main Use |
|---|---|---|---|---|---|---|
| DAP-01 | 0.9 | 23 | 3.0 | 10 | 113 | Smart phone |
| DTP-03 | 1.3 | 75 | 3.0 | 15 | 146 | Mobile phone, etc |
| DTP-05 | 1.7 | 100 | 5.5 | 25 | 200 | Mobile phone, etc |

DAT-02

Point size (mm)

| Item No. | Point size | Shaft Length | Shaft diam. | Handle diam. | O.A. Length | Main Use |
|---|---|---|---|---|---|---|
| DAT-02 | ✱ 0.9 T2 | 23 | 3.0 | 10 | 113 | Game console |

DTY-03

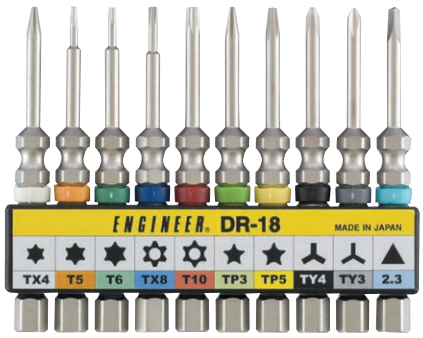
Point size (mm)

| Item No. | Point size | Shaft Length | Shaft diam. | Handle diam. | O.A. Length | Main Use |
|---|---|---|---|---|---|---|
| DTY-02 | 1.7 | 75 | 3.0 | 15 | 146 | Game/Mobile phone |
| DTY-03 | 2.4 | 75 | 3.0 | 15 | 146 | Game/Mobile phone |

## DR-18 — BIT SET FOR MOBILE PHONE

10-in-1 special driver bit set

- Easy to distinguish different color band.
- Magnet point attracting a tiny screw.




## DR-50 — TWIN WRENCH DRIVER (For Special Screws)

Ideal for sure-gripped work in restricted areas.

- Off-set twin wrench driver with 8 Torx bits and 2 ⊕/⊖ bits.
- Non-slip knurled cushion handle.
- Bullet type replaceable bit holder.

CONTENTS (mm)

| Shape of Bit | Point | Size |
|---|---|---|
| Torx bit | ✡ | 8 10 15 20 25 27 30 40 |
| ⊕⊖bit (2edges) | + − | ⊕#1/⊖4.5 ⊕#2/⊖6.0 |

Bit set is separately available DR-17

## DR-51 MASTER GRIP DRIVER (For Hex-Lobe Screws)

### Accommodates 12 different sized Torx (hex-lobe) screws.

- 6 double ended hex-lobe bits fit 12 different screw sizes from T-5 to T-40.
- Bits are made of chrome-vanadium steel.
- Cushion grip handle.

■Contents of bit set (12 sizes)

| Tip Shape | Tip Size | O.A.Length |
|---|---|---|
| ✱／✱ | T−5／T−6 | 110㎜ |
| ✱／✡ | T−7／T−8 | |
| ✡／✡ | T−9／T−10 | |
| ✡／✡ | T−15／T−20 | |
| ✡／✡ | T−25／T−27 | |
| ✡／✡ | T−30／T−40 | |

Standard accessory
- Hex lobe bit set
- Bullet-type bit holder
- Master grip

Bit set is separately available DR-15

■Applications for hex-lobe screws (mm)

| Size ✡ | T5 | T6 | T7 | T8 | T9 | T10 | T15 | T20 | T25 | T27 | T30 | T40 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Outer diam. | 1.4 | 1.7 | 2.0 | 2.3 | 2.5 | 2.7 | 3.3 | 3.8 | 4.4 | 5.0 | 5.5 | 6.6 |
| Screw adapted | — | M2 | — | M2.5 | — | M3 | M3.5 | M4 | M5 | M5 | M6 | M8 |

※Diameter is just for reference

## DJ-03・04 PLUG JACK DRIVER

- Ideal for use with radio microphone jacks.

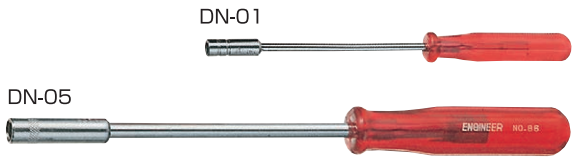
C type

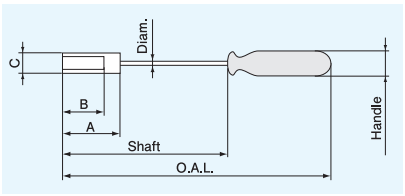
(mm)

| Item No. | Tip shape & size A | B | C | Shaft length | Shaft diam. | Handle diam. | O.A. Length |
|---|---|---|---|---|---|---|---|
| DJ-03 | — | — | 4 | 75 | 4.3 | 16 | 150 |
| DJ-04 | — | — | 6 | 75 | 4.3 | 16 | 150 |

## DN-01～12 NUT DRIVER

- Anti-abrasive point of special steel.
- Nickel-plated finish.




(mm)

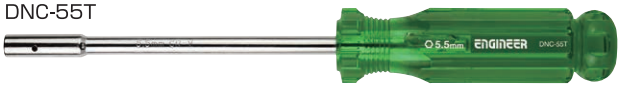
| Item No. | Size ⬣↕ | A | B | C | Shaft Length | Shaft diam. | Handle diam. | O.A. Length | Screw adapted |
|---|---|---|---|---|---|---|---|---|---|
| DN-01 | 3 | 18 | 9 | 6 | 75 | 3.0 | 11 | 130 | (1.4) |
| DN-02 | 4 | 18 | 9 | 6 | 75 | 3.0 | 11 | 130 | 2 |
| DN-03 | 4.5 | 18 | 9 | 8 | 75 | 4.0 | 13 | 145 | (2.3) |
| DN-04 | 5 | 35 | 25 | 7.5 | 75 | 4.3 | 16 | 150 | (2.6) |
| DN-05 | 5.5 | 35 | 25 | 9 | 125 | 5.5 | 18 | 210 | 3 |
| DN-06 | 6 | 35 | 25 | 9 | 125 | 5.5 | 18 | 210 | (3) |
| DN-07 | 7 | 35 | 25 | 11 | 125 | 5.5 | 18 | 210 | 4 |
| DN-08 | 8 | 35 | 25 | 12 | 125 | 5.5 | 18 | 210 | 5 |
| DN-09 | 9 | 35 | 25 | 13 | 125 | 5.5 | 18 | 210 | (5) |
| DN-10 | 10 | 35 | 25 | 14 | 125 | 6.3 | 22 | 220 | 6 |
| DN-12 | 12 | 36 | 25 | 17 | 125 | 6.3 | 22 | 220 | (6) |

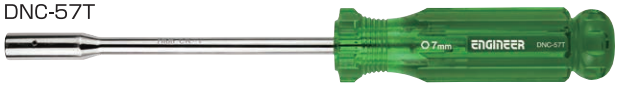
( )=old specifications

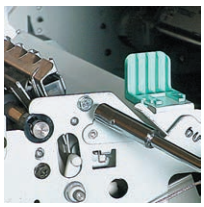
## DNC-55T・57T・65T NUT CATCHING DRIVER

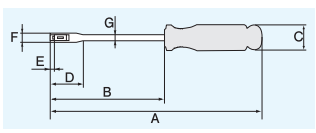
### Magnet hold type for easy operation

- Solid shaft machined from one piece of metal, for improved durability.
- Suitable for maintenance service of facsimile machine and photocopying machine.
- Sliding magnet in socket attracts and catches a hex bolt while fitting different heights of the heads.
- Material: Cr-V (shaft), Cellulose Acetate (handle)







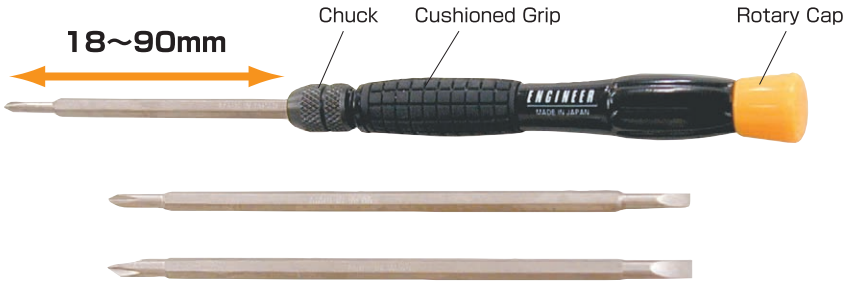

(mm)

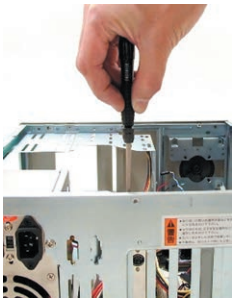
| Item No. | Size ⬣↕ | A | B | C | D | E | F | G | Wgt. |
|---|---|---|---|---|---|---|---|---|---|
| DNC-55T | 5.5 | 233 | 127 | 29 | 32 | 0.5～3.0 | 9 | 7 | 120g |
| DNC-57T | 7 | 233 | 127 | 29 | 37 | 0.5～4.3 | 11 | 7 | 125g |
| DNC-65T | 5.5 | 336 | 230 | 29 | 32 | 0.5～3.0 | 9 | 7 | 153g |

## DK-13 REVERSIBLE PRECISION DRIVER SET

- Driver's shaft length to be adjustable 18~90㎜.
- Magnetic point⊖ for hard-to-reach screws.
- ⬣4㎜ slim shaft with double-ended blade (5-in-1)
- Cushioned grip for well-fitting with fingers.
- With rotary cap for quick rotation or precise alignment work

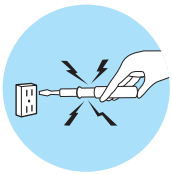
| Contents 3 pcs. (Double-ended) | |
|---|---|
| Length: 125㎜ | |
| # 00 | ⊖2.5㎜ |
| # 0 | ⊖3.0㎜ |
| # 0 | ⊖4.0㎜ |



## DKD-01 CIRCUIT TESTING DRIVER

- AC80~250V, DC100~300V
- For continuity & transmitting test
- O.A. Length: 129㎜



## DKD-03 LED CIRCUIT TESTER

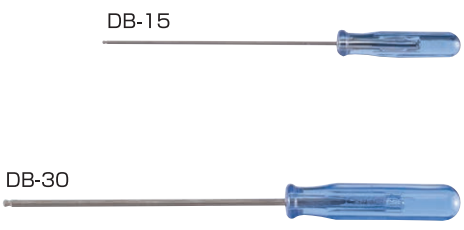
- AC100-250V (Low voltage use)
- High brightness LED built-in
- Continuity check of circuit
- Polarity check of electric outlet
- Blade (3.0 x 0.4㎜) with protective cap
- O.A. Length : 120㎜

Continuity check

## DB-15~40 BALL POINT DRIVER

- Ball head will work from an angle up to 30° off axis.
- Heat-treated alloy steel with electroless nickel plating
- Magnetized point

Ball Ended Point.




(mm)

| Item No. | Size ⬣↕ | Shaft length | Shaft diam. | Handle diam. | O.A. Length |
|---|---|---|---|---|---|
| DB-15 | 1.5 | 70 | 1.5 | 11 | 124 |
| DB-20 | 2 | 70 | 2 | 11 | 124 |
| DB-25 | 2.5 | 70 | 2.5 | 16 | 143 |
| DB-30 | 3 | 100 | 3 | 16 | 173 |
| DB-40 | 4 | 120 | 4 | 18 | 204 |

## DH-15~50 HEX DRIVER

- Heat-treated, chrome-molybdenum alloy steel blade.

(mm)

| Item No. | Size ⬣↕ | Shaft length | Handle diam. | O.A. Length |
|---|---|---|---|---|
| DH-15 | 1.5 | 90 | 11 | 144 |
| DH-20 | 2 | 90 | 11 | 144 |
| DH-25 | 2.5 | 90 | 11 | 144 |
| DH-30 | 3 | 90 | 16 | 163 |
| DH-40 | 4 | 90 | 16 | 163 |
| DH-50 | 5 | 90 | 18 | 175 |

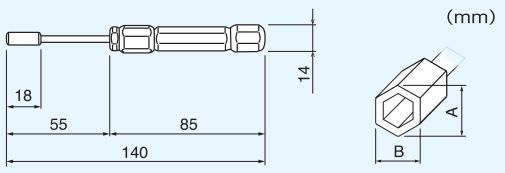
## DK-14 NUT DRIVER SET

- Set of 6 nut drivers with across flats 3~6㎜
- Magnetized sockets

Slim socket design

With rotary cap

Self-standing holder




| Materials |
|---|
| Socket:Cr-Mo<br>Shaft:Cr-V<br>Handle:Cellulose Acetate<br>Cap:PP |

(mm)

| Item No. | Across Flats | Screw Diameter | Ext. Socket Size A | Ext. Socket Size B | Wgt. |
|---|---|---|---|---|---|
| DK-14 | 3 | M1.4/M1.5 | 6.3 | 5.6 | 155g (Holder included) |
| | 4 | M2 | 6.3 | 5.6 | |
| | 4.5 | M2.3 | 8 | 7 | |
| | 5 | M2.5/M2.6 | 8 | 7 | |
| | 5.5 | M3 | 9.1 | 8 | |
| | 6 | M3.5 | 9.1 | 8 | |

## DK-01・02 HEX DRIVER SET

- Set of 4 (DK-01) and 6 (DK-02) most popular hex drivers in a vinyl pouch.

DK-01
(4pcs)
- ●DH-15
- ●DH-20
- ●DH-25
- ●DH-30

DK-02
〈6pcs〉
- ●DH-15
- ●DH-20
- ●DH-25
- ●DH-30
- ●DH-40
- ●DH-50

Screw adapted (mm)

| Size | Cap screw | Set screw |
|---|---|---|
| 1.5 | M1.6,M2 | M3 |
| 2.0 | M2.5,M2.6 | M4 |
| 2.5 | M3 | M5 |
| 3.0 | M4 | M6 |
| 4.0 | M5 | M8 |
| 5.0 | M6 | M10 |

## DK-03 BALL DRIVER SET

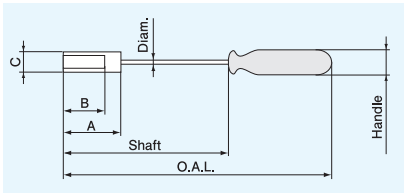
- Set of 5 most popular ball drivers in a vinyl pouch.

DK-03(5pcs)
- ●DB-15
- ●DB-20
- ●DB-25
- ●DB-30
- ●DB-40

## DK-04 NUT DRIVER SET

7-in-1 assortment of Compact-sized Nut Drivers

Contents:○3, 3.5, 4, 4.5, 5, 5.5, 6㎜




(mm)

| Size | A | B | C | Shaft length | Shaft diam. | Handle diam. | O.A. Length |
|---|---|---|---|---|---|---|---|
| 3 | 18 | 9 | 6 | 75 | 3.0 | 11 | 130 |
| 3.5 | | | 6 | | | | |
| 4 | | | 6 | | | | |
| 4.5 | | | 8 | | 4.0 | 13 | 145 |
| 5 | | | 8 | | | | |
| 5.5 | | | 9 | | | | |
| 6 | | | 9 | | | | |

## DM-20 RoHS ⊕PRECISION DRIVER SET

(mm)

| Item No. | Tip Size | Blade Diam. | O.A. Length |
|---|---|---|---|
| DM-21 | #0000 | 1.4 | 76 |
| DM-22 | #000 | 1.6 | 84 |
| DM-23 | #00 | 2 | 90 |
| DM-24 | #0 | 2.4 | 102 |
| DM-25 | #1 | 3 | 110 |
| DM-26 | #1 | 3 | 118 |

## DM-30 RoHS ⊖PRECISION DRIVER SET

(mm)

| Item No. | Tip Size | Blade Diam. | O.A. Length |
|---|---|---|---|
| DM-31 | 1.0×0.2 | 1 | 73 |
| DM-32 | 1.2×0.3 | 1.2 | 79 |
| DM-33 | 1.8×0.3 | 1.8 | 89 |
| DM-34 | 2.4×0.45 | 2.4 | 102 |
| DM-35 | 3.0×0.6 | 3 | 110 |
| DM-36 | 3.5×0.7 | 3.5 | 118 |

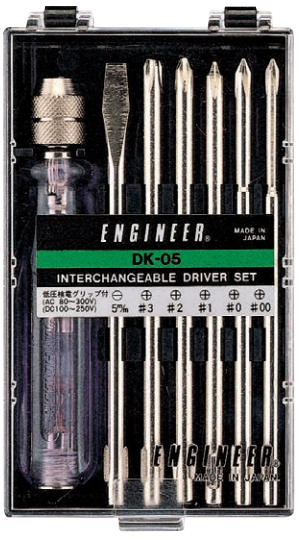
## DM-60 RoHS ⊕⊖PRECISION DRIVER SET

(mm)

| Item No. | Tip Size | Blade Diam. | O.A. Length |
|---|---|---|---|
| DM-22 | #000 | 1.6 | 84 |
| DM-24 | #0 | 2.4 | 102 |
| DM-25 | #1 | 3 | 110 |
| DM-33 | 1.8×0.3 | 1.8 | 89 |
| DM-34 | 2.4×0.45 | 2.4 | 102 |
| DM-35 | 3.0×0.6 | 3 | 110 |

## DK-05 RoHS INTERCHANGEABLE DRIVER SET

With circuit testing driver handle for low voltage.
(AC80~250V/DC100~300V)
Contents:⊖5.5㎜,⊕#00,#0,#1, #2,#3




## DK-06 RoHS INTERCHANGEABLE DRIVER SET

With circuit testing driver handle for low voltage.
(AC80~250V/DC100~300V)
Contents:⊕#1,#2,⊖3, 5.5㎜, ○5.5㎜, awl

## DK-08 RoHS INTERCHANGEABLE DRIVER SET

Contents: ○4, 5.5, 6, 7, 8,10㎜

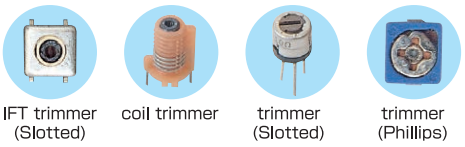
## DK-05P·06P RoHS INTERCHANGEABLE DRIVER SET

- Cost-saving package in Plastic blow-mould case
- Contents exactly same as DK-05 & DK-06

## DA-48~52 CERAMIC ALIGNMENT SCREWDRIVER

### Four-in-One Slotted Tip & Hex Core Ceramic Alignment Screwdrivers.

- Perfect non-conductive tip for high frequency trimming.
- Ideal alignment screwdriver for short-circuit prevention
- Four-in-one double ended tool.
- Pen-type design with protective caps and pocket clip.
- φ8 x 136㎜ long




(mm)

| Item No. | Size | ●Core |
|---|---|---|
| DA-48 | ⊖0.7×1.3 | 2 |
| | ⊖0.4×2.4 | 2.5 |
| DA-50 | ⊖0.35×0.8 | 2 |
| | ⊕#0 | – |
| DA-51 | ⊖0.4×0.9 | 2 |
| | ⊖0.4×1.8 | 2.5 |
| DA-52 | ⊖0.4×1.3 | 2 |
| | ⊖0.7×2.5 | 2.5 |

Tips are made of fine, durable zirconia ceramic.

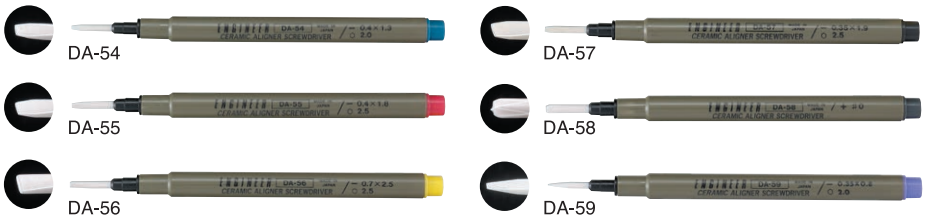
## DK-90 CERAMIC ALIGNMENT SCREWDRIVER SET

Assortment of DA-48~52 (4pcs.)

## DA-53~59 CERAMIC ALIGNMENT SCREWDRIVER

### Pen type Ceramic Alignment Driver for service and assembly line work

- Two-in-one, slotted tip and hex. core (except DA-58)
- With pen-type cap for protection and portable use
- φ9 x 135㎜ long




(mm)

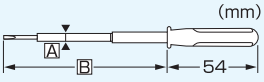
| Item No. | Size | ●Core | Bottom color |
|---|---|---|---|
| DA-53 | ⊖0.4×0.9 | 2.0 | Green |
| DA-54 | ⊖0.4×1.3 | 2.0 | Blue |
| DA-55 | ⊖0.4×1.8 | 2.5 | Red |
| DA-56 | ⊖0.7×2.5 | 2.5 | Yellow |
| DA-57 | ⊖0.35×1.95 | 2.5 | Black |
| DA-58 | ⊕#0 | – | Gray |
| DA-59 | ⊖0.35×0.8 | 2.0 | Purple |

## DA-72~79 CERAMIC ALIGNMENT SCREWDRIVER

### The DA-70 series ceramic alignment screwdrivers are designed with a long slender shaft for a wider application of alignment in remote areas.

- Fine zirconia ceramic tipped alignment screwdrivers, highly intensive, durable, and perfectlynon-conductive
- Slide-in shaft is attachable to other tools & equipment
- Long, slim design for easy access to remote areas
- Two-in-one, slotted tip and hex. core (except DA-78)

(mm)




(mm)

| Item No. | Size | ●Core | A Size | B Size | Bottom color |
|---|---|---|---|---|---|
| DA-72 | ⊖0.4×2.4 | 2.5 | φ4 | 94 | Orange |
| DA-73 | ⊖0.4×0.9 | 2.0 | φ3.5 | 95 | Green |
| DA-74 | ⊖0.4×1.3 | 2.0 | | | Blue |
| DA-75 | ⊖0.4×1.8 | 2.5 | φ4 | 94 | Red |
| DA-76 | ⊖0.7×2.5 | 2.5 | | | Yellow |
| DA-77 | ⊖0.35×1.95 | 2.5 | | | Black |
| DA-78 | ⊕#0 | – | | 92 | Gray |
| DA-79 | ⊖0.35×0.8 | 2.0 | φ3.5 | 95 | Purple |

## DA-81~88

RoHS **CERAMIC ALIGNMENT SCREWDRIVER**

### Compact designed ceramic alignment drivers. Perfect for assembly line trimming.

- Fine zirconia ceramic tipped alignment screwdrivers, highly intensive, durable, and perfectly non-conductive.
- Two-in-one function with slotted tip and hex core. (except DA-88)
- Ergonomically designed with convenient rotary cap.

IFT trimmer (Slotted) | coil trimmer | trimmer (Slotted) | trimmer (Phillips)

DA-81

DA-85

DA-82

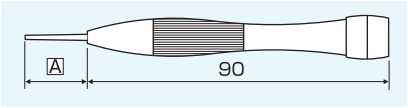
DA-86

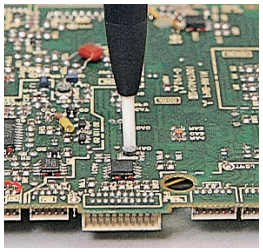
DA-83

DA-87

DA-84

DA-88



(mm)

| Item No. | Size | ●Core | ASize | BOTTOM COLOR |
|---|---|---|---|---|
| DA-81 | ⊖0.7×1.3 | 2 | 18 | Purple |
| DA-82 | ⊖0.4×2.4 | 2.5 | | Orange |
| DA-83 | ⊖0.4×0.9 | 2 | | Green |
| DA-84 | ⊖0.4×1.3 | 2 | | Blue |
| DA-85 | ⊖0.4×1.8 | 2.5 | | Red |
| DA-86 | ⊖0.7×2.5 | 2.5 | | Yellow |
| DA-87 | ⊖ 0.35×1.95 | 2.5 | | Black |
| DA-88 | ⊕#0 | – | 15 | Gray |

## DK-91

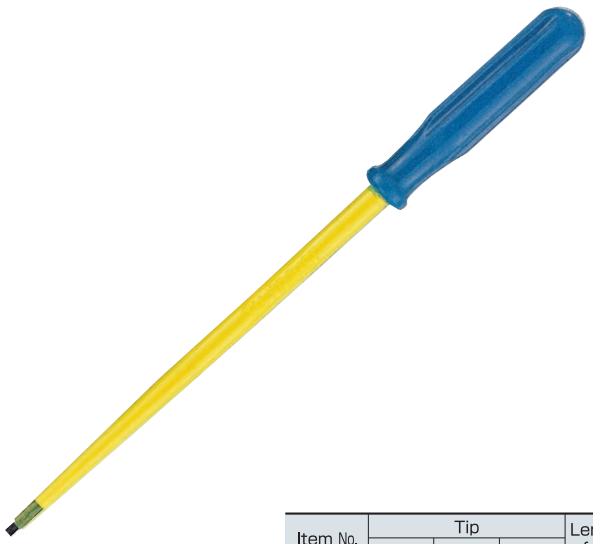
RoHS **CERAMIC ALIGNMENT SCREWDRIVER SET**

- Assortment of DA-81~88 (8pcs.)

## DA-01・02

RoHS **ALIGNMENT SCREWDRIVER**

- Alignment tool for TV, tuner, trimmer under a high frequency current.



(mm)

| Item No. | Tip | | | Length of Rod | Handle |
|---|---|---|---|---|---|
| | Material | Thick | Width | | |
| DA-01 | SK steel | 0.5 | 2.0 | 100 | φ12×54 |
| DA-02 | | | | 150 | |

## DA-40

RoHS **ALIGNMENT SCREWDRIVER**

- E.S.D. free construction (Safe from static discharge)
- Overall length: 125㎜
- Tip: ⊖2×0.5 & ⊜2×0.5㎜

ESD SAFE

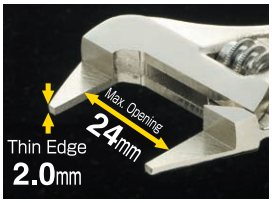
# Wrenches

# SMART MONKEY WRENCH

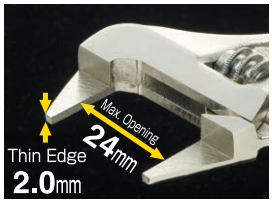
Features
- Only 2mm-thick jaws fit in a narrow area.
- Ideal for fastening coaxial (BNC) connectors, double nut, etc.
- No damage given to housing of BNC connectors
- Accurately machined finish of thin edge
- Made of Chrome Vanadium steel
- Extra long jaws and wide opening type (TWM-07 & TWM-08)

## TWM-03・07・08 SMART MONKEY WRENCH

150mm size with soft handle




150mm size

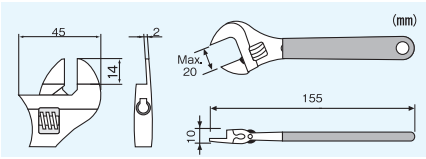


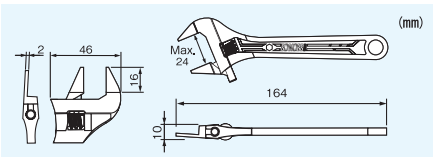

100mm size Stubby with cushioned handle(TPR)

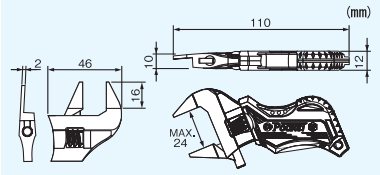
TWM-03

TWM-07

TWM-08




## VARIOUS APPLICATIONS

| Caster | Coaxial Connector | Bike, Bicycle | Double Nut | Volume Nut |
|---|---|---|---|---|
| | | | | |

## TWM-01・02・04・05 ADJUSTABLE ANGLE WRENCH

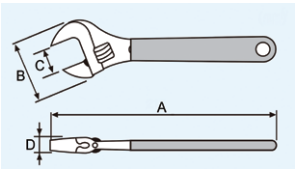
- Heavy duty adjustable wrench
- Soft grip for easy handling.

TWM-04

TWM-02

TWM-01

TWM-05




(mm)

| Item No. | Nominal Size | A | B | C | D |
|---|---|---|---|---|---|
| TWM-04 | 100 | 100 | 32 | 13 | 8 |
| TWM-01 | 150 | 155 | 45 | 20 | 10 |
| TWM-02 | 200 | 210 | 57 | 25 | 14 |
| TWM-05 | 250 | 260 | 68 | 30 | 15 |

## TS-04 MINI COMBINATION SPANNER SET

- 8-in-1 Combination spanner set with key chain
- Box-end inclined (30°)
- Thickness: 1.5㎜
- Material: Stainless steel

◆This item is individually available.

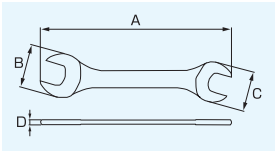
(mm)

| Item No. | Sizes | | Thick | Length |
|---|---|---|---|---|
| | Box | Open | | |
| TS-41 | 4.0 | 3.5 | 1.5 | 100 |
| TS-42 | 4.5 | 4.0 | | |
| TS-43 | 5.0 | 4.5 | | 106 |
| TS-44 | 5.5 | 5.0 | | |
| TS-45 | 6.0 | 5.5 | | |
| TS-46 | 6.5 | 6.0 | | 114 |
| TS-47 | 7.0 | 6.5 | | |
| TS-48 | 8.0 | 7.0 | | |

# DROP-FORGED WRENCH SET

Features
- 5-in-1 Set with carrying case
- Material:Cr-V Steel

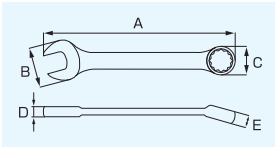
## TS-05 OPEN-END WRENCH SET




(mm)

| Size | A | B | C | D | Wgt.(g) |
|---|---|---|---|---|---|
| 3.2×5.5 | 70 | 13 | 10 | 2.4 | 7 |
| 4×5 | 70 | 13 | 10 | 2.4 | 7 |
| 6×7 | 80 | 16 | 14 | 2.7 | 12 |
| 8×9 | 90 | 20 | 18 | 3 | 17 |
| 10×11 | 100 | 23 | 21 | 3 | 23 |

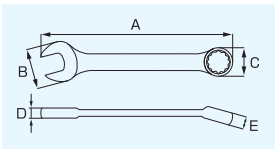
## TS-06 COMBINATION WRENCH SET




(mm)

| Size | A | B | C | D | E | Wgt.(g) |
|---|---|---|---|---|---|---|
| 3.2 | 77 | 10 | 6.5 | 3 | 3.1 | 7 |
| 3.5 | 77 | 10 | 6.5 | 3 | 3.1 | 7 |
| 4 | 77 | 10 | 7.5 | 3 | 3.1 | 7 |
| 5 | 82 | 11.8 | 9 | 3.2 | 4.1 | 9 |
| 5.5 | 82 | 11.8 | 9.5 | 3.2 | 4.1 | 9 |

## TS-07 COMBINATION WRENCH SET




(mm)

| Size | A | B | C | D | E | Wgt.(g) |
|---|---|---|---|---|---|---|
| 6 | 88 | 15 | 10.4 | 3.8 | 5 | 14 |
| 7 | 88 | 15 | 11.5 | 3.8 | 5 | 14 |
| 8 | 94 | 17.2 | 12.5 | 4.3 | 6 | 20 |
| 9 | 98 | 19.4 | 14 | 4.6 | 6.2 | 23 |
| 10 | 103 | 21.5 | 15.3 | 5.1 | 6.6 | 29 |

# TWB-01・02・04・05 BALL POINT HEX WRENCH SET

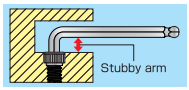
## Ball head (magnetized) works from an angle up to 30° off axis.

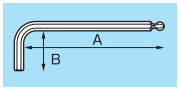
- Heat treated special alloy with electroless nickel plating
- Hardness : HRC57±2

### TWB-01 8-in-1 Standard Long Shank

### TWB-02 8-in-1 Stubby Arm, Long Shank

- Stubby arm accessible to restricted area where overhead space is tight





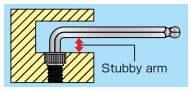

| | TWB-01 (8 pcs./set) | TWB-02 (8 pcs./set) | TWB-04 (8 pcs./set) | TWB-05 (8 pcs./set) |
|---|---|---|---|---|
| Across Flat ⬢t (mm) | A×B (mm) (Individual model) | A x B (mm) | A x B (mm) | A x B (mm) |
| ⬢1.5 | 81×14 (TWB-15) | 81×4 | 51×14 | 51×4 |
| ⬢2.0 | 96×16 (TWB-20) | 96×5 | 58×16 | 58×5 |
| ⬢2.5 | 111×18 (TWB-25) | 111×6 | 65×18 | 65×6 |
| ⬢3.0 | 127×20 (TWB-30) | 127×8 | 74×20 | 74×8 |
| ⬢4.0 | 142×25 (TWB-40) | 142×9 | 78×25 | 78×9 |
| ⬢5.0 | 160×28 (TWB-50) | 160×11 | 89×28 | 89×11 |
| ⬢6.0 | 180×32 (TWB-60) | 180×13 | 101×32 | 101×13 |
| ⬢8.0 | 198×36 (TWB-80) | 198×16 | 112×36 | 112×16 |

### TWB-04 8-in-1 Standard Arm, Short Shank

- Hand-held compact sized body in bullet holder

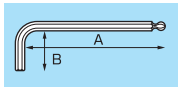
### TWB-05 8-in-1 Stubby, Short Shank

- Stubby arm accessible to restricted area where overhead space is tight
- Hand-held compact sized body in bullet holder



# TWB-13~80 BALL POINT HEX WRENCH

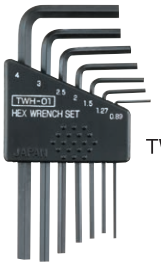
- Electroless nickel plated



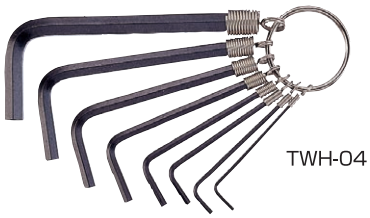

| Item No. | Across Flats ⬢mm | A×B mm |
|---|---|---|
| TWB-13 | 1.27 | 70×13 |
| TWB-15 | 1.5 | 81×14 |
| TWB-20 | 2.0 | 96×16 |
| TWB-25 | 2.5 | 111×18 |
| TWB-30 | 3.0 | 127×20 |
| TWB-40 | 4.0 | 142×25 |
| TWB-50 | 5.0 | 160×28 |
| TWB-60 | 6.0 | 180×32 |
| TWB-80 | 8.0 | 198×36 |

# TWH-01・02・04 HEX KEY WRENCH SET

## METRIC SIZE



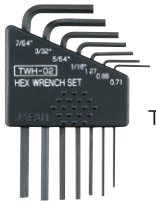

TWH-01



TWH-04

| Item No. | pcs. | Set(mm) |
|---|---|---|
| TWH-01 | 7 | 0.89, 1.27, 1.5, 2.0, 2.5, 3.0, 4.0 |
| TWH-04 | 8 | 1.5, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 8.0 |

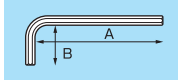
## INCH SIZE




TWH-02

| Item No. | pcs. | Set(inch) |
|---|---|---|
| TWH-02 | 7 | 0.71mm, 0.89mm, 0.05", 1/16", 5/64", 3/32", 7/64" |

# TWH-11~25 HEX KEY WRENCH




### Hex Key Wrench in metric size

| Item No. | Across Flats ⬢mm | L Size |
|---|---|---|
| TWH-11 | 1.5 | 45×14 |
| TWH-12 | 2.0 | 50×16 |
| TWH-13 | 2.5 | 56×18 |
| TWH-14 | 3.0 | 63×20 |
| TWH-15 | 4.0 | 70×25 |
| TWH-16 | 5.0 | 80×28 |
| TWH-17 | 6.0 | 90×32 |
| TWH-18 | 8.0 | 100×36 |

### Applicable Sizes Chart

| Hex Across Flats ⬢mm | Cap Screw Diam. | Set Screw Diam. |
|---|---|---|
| 1.27 | M1.4 | M2.5 |
| 1.5 | M1.6, M2 | M3 |
| 2.0 | M2.5, M2.6 | M4 |
| 2.5 | M3 | M5 |
| 3.0 | M4 | M6 |
| 4.0 | M5 | M8 |
| 5.0 | M6 | M10 |
| 6.0 | M8 | M12, M14 |
| 8.0 | M10 | M16, M18 |

### Hex Key Wrench in inch size (mm)

| Item No. | Across Flats | L Size |
|---|---|---|
| TWH-20 | (0.71) | 35×10 |
| TWH-21 | (0.89) | 38×10 |
| TWH-22 | 0.05"(1.27) | 40×11.5 |
| TWH-23 | 1/16"(1.59) | 42.5×12.5 |
| TWH-24 | 5/64"(1.98) | 45.5×13.5 |
| TWH-25 | 3/32"(2.38) | 48.5×14.5 |

# TWS-01~05 SOCKET WRENCH SET

- Socket wrench sets contain the complete combination of most needed sockets.
- Chrome molybdenum steel sockets and chrome vanadium ratchet handles.

## TWS-05

TWS-05 Contents : 52pcs. per set

| Contents | Size／Length(㎜) |
|---|---|
| Sockets ○6.3(1/4") | 4, 4.5, 5, 5.5, 6, 7, 8, 9, 10, 11, 13 |
| ○12.7(1/2") | 10, 11, 12, 13, 14, 15, 17, 19, 22, 24, 27, 30, 32 |
| Socket for 21㎜ plug | 21 Across flats |
| Hex. Wrenches | 1.5, 2, 2.5 |
| Hex. Bits | 3, 4, 5, 6, 7, 8 |
| Phillips Bits | #1, #2, #3 |
| Slotted Bits | 4, 5.5, 7 |
| Plastic Spinner Handle | 200 |
| Ratchet Handles | 125, 300 |
| Extension Shafts | 100, 125, 250 |
| T Type Sliding Handles | 115, 300 |
| Universal Joints | 35, 70 |
| Bit Adapters | 25, 30 |
| Steel Case | 450×200×55 |

## TWS-01・TWS-02

TWS-01・02 Contents : 16pcs. per set

| Contents | | Size／Length(㎜) |
|---|---|---|
| Sockets ○6.3(1/4") | TWS-01 | 5/32, 3/16, 7/32, 1/4, 9/32, 5/16 11/32, 3/8, 13/32, 7/16, 1/2 (inch) |
| | TWS-02 | 4, 4.5, 5, 5.5, 6, 7, 8 9, 10, 11, 13 (㎜) |
| Ratchet Handles | | 125 |
| Extension Shafts | | 50,150 |
| Universal Handle | | 125 |
| Cross Bar | | 115 |
| Steel Case | | 180×120×30 |

## TWS-03

TWS-03 Contents : 20pcs. per set

| Contents | Size／Length (㎜) |
|---|---|
| Sockets ○ 6.3(1/4") | 4, 4.5, 5, 5.5, 6, 7, 8 |
| ○9.5(3/8") | 9,10,12,13,14,17,19 |
| Adaptor3/8"→1/4" | 25 |
| Plastic Spinner Handle | 150 |
| Ratchet Handle | 200 |
| Extension Shaft | 75,150 |
| Socket for 21㎜ Plug | 21 Across flats |
| Steel Case | 292×145×35 |

## TWS-04

● with quick drive ring

TWS-04 Contents : 34pcs. per set

| Contents | Size／Length(㎜) |
|---|---|
| Sockets ○ 6.3(1/4") | 4, 4.5, 5, 5.5, 6, 7 8, 9,10,11,13 |
| Hex. Bits | 3, 4, 5, 6, 8, 10 |
| Phillips Bits | #1,#2,#3,#4 |
| Slotted Bits | 4, 5.5, 7 |
| Hex Wrenches | 1.5, 2, 2.5 |
| Plastic Spinner Handle | 150 |
| Ratchet Handle | 125 |
| Extension Shaft | 50, 100 |
| T Type Sliding Handle | 115 |
| Universal Joint | 35 |
| Steel Case | 200×110×30 |

# Cutting and Processing

## TR-01~04 TAPER REAMER

- For reaming holes in sheet metal, aluminum and similar material
- Material : Carbon steel

(mm)

| Item No. | Size | Blade | Length |
|---|---|---|---|
| TR-01 | φ3.0~12 | 81 | 113 |
| TR-02 | φ4.0~16 | 85 | 118 |
| TR-03 | φ5.0~20 | 95 | 130 |
| TR-04 | φ6.0~30 | 107 | 145 |

※Hardness: HRC 55±3

## TDS-01・02・03 TWIST DRILL SET

TDS-01

TDS-02

TDS-03

(mm)

| Item No. | Contents | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | 1.2 | 1.5 | 2.0 | 2.5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TDS-01 | 5 | | | ● | ● | | ● | | ● | ● | | | |
| TDS-02 | 6 | | | | | | ● | | ● | ● | ● | ● | ● |
| TDS-03 | 8 | ● | ● | ● | ● | ● | ● | ● | ● | | | | |

## TD-03~60 TWIST DRILL

(mm)

| Item No. | Size |
|---|---|
| TD-03 | 0.3 |
| TD-04 | 0.4 |
| TD-05 | 0.5 |
| TD-06 | 0.6 |
| TD-07 | 0.7 |
| TD-08 | 0.8 |
| TD-09 | 0.9 |
| TD-10 | 1.0 |
| TD-12 | 1.2 |
| TD-15 | 1.5 |

(mm)

| Item No. | Size |
|---|---|
| TD-16 | 1.6 |
| TD-18 | 1.8 |
| TD-20 | 2.0 |
| TD-25 | 2.5 |
| TD-30 | 3.0 |
| TD-32 | 3.2 |
| TD-35 | 3.5 |
| TD-40 | 4.0 |
| TD-50 | 5.0 |
| TD-60 | 6.0 |

## TT-01・02 TAP HANDLE

TT-01

TT-02

TAP HANDLE (mm)

| Item No. | Capacity | Length |
|---|---|---|
| TT-01 | M1~6.5 | 170 |
| TT-02 | M2~6.0 | 85 x 60 |

## TT-03・10~16 TAP/TAP SET

◀TT-03
CONTENTS
- Tap, 4pcs(2, 3, 4, 5㎜)
- Tap Handle(TT-02)

●Primary, Second & Finishing Taps (3pcs./set)

TAP (mm)

| Item No. | Size | Pitch |
|---|---|---|
| TT-10 | 1.4 | 0.3 |
| TT-11 | 1.7 | 0.35 |
| TT-12 | 2.0 | 0.4 |
| TT-13 | 3.0 | 0.5 |
| TT-14 | 4.0 | 0.7 |
| TT-15 | 5.0 | 0.8 |
| TT-16 | 6.0 | 1.0 |

## TP-20・23・24 MINI DRILL CHUCK/PIN VISE

- Used for various applications to drilling, tapping, piercing (handy reamer) grinding, etc.
- Featuring precision clamping chuck (collet)
- Material:Body-Brass Collet-Steel with plating

### Fitting to electric driver — TP-20

with 2 pcs. of Single head collets

### Double ended shank (Through-hole body) — TP-23

with 2 pcs. of Double-head collets

### Single end with swivel head — TP-24

with 2 pcs. of Double-head collets

Remove the swivel head to put a collet inside.

(mm)

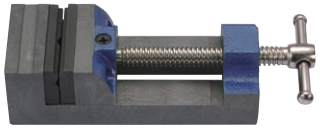
| Item No. | Collet Type | Diameter of Drill Bit | Shank | Joint | O.A. Length | Weight (g) |
|---|---|---|---|---|---|---|
| TP-23 | Double Head | 0.1~1.2 / 2.0~2.5<br>1.2~2.0 / 2.5~3.2 | φ8 | – | 105 | 35 |
| TP-24 | Double Head | 0.1~1.2 / 2.0~2.5<br>1.2~2.0 / 2.5~3.2 | φ8 | – | 95 | 40 |
| TP-20 | Single Head | 0.7~1.9<br>1.9~3.0 | – | ●6.3 | 50 | 20 |

## TV-01~27 VISE

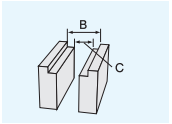
TV-04

TV-14

●With special clasp ideal for thin plate, round bar and square lumber.
●The reverse of the clasp to be used as a flat clasp.



TV-26




BENCH VISE (mm)

| Item No. | Size | Max. Opening | Clamp |
|---|---|---|---|
| TV-01 | 38 | 35 | 0~21 |
| TV-02 | 50 | 35 | 0~32 |
| TV-03 | 63 | 50 | 5~33 |
| TV-04 | 75 | 50 | 18~40 |

ANVIL VISE (mm)

| Item No. | Size | Max. Opening | Clamp |
|---|---|---|---|
| TV-11 | 38 | 35 | 0~25 |
| TV-12 | 50 | 35 | 0~34 |
| TV-13 | 63 | 45 | 20~45 |
| TV-14 | 75 | 55 | 20~45 |

YANKEE VISE (mm)

| Item No. | Size | Max. Opening | |
|---|---|---|---|
| | | B | C |
| TV-25 | 50 | 61 | 55 |
| TV-26 | 65 | 76 | 70 |
| TV-27 | 75 | 84 | 78 |

## TN-01~05 JEWELLER'S SAW

- Light weight, durable and well-balanced frame design.
- Plastic handles are shaped for perfect grip without slip.
- Saw frame is designed to be adjustable in length and capable of using even broken pieces of saw blades. (TN-04/05)

TN-01

TN-02

TN-05
〈※Frame length adjustable(TN-04/05)〉

- Blade contained
  TN-17 (standard)
  TN-13&15 (spare)
- The ideal saw blades made of SKS special steel alloy with the technological know-how.
- Entirely heat treated, best quality saw blades available.

| Item No. | Frame's Depth(mm) | Weight(g) |
|---|---|---|
| TN-01 | 125×75 | 170 |
| TN-02 | 120×125 | 190 |
| TN-03 | 110×280 | 240 |
| *TN-04 | ~150×75 | 200 |
| *TN-05 | ~150×125 | 220 |

## TN-11~18 SAW BLADES

TN-17

| Item No. | Nominal Size | Blade Thick (mm) | Notches/ 25mm | Applications |
|---|---|---|---|---|
| TN-11 | #3/0 | 0.24 | 61 | Noble metals |
| TN-12 | #2/0 | 0.26 | 56 | |
| TN-13 | #0 | 0.28 | 53.5 | Brass & thin Iron Sheet |
| TN-14 | #1 | 0.30 | 51 | |
| TN-15 | #2 | 0.34 | 43 | Copper, Shell |
| TN-16 | #3 | 0.36 | 40.5 | |
| TN-17 | #4 | 0.38 | 38 | Iron Sheet, Wood, Plastic |
| TN-18 | #5 | 0.40 | 35.5 | |

## TM-04・05 STEEL RULE

TM-04

| Item No. | Scale |
|---|---|
| TM-04 | 15cm |
| TM-05 | 30cm |

## TZ-02~04 HANDY SAW/HACK SAW

TZ-02 Adjustable blade

TZ-03

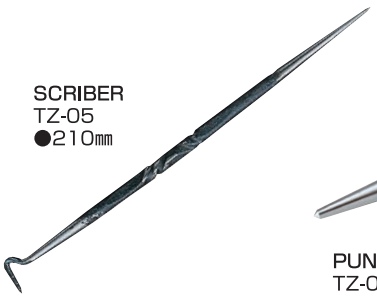
Die casting Aluminum handle

| Item No. | Blade Size | Shape | Length |
|---|---|---|---|
| TZ-02 | 250mm24notches | Plastic Grip | 260mm |
| TZ-03 | | Piping Frame | 400mm |

●Replacement blade TZ-04 (12pcs/dozen)

## TZ-05・07 SCRIBER/PUNCH

SCRIBER
TZ-05
●210mm



PUNCH
TZ-07
●100mm

## TF-06・07・10 FILE

TF-07

TF-10

| Item No. | Shape | Length(mm) | Grip |
|---|---|---|---|
| TF-06 | ▭ | 200 | Rubber |
| TF-07 | ○ | | |
| TF-10 | ⌓ | | |

## TF-11~45 JET BLACK FILE

### High performance, Rust-resistant, Black coated files

PRODUCT VIDEO

(mm)

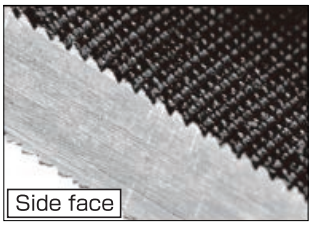
| Item No. | Shape | Coarseness | Blade length | O.A. length | Wgt (g) |
|---|---|---|---|---|---|
| TF-11 | ▭ | Second-cut | 100 | 215 | 58 |
| TF-12 | ⌓ | | | | 59 |
| TF-13 | ○ | | | | 41 |
| TF-14 | □ | | | | 52 |
| TF-15 | △ | | | | 56 |
| TF-21 | ▭ | #3 | | 200 | 21 |
| TF-22 | ⌓ | | | | 18 |
| TF-23 | ○ | | | | 16 |
| TF-24 | □ | | | | 19 |
| TF-25 | △ | | | | 17 |
| TF-31 | ▭ | Smooth-cut | | 215 | 58 |
| TF-32 | ⌓ | | | | 61 |
| TF-33 | ○ | | | | 40 |
| TF-34 | □ | | | | 55 |
| TF-35 | △ | | | | 58 |
| TF-41 | ▭ | Second-cut | 175 | 325 | 166 |
| TF-42 | ⌓ | | | | 153 |
| TF-43 | ○ | | | 300 | 109 |
| TF-44 | □ | | | 325 | 112 |
| TF-45 | △ | | | | 166 |

**ORIDINARY FILES**
Clogged with filing debris

Burr on each file tooth is eliminated before black coating, good for high and lasting performance of filing.

Sharp edge of teeth

Rust-resistant black coating




Smooth machined surface,
ideal for filing a corner without damage.
(TF-11, 21, 31, 41 only)

## TFS-07・10・20・30 JET BLACK FILE SET

● A set of Jet Black Files in a roll-up storage with a strap

TFS-10 W240×L240(mm) W50×L240×H50(mm)

(mm)

| Item No. | Shape | | | | | Brush | Coarseness | Blade length | O.A.length | Wgt (g) |
|---|---|---|---|---|---|---|---|---|---|---|
| | ▭ | ⌓ | ○ | □ | △ | | | | | |
| TFS-07 | TF-11 | TF-12 | TF-13 | – | – | – | Second-cut | 100 | 215 | 274 |
| | TF-21 | TF-22 | TF-23 | | | | Precision | 100 | 200 | |
| TFS-10 | TF-11 | TF-12 | TF-13 | TF-14 | TF-15 | ○ | Second-cut | 100 | 215 | 349 |
| TFS-20 | TF-21 | TF-22 | TF-23 | TF-24 | TF-25 | ○ | Precision | 100 | 200 | 170 |
| TFS-30 | TF-31 | TF-32 | TF-33 | TF-34 | TF-35 | ○ | Second-cut | 100 | 215 | 371 |

## TFS-01・02 FILE SET

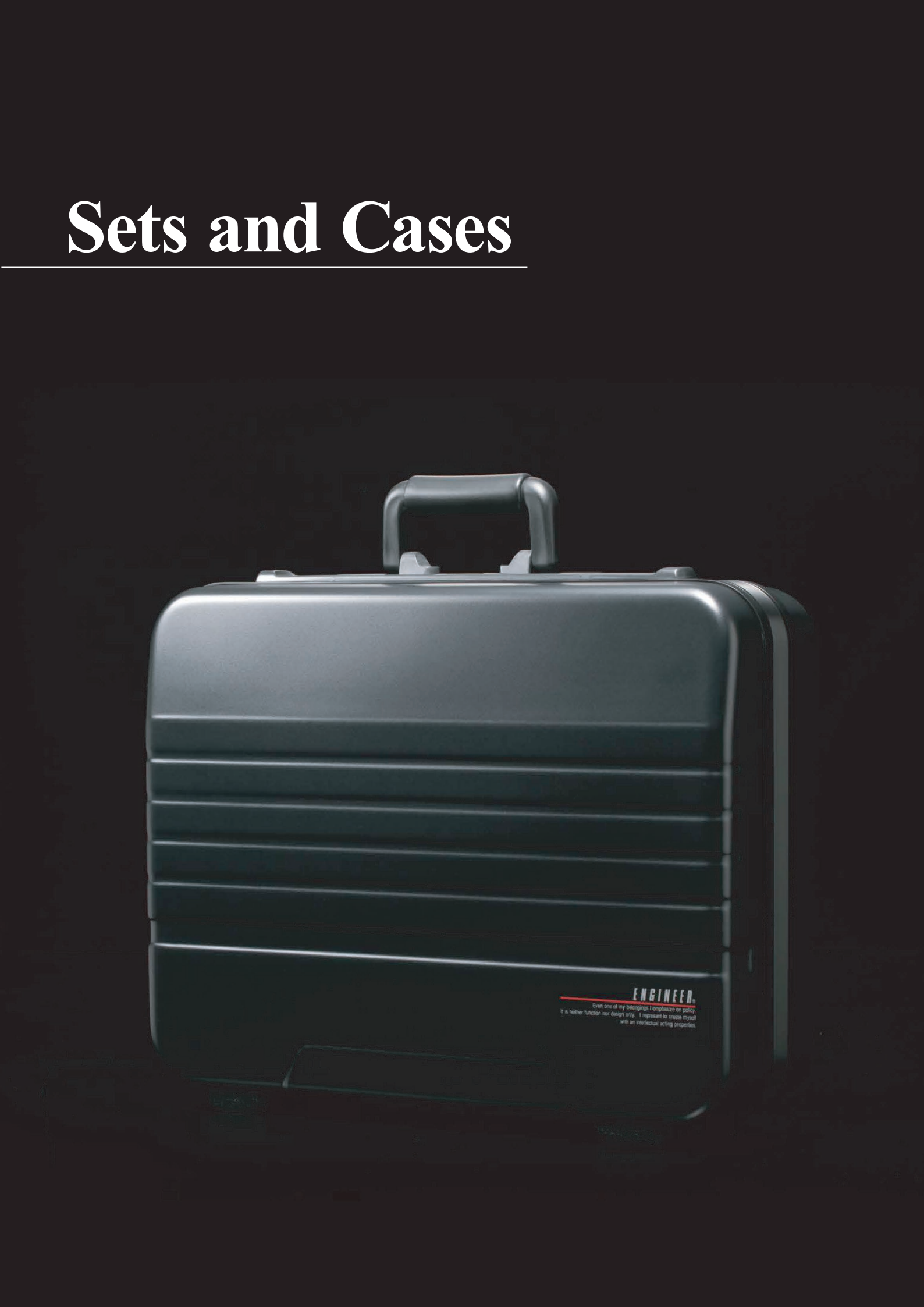
NORMAL TYPE

TFS-01

TFS-02
(TF-06~10)

| Item No. | Contents | ▭ | ⌓ | ○ | □ | △ | Length(mm) |
|---|---|---|---|---|---|---|---|
| TFS-01 | 5 | ● | ● | ● | ● | ● | 180 |
| TFS-02 | 5 | ● | ● | ● | ● | ● | 200 |

# Sets and Cases



## KS-01 MY KIT

● Pocketable & reasonable kit for daily use

■Set of 7 items

| | | |
|---|---|---|
| NSX-04 | Micro nippers | 115㎜ |
| PS-04 | Miniature pliers | 115㎜ |
| PTS-01 | Tweezers | 125㎜ |
| DM-22 | ⊕Precision driver | #3/0 |
| DM-33 | ⊖Precision driver | 1.8㎜ |

| | | |
|---|---|---|
| DS-03 | ⊕Screwdriver | #00 |
| DS-13 | ⊖Screwdriver | 2.6×75 |

●Case : 135×90×30㎜
●Weight : 0.25kg

## KS-02 MY KIT

● Simple & basic tool kit

■Set of 11 items

| | | |
|---|---|---|
| NS-03 | Micro nippers | 125㎜ |
| PS-01 | Miniature long nose pliers | 125㎜ |
| PTS-01 | Tweezers | 125㎜ |
| DS-03 | ⊕Screwdriver | #00 |
| DS-23 | ⊕Screwdriver | #0 |
| DS-33 | ⊖Screwdriver | 4×75 |

| | | |
|---|---|---|
| DH-15 | Hex driver | 1.5㎜ |
| DH-20 | Hex driver | 2.0㎜ |
| DH-25 | Hex driver | 2.5㎜ |
| | File(Half-round) | |
| | Cutter knife, S | |

●Case : 220×145×35㎜
●Weight : 0.5kg

## KS-20 MY KIT

● Pocket-sized and functional tool kit
● with Circuit testing driver handle

■Set of 12 items

| | | |
|---|---|---|
| NN-45 | Slant edge nippers | 125㎜ |
| PR-15 | Long nose pliers | 125㎜ |
| PTS-01 | Tweezers | 125㎜ |
| Circuit testing driver with spare bits | Phillips bit | ⊕#00 |
| | Phillips bit | ⊕#1 |
| | Phillips bit | ⊕#2 |
| | Slotted bit | ⊖2.5㎜ |
| | Slotted bit | ⊖3.5㎜ |
| | Slotted bit | ⊖5.5㎜ |
| | Hex nut bit | ⬡5.5㎜ |
| | Awl (square) | |
| | Cutter knife (S) | |

●Case : 160×90×35㎜
●Weight: 0.5kg

Circuit testing handle
(AC80~250V/DC100~300V)

## KS-27 MY KIT

● Pocket-sized tool kit, ideal for electronics
● with Penlight & Circuit testing driver

■Set of 13 items

| | | |
|---|---|---|
| NS-03 | Micro nippers | 125㎜ |
| PS-01 | Miniature long nose pliers | 125㎜ |
| PT-06 | Tweezers (J) | 120㎜ |
| Circuit testing driver with spare bits | Phillips bit | ⊕#1 |
| | Phillips bit | ⊕#2 |
| | Slotted bit | ⊖3.5㎜ |
| | Slotted bit | ⊖5.5㎜ |
| DM-22 | ⊕Precision driver | #000 |
| DM-24 | ⊕Precision driver | #0 |
| DM-32 | ⊖Precision driver | 1.2㎜ |
| DM-34 | ⊖Precision driver | 2.3㎜ |
| TWH-01 | Hex key wrench set | |
| | Mini penlight (AAA type) | |

●Case : 160×90×35㎜
●Weight: 0.6kg

Circuit testing handle
(AC80~250V/DC100~300V)

## KS-05 MAINTENANCE KIT

- For field maintenance service
- Environment-friendly polyester-made case (Lining: made of nylon)

■Set of 13 items

| | | |
|---|---|---|
| NK-15 | Diagonal nippers | 125㎜ |
| PR-16 | Long nose pliers | 150㎜ |
| PC-06 | Combination pliers | 150㎜ |
| DS-03 | ⊕Screwdriver | #00 |
| DS-23 | ⊕Screwdriver | #0 |
| DS-64 | ⊕Screwdriver | #2 |
| DS-33 | ⊖Screwdriver | 4×75 |
| DA-02 | Alignment screwdriver | 150㎜ |
| PTS-01 | Tweezers | 125㎜ |
| TWH-01 | Hex key wrench set | |
| SKC-30 | Soldering iron | 26W |
| SW-30 | Solder | 20g |
| | File (flat) | |

●Case : 255×150×50㎜
●Weight : 1kg

V Soldering Iron 220V~240V available by assortment of SKC-30 as per Page 71

## KSC-05 MAINTENANCE KIT

Cordless soldering iron (with Multi-holder) expands the utility of traditional tool kits.

- For field maintenance service
- Environment-friendly polyester-made case (Lining: made of nylon)

Cordless soldering iron

■Set of 14 items

| | | |
|---|---|---|
| NK-15 | Diagonal nippers | 125㎜ |
| PR-16 | Long nose pliers | 150㎜ |
| PC-06 | Combination pliers | 150㎜ |
| DS-03 | ⊕Screwdriver | #00 |
| DS-23 | ⊕Screwdriver | #0 |
| DS-64 | ⊕Screwdriver | #2 |
| DS-33 | ⊖Screwdriver | 4×75 |
| DA-02 | Alignment screwdriver | 150㎜ |
| PTS-01 | Tweezers | 125㎜ |
| TWH-01 | Hex key wrench set | |
| SK-60 | Cordless soldering iron(w/cap) | |
| SK-66 | Hot blow tip | |
| SW-30 | Solder | 20g |
| | File (flat) | |

●Case : 255×150×50㎜
●Weight : 1kg

## KS-06(KSE-06) MAINTENANCE KIT

●For field maintenance service (Complete Set)

■Set of 20 items

| | | |
|---|---|---|
| NN-46 | Slant edge nippers | 150㎜ |
| PR-16 | Long nose pliers | 150㎜ |
| PD-06 | Side cutting pliers | 150㎜ |
| PC-06 | Combination pliers | 150㎜ |
| PTS-02 | Tweezers | 125㎜ |
| DS-03 | ⊕Screwdriver | #00 |
| DS-23 | ⊕Screwdriver | #0 |
| DS-64 | ⊕Screwdriver | #2 |
| DS-13 | ⊖Screwdriver | 2.6×75 |
| DS-54 | ⊖Screwdriver | 5.5×100 |
| DN-05 | Nut driver | 5.5㎜ |
| DA-02 | Alignment screwdriver | 150㎜ |
| SKC-40 | Soldering iron | 32W |
| SW-30 | Solder | 20g |
| TWM-02 | Adjustable angle wrench | 200㎜ |
| | File (flat) | |
| | File (round) | |
| TM-04 | Steel rule | 150㎜ |
| TWH-04 | Hex key wrench set (8 pcs.) | |
| | Cutter knife (S) | |

●Case : 305×220×45㎜
●Weight : 2kg

◇ KSE-06 Case only

V Soldering Iron 220V~240V available by assortment of SKC-30 as per Page 71

## KSC-06 MAINTENANCE KIT

Cordless soldering iron (with Multi-holder) expands the utility of traditional tool kits.

●For field maintenance service (Complete Set)

Cordless soldering iron

■Set of 21 items

| | | |
|---|---|---|
| NN-46 | Slant edge nippers | 150㎜ |
| PR-16 | Long nose pliers | 150㎜ |
| PD-06 | Side cutting pliers | 150㎜ |
| PC-06 | Combination pliers | 150㎜ |
| PTS-02 | Tweezers | 125㎜ |
| DS-03 | ⊕Screwdriver | #00 |
| DS-23 | ⊕Screwdriver | #0 |
| DS-64 | ⊕Screwdriver | #2 |
| DS-13 | ⊖Screwdriver | 2.6×75 |
| DS-54 | ⊖Screwdriver | 5.5×100 |
| DN-05 | Nut driver | 5.5㎜ |
| DA-02 | Alignment screwdriver | 150㎜ |
| SK-60 | Cordless soldering iron(w/cap) | |
| SK-66 | Hot blow tip | |
| SW-30 | Solder | 20g |
| TWM-02 | Adjustable angle wrench | 200㎜ |
| | File (flat) | |
| | File (round) | |
| TM-04 | Steel rule | 150㎜ |
| TWH-04 | Hex key wrench set (8 pcs.) | |
| | Cutter knife (S) | |

●Case : 305×220×45㎜
●Weight : 2kg

## KS-03(KSE-03) TOOL KIT

● General electronic & job training use

■Set of 12 items

| | | |
|---|---|---|
| NN-45 | Slant edge nippers | 125㎜ |
| PR-16 | Long nose pliers | 150㎜ |
| DS-03 | ⊕Screwdriver | #00 |
| DS-23 | ⊕Screwdriver | #0 |
| DS-64 | ⊕Screwdriver | #2 |
| DS-33 | ⊖Screwdriver | 4×75 |
| DA-01 | Alignment screwdriver | 100㎜ |
| PTS-01 | Tweezers | 125㎜ |
| | Soldering iron | 30W |
| | Solder | |
| | Solder paste | |
| | Soldering stand | |

●Case : 240×115×45㎜
●Weight : 0.8kg

KSE-03 Case only

Ⓥ Soldering Iron 220V~240V available by assortment of SK-14 as per Page 71

## KS-04(KSE-04) TOOL KIT

● General electronic & job training use
● Environment-friendly polyester-made case (Lining: made of nylon)

■Set of 14 items

| | | | | | |
|---|---|---|---|---|---|
| NN-45 | Slant edge nippers | 125㎜ | DN-05 | Nut driver | 5.5㎜ |
| PR-16 | Long nose pliers | 150㎜ | PTS-02 | Tweezers | 125㎜ |
| PD-06 | Side cutting pliers | 150㎜ | SKC-30 | Soldering iron | 26W |
| DS-03 | ⊕Screwdriver | #00 | | Solder | |
| DS-23 | ⊕Screwdriver | #0 | | Solder Paste | |
| DS-64 | ⊕Screwdriver | #2 | | Soldering stand | |
| DS-33 | ⊖Screwdriver | 4×75 | | Cutter knife (S) | |

●Case : 255×150×50㎜
●Weight : 1.1kg

KSE-04 Case only

Ⓥ Soldering Iron 220V~240V available by assortment of SKC-30 as per Page 71

## KSC-04 TOOL KIT

Cordless soldering iron (with Multi-holder) expands the utility of traditional tool kits.

● General electronic & job training use
● Environment-friendly polyester-made case (Lining: made of nylon)

■Set of 15 items

| | | | | | |
|---|---|---|---|---|---|
| NN-45 | Slant edge nippers | 125㎜ | DS-33 | ⊖Screwdriver | 4×75 |
| PD-06 | Side cutting pliers | 150㎜ | SK-60 | Cordless soldering iron(w/cap) | |
| PR-16 | Long nose pliers | 150㎜ | SK-66 | Hot blow tip | |
| PTS-02 | Tweezers | 125㎜ | | Solder | |
| DN-05 | Nut driver | 5.5㎜ | | Solder Paste | |
| DS-03 | ⊕Screwdriver | #00 | | Soldering stand | |
| DS-23 | ⊕Screwdriver | #0 | | Cutter knife (S) | |
| DS-64 | ⊕Screwdriver | #2 | | | |

●Case : 255×150×50㎜
●Weight : 1.1kg

## KS-08 ELECTRONICS KIT

●For electronics, PC maintenance, PC modification, etc.
●Environment-friendly polyester-made case (Lining: made of nylon)

■Set of 21 items

| | | |
|---|---|---|
| NS-03 | Micro nippers | 125㎜ |
| PS-01 | Miniature long nose pliers | 125㎜ |
| PTS-01 | Tweezers | 125㎜ |
| SS-01 | Solder sucker | |
| SS-08 | IC extractor | |
| SS-22 | Spring hook | |
| | Soldering iron | 30W |
| SL-02 | Inspection mirror | |
| SWU-04 | Solder wick | 2.8㎜ |
| | Solder (1m) | |
| TWH-01 | Hex key wrench set | |
| DN-05 | Nut driver | 5.5㎜ |
| DM-22 | ⊕Precision driver | #000 |
| DM-33 | ⊖Precision driver | 1.8㎜ |
| Circuit testing driver with spare bits | Phillips bit | ⊕#00 |
| | Phillips bit | ⊕#0 |
| | Phillips bit | ⊕#1 |
| | Phillips bit | ⊕#2 |
| | Slotted bit | ⊖3.5㎜ |
| | Cutter knife (S) | |
| | File (half-round) | |

●Case : 255×150×50㎜
●Weight : 1.0kg

## KS-14 ELECTRONICS KIT

●For electronics, office automation maintenance, etc.
●Environment-friendly polyester-made case (Lining: made of nylon)

■Set of 18 items

| | | |
|---|---|---|
| NS-03 | Micro nippers | 125㎜ |
| PR-16 | Long nose pliers | 150㎜ |
| PTS-01 | Tweezers | 125㎜ |
| PZ-56 | Screw removal pliers | 175㎜ |
| DP-03 | Pro-use driver | ⊕#00 |
| DP-24 | Pro-use driver | ⊕#0 |
| DP-64 | Pro-use driver | ⊕#2 |
| DP-34 | Pro-use driver | ⊖4.3㎜ |
| DN-05 | Nut driver | 5.5㎜ |
| | Mini spanner | 5.5×6 |
| | Mini spanner | 8×9 |
| TM-04 | Steel rule | 150㎜ |
| TZ-05 | Scriber | 220㎜ |
| TWH-01 | Hex key wrench set | |
| TWM-03 | Smart monkey wrench | 150㎜ |
| SL-02 | Inspection mirror | |
| | Cutter knife (S) | |
| | File (half-round) | |

●Case : 250×180×50㎜
●Weight : 1.3kg

## KS-28(KSE-28) TOOL KIT

### Basic assortment of general purpose tools and free space in mesh pocket for your own use

- Soft touch EVA plastic case with double panel
- A4 size pocket is provided on the reverse of upper panel which is capable of documents, measuring instrument or notebook P.C. (max. 40mm thick)
- Tool panel is easily detachable with hook, which is convenient for field work.

330mm wide pocket on the reverse

■KS-28 Set of 22 items

| | | |
|---|---|---|
| NN-46 | Slant edge nippers | 150㎜ |
| PR-16 | Long nose pliers | 150㎜ |
| PD-06 | Side cutting pliers | 150㎜ |
| PZ-55 | Screw removal pliers | 150㎜ |
| PW-08 | Pump pliers | 200㎜ |
| PTS-01 | Tweezers | 125㎜ |
| DA-01 | Alignment driver | 100㎜ |
| DKD-01 | Circuit testing driver | |
| DN-05 | Nut driver | 5.5㎜ |
| DG-05 | ⊕/⊖Cushion driver | #2/⊖6 |
| DG-21 | ⊖Mini soft driver | 3×100㎜ |
| DG-24 | ⊕Mini soft driver | #0×100㎜ |

| | | |
|---|---|---|
| SKC-30 | Soldering iron | 26W |
| SS-05 | Tip cleaner with stand | |
| SW-30 | Solder | 20g |
| | File (half-round) | |
| | Measuring tape | 2m |
| TS-05 | Open-End wrench set | |
| TWH-01 | Hex key wrench set | |
| TWM-02 | Adjustable angle wrench | 200㎜ |
| | Cutter knife (S) | |
| | Vinyl tape | |

●Case : 405×306×100㎜ (Ext.)
380×276×73㎜ (Int.)
●Weight : 3.7kg

KSE-28 Case and panel 1.8kg

V Soldering Iron 220V~240V available by assortment of SKC-30 as per Page 71

OPTION Cordless Soldering Iron can be assorted instead of SKC-30 at customer's option.

## KS-11(KSE-11)

## TOOL KIT

### Field service and maintenance of production lines & machinery

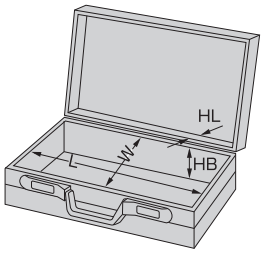
KS-11(Tool kit)
KSE-11(Case and panel only) - Net 5 kg

■Set of 60 items

| | | |
|---|---|---|
| NS-03 | Micro nippers | 125mm |
| NN-46 | Slant edge nippers | 150mm |
| PS-01 | Miniature pliers | 125mm |
| PR-46 | Needle nose pliers | 150mm |
| PD-06 | Side cutting pliers | 150mm |
| PC-06 | Combination pliers | 150mm |
| PW-10 | Pump pliers | 250mm |
| PA-01 | Wire pliers | |
| PT-01 | Tweezers | 125mm |
| PH-03 | Lock holder | 150mm |
| PH-33 | Electronic snips | 145mm |
| DS-03 | ⊕Screwdriver | #00 |
| DS-24 | ⊕Screwdriver | #0 |
| DS-44 | ⊕Screwdriver | #1 |
| DS-64 | ⊕Screwdriver | #2 |
| DS-13 | ⊖Screwdriver | 2.6×75 |
| DS-34 | ⊖Screwdriver | 4×100 |
| DA-02 | Alignment driver | 150mm |
| DM-22 | ⊕Precision driver | #3/0 |
| DM-23 | ⊕Precision driver | #00 |
| DM-33 | ⊖Precision driver | 1.8mm |
| DM-34 | ⊖Precision driver | 2.3mm |
| DZ-24 | Screw-holding driver | #0 |
| DG-12 | Long pro-grip driver | #2×250mm |
| DN-02 | Nut driver | 4mm |
| DN-04 | Nut driver | 5mm |
| DN-05 | Nut driver | 5.5mm |
| DN-07 | Nut driver | 7mm |
| DN-08 | Nut driver | 8mm |
| DR-04 | Ratchet stubby driver set | |
| DZ-08 | Offset driver set | |
| TWM-02 | Adjustable angle wrench | 200mm |
| TS-05 | Mini spanner set (5 pcs.) | |
| TR-03 | Taper reamer | 20mm |
| | Hammer | |
| | Measuring tape | 2m |
| TWH-01 | Hex key wrench set | |
| TWS-02 | Socket wrench set | |
| TFS-02 | File set | |
| TZ-02 | Handy saw | |
| SKC-40 | Soldering iron | 32W |
| SW-31 | Solder | 150g |
| SS-05 | Tip cleaner with stand | |
| SS-02 | Solder sucker | |
| SS-08 | IC Extractor | |
| SS-21 | Spring hook | |
| SS-22 | Spring hook | |
| SL-03 | Inspection mirror | |
| TP-35 | Magnetic pick-up tool | |
| KP-03K | Parts box | |
| SWU-04 | Solder wick | 2.8mm |
| | Vinyl tape | |
| | Pen light | |
| | Cutter knife (L) | |
| ZC-19 | Oiler | 20cc |
| | Flat brush | |
| | Poly bottle | 50cc/2pcs. |
| | Poly bottle | 100cc/2pcs. |
| | Silicon cloth | |
| SD-10 | Digital Multimeter | |

●Aluminum Case :
455×330×176 (Ext.)
440×315×168 (Int.)
●Weight : 12kg

Ⓥ Soldering Iron 220V~240V available by assortment of SKC-30 as per Page 71




H=HL+HB

## KS-12

## ATTACHE TOOL KIT

### Stylish and functional tool kit

■Set of 25 items

| | | |
|---|---|---|
| NS-03 | Micro nippers | 125mm |
| PS-01 | Miniature pliers | 125mm |
| PD-06 | Side cutting pliers | 150mm |
| PTS-01 | Tweezers | 125mm |
| DA-51 | Ceramic alignment driver | |
| DG-21 | ⊖Mini soft driver | 3×0.4 |
| DG-22 | ⊕Mini soft driver | #00 |
| DG-24 | ⊕Mini soft driver | #0 |
| DG-01 | ⊖Pro grip driver | 5.5×0.7 |
| DG-04 | ⊕Pro grip driver | #2 |
| DST-05 | ⊕⊖Reversible stubby driver | #2/⊖6.3 |
| SD-10 | Digital multimeter | |
| SKC-30 | Soldering iron | 26W |
| SS-02 | Solder sucker | |
| SS-08 | IC extractor | |
| SS-10 | PCB connector extractor | |
| SW-30 | Solder | 20g |
| TWM-03 | Smart monkey wrench | 150mm |
| TWH-04 | Hex key wrench set | |
| TS-05 | Mini spanner set (5 pcs.) | |
| TM-04 | Steel rule | 150mm |
| PA-06 | Wire stripper | |
| SWU-04 | Solder wick | 2.8mm |
| SL-50 | Pocket loupe | |
| | Cutter knife (S) | |

●Dividing plate for soldering box & tester

(mm)

| Item No. | L | W | H | HL | HB | Weight(kg) | Color |
|---|---|---|---|---|---|---|---|
| KS-12 | 465 (450) | 345 (320) | 129 (105) | (35) | (70) | 6 | Black |

( ): Internal size

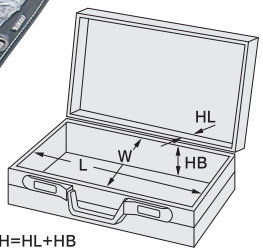
Ⓥ Soldering Iron 220V~240V available by assortment of SKC-30 as per Page 71

## KSE-12 ATTACHE CASE WITH EMPTY PANEL

- Neatly designed for a stylish appearance
- Incorporating empty tool panel and document pocket

Dividing panel is easily detachable with Velcro.

●Speedy and easy attachment of empty panel




H=HL+HB

(mm)

| Item No. | L | W | H | HL | HB | Weight(kg) | Color |
|---|---|---|---|---|---|---|---|
| KSE-12 | 465 (450) | 345 (320) | 129 (105) | (35) | (70) | 3.3 | Black |

( ): Internal size

## KA-22 ATTACHE CASE(WIDE TYPE)

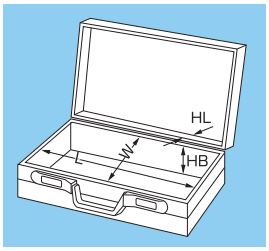
### Attractive and functional multipurpose case

- Light-weighted & durable case made of ABS resin
- Nylon 100% (Hypalon) interior finish for more than just business
- Tool panel (option) can be hidden from free space by dividing plate.
- Comes with multipurpose pockets

**INSIDE**
Besides business use, add functional and fashionable pockets and storage pouch to meet multipurpose requirements.
Offer clear see-through mesh type pocket at the back of dividing plate.

**BODY**
This handsome case is molded of ABS plastic with simple form line, lightweight and durable construction. Suggest a new field of use and produce the joy in possession of the case.

**DIAL LOCK**
Add security with combination dial lock and two pushing locks.
Open easily by sliding outside the 2 buttons.




(Remark)
The dimensions indicate the internal sizes but subject to within a tolerance allowed.
H=HL+HB

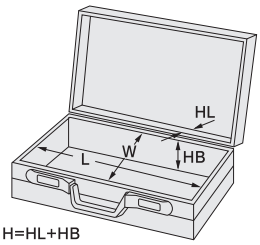
**HANDLE**
Designed to fit the hand and reduce hand fatigue.

(mm)

| Item No. | L | W | H | HL | HB | Weight(kg) | Color |
|---|---|---|---|---|---|---|---|
| KA-22 | 450 | 320 | 105 | 35 | 74 | 2.4 | Black |

## KA-15

RoHS **ABS ATTACHE CASE**




H=HL+HB

(mm)

| Item | L | W | H | HL | HB | Weight(kg) |
|---|---|---|---|---|---|---|
| KA-15 | 440 | 320 | 92 | 32 | 60 | 2 |

## KA-50・51

RoHS **ALUMINIUM CASE**

- Featuring a matt surface in silver color
- Streamline appearance

KA-50

KA-51

●Durable handle

Internal Size (mm)

| Item | L | W | H | HL | HB | Weight(kg) |
|---|---|---|---|---|---|---|
| KA-50 | 440 | 320 | 105 | 40 | 65 | 2.6 |
| KA-51 | 440 | 320 | 130 | 50 | 80 | 2.8 |

## KA-57

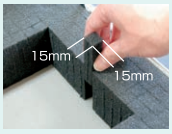
RoHS **ALUMINIUM CASE**

- Stylish case coming with shock-proof sponges and tool panel

Stylish round corner

Tool panel affixed to shell with Velcro and detachable

Wavy formed urethane (upper shell) and cut sponges (body) protect contents such as camera, camcorder, etc.




Each cut sponge (15x15mm) can be removed so as to fit the size and shape of content.

■External dimensions (Internal dimensions) (mm)

| Item No. | L | W | H | HL | HB | Tool Panel (single) | Weight(kg) |
|---|---|---|---|---|---|---|---|
| KA-57 | 450(435) | 330(314) | 135(120) | (52) | (68) | 420×300 | 4.1 |

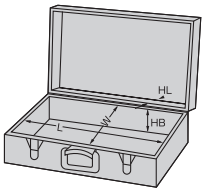
## KA-30・42~44 ALUMINIUM CASE

- Heavy-duty type
- Made of 1.5mm-thick rugged aluminium of anodized finish
- All the corners reinforced with aluminum frame and rivets
- Case inside in melton finish

●Durable handle

CUSTOM Water-repellent, anti-static or cleanroom type is available at option.

KA-44 is originally equipped with casters. Other models can be equipped with casters at option.




(Remark)
The dimensions indicate the internal sizes but subject to within a tolerance allowed.
H = HL+HB

| Internal Size (mm) | | | | | | (kg) | |
|---|---|---|---|---|---|---|---|
| Item No. | L | W | H | HL | HB | Wgt. | Max.Load |
| KA-30 | 440 | 315 | 165 | 55 | 110 | 4.3 | 15 |
| KA-42 | 540 | 320 | 160 | 50 | 110 | 4.6 | |
| KA-43 | 590 | 410 | 205 | 50 | 155 | 6.2 | 20 |
| KA-44 | 650 | 450 | 197 | 60 | 137 | 7.4 | |

## KAC-30・42 ALUMINIUM CASE FOR CLEANROOM

- Constructed of aluminum sheets without any accessories nor material generating dust
- KAC-42 is ideal for storage of precision instruments in cleanroom

FOR CLEAN ROOM

●Durable handle

| Internal Size (mm) | | | | | | (kg) | |
|---|---|---|---|---|---|---|---|
| Item No. | L | W | H | HL | HB | Wgt. | Max.Load |
| KAC-30 | 440 | 315 | 165 | 55 | 110 | 4 | 15 |
| KAC-42 | 540 | 320 | 160 | 50 | 110 | 4.7 | |

## KA-54 ALUMINIUM ATTACHE CASE

- Featuring a glossy surface in black color Streamline appearance

(mm)

| Item | L | W | H | HL | HB | Weight(kg) |
|---|---|---|---|---|---|---|
| KA-54 | 440 | 320 | 130 | 50 | 80 | 2.8 |

## KP-01~03(KP-95~97) PARTS BOX

### Durable transparent box, ideal for transporting, classification and storage of small parts.

- Lightweight, compact and durable component box made of polypropylene
- Interchangeable dividing plates can be configured to create storage space
- See-through, transparent box.
- With article labels.
- Optional dividing plate set
  KP-95 : 6 pcs./set adaptable to KP-01
  KP-96 : 6 pcs./set adaptable to KP-02
  KP-97 : 6 pcs./set adaptable to KP-03

●KP-01
Ext. Size ： 157×102×42mm
4 pcs. of dividing plates included

●KP-02
Ext. Size ： 207×145×40mm
12 pcs. of dividing plates included

●KP-03
Ext. Size ： 255×190×40mm
16 pcs. of dividing plates included

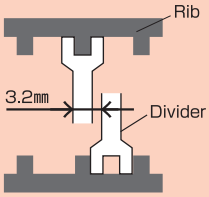
## KP-02K•03K(KP-96•97) PARTS BOX (HEAVY DUTY TYPE)

### Heavy duty transparent parts box, ideal for classification and storage

- Super clear transparent lid owing to shock-proof polycarbonate resin
- Micro-rib system of divider setting
- Material: Lid – Polycarbonate
  Body & Divider – Polypropylene
  Latch – ABS resin
- Optional dividing plate set
  KP-96 : 6 pcs./set adaptable to KP-02K
  KP-97 : 6 pcs./set adaptable to KP-03K

●KP-02K
Ext. Size ： 205×145×40mm
18 pcs. of dividers included

●KP-03K
Ext. Size ： 255×190×40mm
32 pcs. of dividers included




2 patterns of interchangeable divider setting are possible to adjust interval of partition at every 3.2mm

## KP-04 MINIATURE BOX

- Most suitable for electronic parts and other small components.
- Compact, lightweight and portable.
- Material: Styrene resin(lid), Polypropylene (body).
- External Size:120×92×25mm

## KP-51•52 IC STORAGE BOX

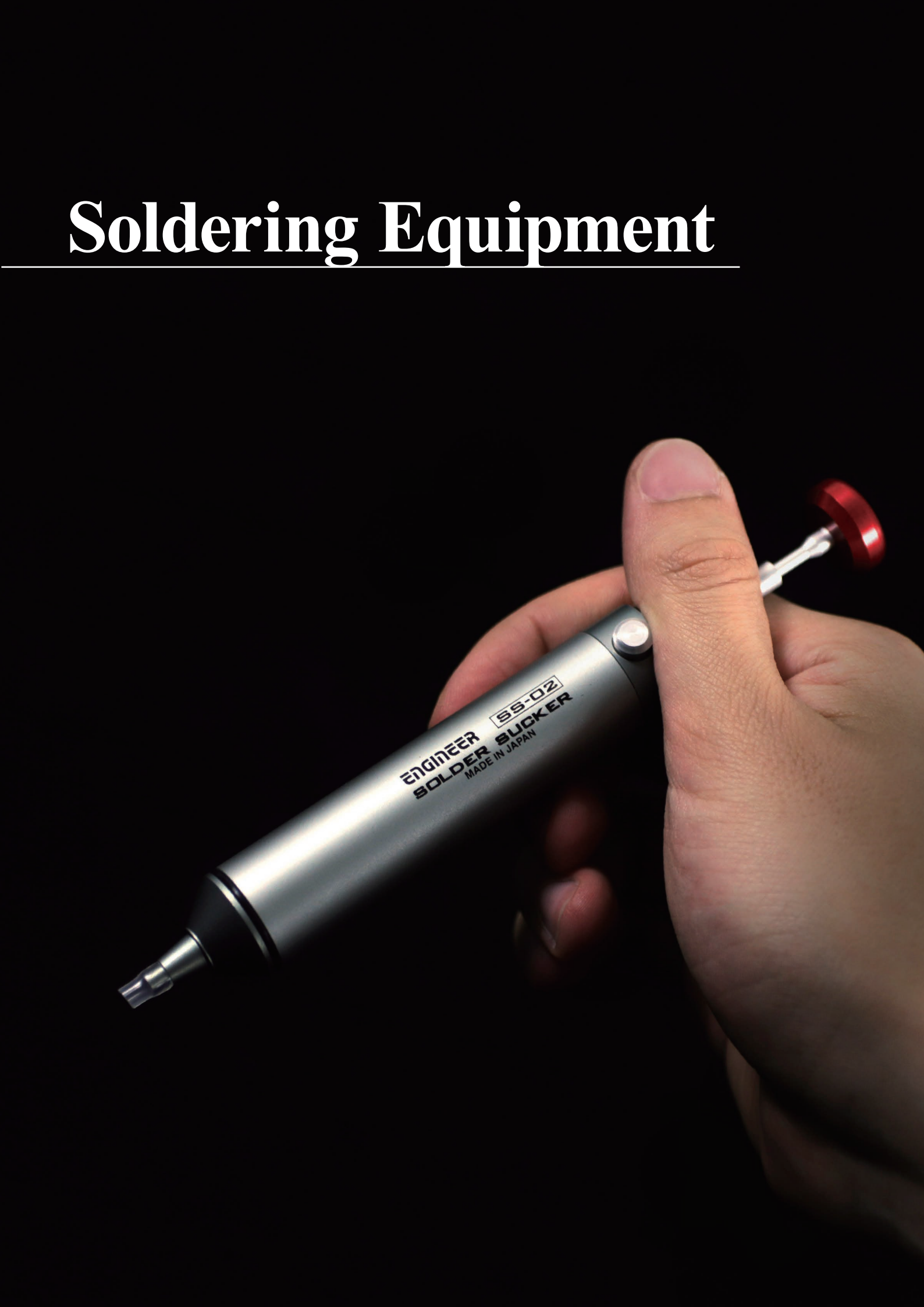
- Compact IC storage box made of anti-static plastic body
- Comes with 10mm-thick high density conductive foam
  (Surface resistivity less than $5x10^6\Omega$)

ESD SAFE

KP-51
- External Size : 80×135×25
- Internal Size : 75×130×19

KP-52
- External Size : 230×145×28
- Internal Size : 219×134×22

# Soldering Equipment



# SK-30/40SERIES SOLDERING IRON

## Excellent built-in ceramic heater. Compact & light-weight design suitable for accurate soldering operations

- High efficient ceramic heater permits quick heat-up, enabling soldering operation only in about 1 minute.
- The use of a small connector connecting heater and power cord permits exchange of heaters with one touch.
- Short length from grip to tip for easy operation
- Screw type tip permits easy exchange of tips.
- Perfect for accurate soldering operation with sharp soldering tip (long life and non corrosive).
- With heat-resistance cap for handy storage after use. (SKC-30/31/32/40/41)

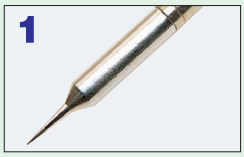
■SK-30~41
Grip made of reinforced glass fiber resin.

SK-30

■SKC-30~41
With Heat-Resistant Cap.

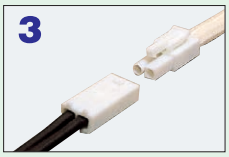
SKC-32

### SK-30/40SERIES Three functions



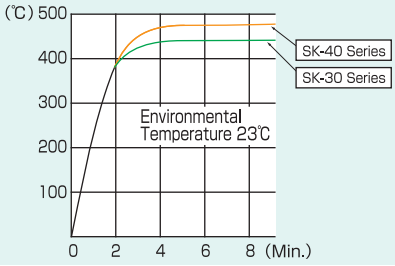

Sharp iron tip
(Long life & durable type)

Special stainless steel inside tip for prevention against sticking and loosening of the tip




Plug-in type heater for instant replacement

■Time/Temp. Chart




## SK-30 SERIES

■Specification

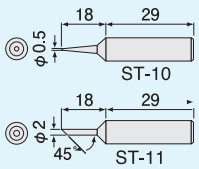
| Item No. | Max.Tip Temp. | Watt | Tip | L'gth | Wgt(g) | Rated Voltage | Insulation Resistance |
|---|---|---|---|---|---|---|---|
| SK-30 | 400℃ | 26W | ST-10 | 202㎜ | 130 | 100V | 100MΩ |
| SKC-30 | | | | | | | |
| SKE-30 | | | | | | | |
| SK-31 | 440℃ | | ST-11 | | | | |
| SKC-31 | | | | | | | |
| SKE-31 | | | | | | | |
| SK-32 | 390℃ | | ST-14 | 204㎜ | | | |
| SKC-32 | | | | | | | |

■ SKC with Heat-Resistant Cap. ■ SKE with 3-pin plug.

V 220V 230V 240V are also available. ☞REF. Page 71

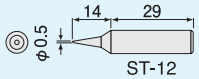
Caution Ceramic heater is not elastic and may be broken by excess shock. Please refrain from beating and wrenching.

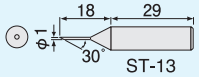
■REPLACEMENT PARTS (㎜)

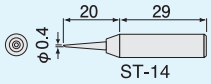


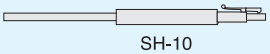







| Item No. | Description |
|---|---|
| ST-10 | Tip |
| ST-11 | Tip |
| ST-12 | Tip |
| ST-13 | Tip |
| ST-14 | Tip |
| SH-10 | Heater(100V) |

## SK-40 SERIES

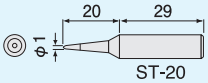
■Specification

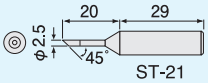
| Item No. | Max.Tip Temp. | Watt | Tip | L'gth | Wgt(g) | Rated Voltage | Insulation Resistance |
|---|---|---|---|---|---|---|---|
| SK-40 | 450℃ | 32W | ST-20 | 204㎜ | 130 | 100V | 100MΩ |
| SKC-40 | | | | | | | |
| SK-41 | 470℃ | | ST-21 | | | | |
| SKC-41 | | | | | | | |

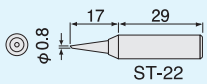
■ SKC with Heat-Resistant Cap.

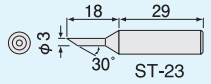
Caution Ceramic heater is not elastic and may be broken by excess shock. Please refrain from beating and wrenching.

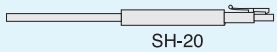
■REPLACEMENT PARTS (㎜)




| Item No. | Description |
|---|---|
| ST-20 | Tip |
| ST-21 | Tip |
| ST-22 | Tip |
| ST-23 | Tip |
| SH-20 | Heater(100V) |

# SK-30 SERIES

## SOLDERING IRON

Excellent built-in ceramic heater. Compact & light-weight design suitable for accurate soldering operations

- High efficient ceramic heater permits quick heat-up, enabling soldering operation only in about 1 minute.
- The use of a small connector connecting heater and power cord permits exchange of heaters with one touch.
- Short length from grip to tip for easy operation
- Screw type tip permits easy exchange of tips.
- Perfect for accurate soldering operation with sharp soldering tip (long life and non corrosive).
- With heat-resistance cap for handy storage after use. (SKC-30/31)

■SK-30~31
Grip made of reinforced glass fiber resin.

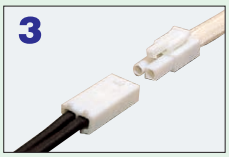
■SKC-30~31
With Heat-Resistant Cap.

■SKE-30~31
With 3-Pin plug to avoid damage of elements caused by electric leakage.

### SK-30SERIES Three functions

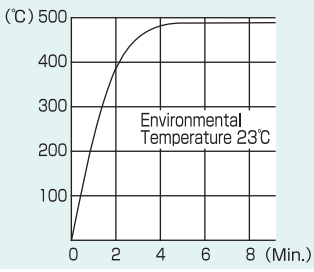
Sharp iron tip
(Long life & durable type)

Special stainless steel inside tip for prevention against sticking and loosening of the tip




Plug-in type heater for instant replacement

■Time/Temp. Chart




## SK-30 SERIES

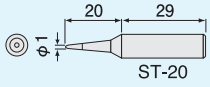
■Specification

| Item No. | Max.Tip Temp. | Watt | Tip | L'gth | Wgt(g) | Rated Voltage | Insulation Resistance |
|---|---|---|---|---|---|---|---|
| SK-30 | 445℃ | 30W | ST-20 | 204㎜ | 130 | 220 ≀ 240V | 100MΩ |
| SKC-30 | | | | | | | |
| SKE-30 | | | | | | | |
| SK-31 | 500℃ | | ST-21 | | | | |
| SKC-31 | | | | | | | |
| SKE-31 | | | | | | | |

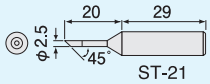
■ST-22 Max. Tip Temp. 430℃ ■ST-23 Max. Tip Temp. 500 ℃

Caution Ceramic heater is not elastic and may be broken by excess shock. Please refrain from beating and wrenching.

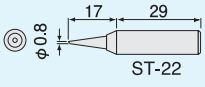
■REPLACEMENT PARTS (㎜)



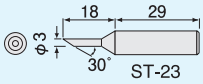

ST-20



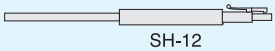

ST-21




ST-22




ST-23



SH-12

| Item No. | Description |
|---|---|
| ST-20 | Tip |
| ST-21 | Tip |
| ST-22 | Tip |
| ST-23 | Tip |
| SH-12 | Heater(220~240V) |

## SK-60SERIES — KOTELYZER

### Newly designed compact body with various functions!

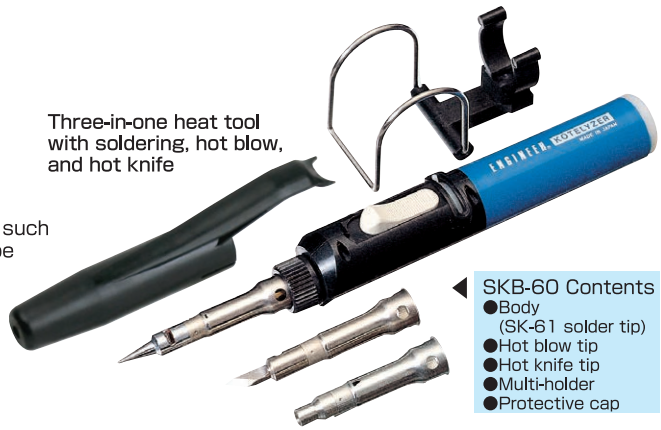
- Perfect for in-field service and maintenance where accessibility may be limited.
- Light weight for fatigue free use.
- One touch ignition and super quick heat-up (equivalent up to 60 watts).
- More than one hour continuous use capacity.

■Soldering iron

■Hot knife

Arts, craft, and hobby use such as plastic shaping and rope cutting.

Three-in-one heat tool with soldering, hot blow, and hot knife



SKB-60 Contents
- Body (SK-61 solder tip)
- Hot blow tip
- Hot knife tip
- Multi-holder
- Protective cap

Completely cordless assures no electric leakage, no E.M.I. and free from voltage problem.

SKA-60 Contents
- Body(SK-61 solder tip)
- Hot blow tip
- Multi-holder
- Protective cap

■Hot blower

Pin point accurate hot air for shrink tubing and plastic welding.

■Kotelyzer (SK-60) Specifications

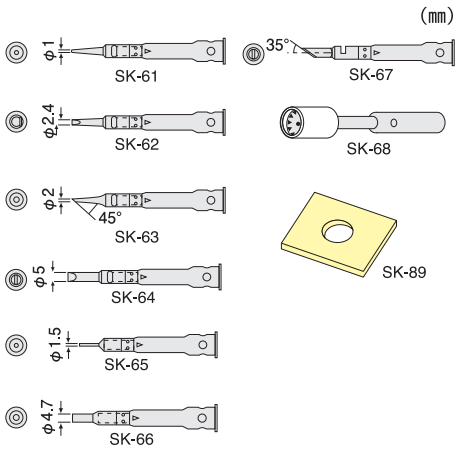
| | | |
|---|---|---|
| System | | Gas Catalyst Reaction System |
| Themal Output | Soldering Iron | 200℃~450℃ (Equivalent to 15~60W electric soldering iron) |
| | Hot Blow | 650℃ MAX |
| Gas Container Capa. | | 14ml |
| Operation Time for One Gas Fill | | Abt 1 hour 15min. |
| O.A. Length | | 216㎜ including cap |
| Weight | | 66g |

Two-in-one heat tool with soldering and hot blow.

SKC-60 Contents
- Body(SK-61 solder tip)
- Hot blow tip
- Protective cap
- Cleaner stand

## SK-60SERIES REPLACEMENT PARTS

(㎜)




| Item No. | Description |
|---|---|
| SK-61 | Tapered needle |
| SK-62 | Chisel |
| SK-63 | φ2㎜ spade |
| SK-64 | Chisel |
| SK-65 | Hot blow tip |
| SK-66 | Hot blow tip |
| SK-67 | Hot knife |
| SK-68 | Ceramic unit |
| SK-89 | Cleaning sponge |

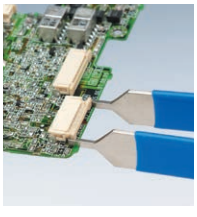
●Multi-Holder is not saleable separately.

## SS-08 — IC EXTRACTOR

- Ideal for extracting 8~42 pins ICs in one single operation.
- Squeeze clip and hold ICs tightly.
- Overall Length : 125㎜

## SS-10 — PC BOARD CONNECTOR EXTRACTOR

- Ideal for insertion or extraction of housing connectors on the PC boards.
- Holds PC board connectors with accurately machined tip, picking them uprightly and smoothly without a cut of wire or deformity.
- Accurate tip design to insert or extract PCB connectors (straight type & right-angle type) mounted on dense PCB
- Overall Length : 112㎜



# SK-70SERIES

RoHS KOTELYZER

## Multi-holder creates new field of cordless soldering iron!

- Perfect for in-field service and maintenance where instant heat is required.
- Super quick heat up with one touch operation.
- Completely cordless assures no electric leakage no E.M.I.
- Flameless and safe heat generating system by gas catalyst reaction.
- Variable temperature control (equivalent to 20-80 watts).

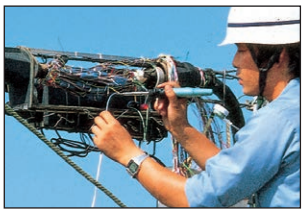
Two-in-one heat tool with soldering and hot blow.

**SKC-70 Contents**
- Body(SK-71 solder tip)
- Hot blow tip
- Multi-holder
- Protective cap

Designed to perform telecommunication tasks.

**SKD-70 Contents**
- Body(SK-79 solder tip)
- Solder tip(SK-72)
- Multi-holder
- Protective cap

■Telecommunication field



SKD-70 set comes with a high-power tip for cable maintenance tasks and an accurate tip for telephone office service.

**SKA-70 Contents**
- Body(SK-71 solder tip)
- Hot blow tip
- Protective cap

**SKB-70 Contents**
- Body(SK-71 solder tip)
- Hot blow tip

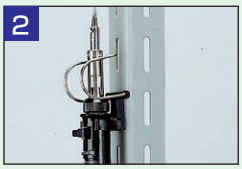
■Kotelyzer(SK-70)Specifications

| | | |
|---|---|---|
| System | | Gas Catalyst Reaction System |
| Thermal Output | Soldering Iron | 200℃~500℃ (Equivalent to 20~80W electric soldering iron) |
| | Hot Blow | 650℃ MAX |
| Gas Container Capa. | | 28ml |
| Operation Time for One Gas Fill | | Abt 4 hours (Lever position : 2) |
| O.A.Length | | 281㎜ including cap |
| Weight | | 110g |

## Three function of Multi-holder assures safe and wide task field !

1 Hanging from cable

2 Magnetic attachment

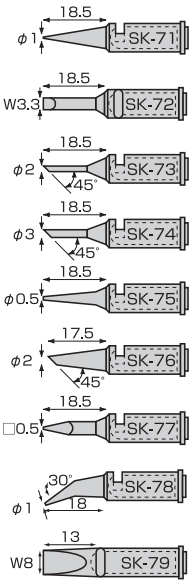


3 Stand

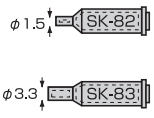
Multi-Holder is useable for both SK-60 series and SK-70 series.

# SK-70SERIES REPLACEMENT PARTS

●Tip(Iron coated) (㎜)




●Hot blow tip



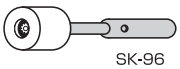

●Hook fitting

●Protective cap

●Cleaning sponge

●Heat shrink

●Ceramic unit




| Item No. | Description |
|---|---|
| SK-71 | Tapered needle |
| SK-72 | Chisel |
| SK-73 | φ2㎜ spade |
| SK-74 | φ3㎜ spade |
| SK-75 | Tapered needle |
| SK-76 | φ2㎜ spade |
| SK-77 | Tapered pyramid |
| SK-78 | Offset tapered needle |
| SK-79 | High powered chisel |
| SK-80 | High powered round head needle |
| SK-81 | High powered long taper chisel |
| SK-82 | Hot blow tip |
| SK-83 | Hot blow tip |
| SK-84 | Hot blow tip |
| SK-85 | Hook fitting |
| SK-88 | Protective cap |
| SK-89 | Cleaning sponge |
| SK-93 | Heat shrink W-22 |
| SK-94 | Heat shrink W-18 |
| SK-96 | Ceramic unit |

# SKM-40•SK-42~47 HANDY KOTELYZER

- Advanced and streamlined design
- Hot blow & powerful torch
- Improved heat-generating structure of metal catalyst
- Come with cleaner stand & solder
- Capable of continuous use in one hour

■Soldering Iron

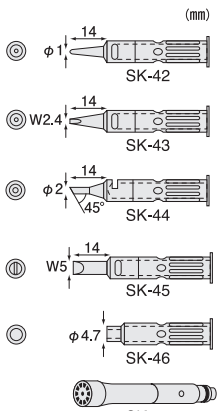
■Hot Blow

■Torch

■Specifications

| | | |
|---|---|---|
| System | | Gas Catalyst Reaction System Pressure Gas Burning System (Torch) |
| Thermal Output | Soldering Iron | 200℃~500℃ (Equivalent to 20~60W electric soldering iron) |
| | Hot Blow | 650℃ MAX |
| | Torch | 1300℃ MAX |
| Gas Container Capa. | | 12ml |
| Operation Time for One Gas Fill | | about 60 min. (Lever position: Middle) |
| O.A.Length | | 197㎜ Cap Included |
| Weight | | 74g |

(㎜)




| Item No. | Description |
|---|---|
| SK-42 | Tapered Needle |
| SK-43 | Chisel |
| SK-44 | φ2㎜ Spade |
| SK-45 | Chisel |
| SK-46 | Hot blow tip |
| SK-47 | Ejector Unit |

# SK-90•95 RoHS GAS REFILL

●Please use our original gas for refill. (Butane liquefied odorless gas for industry use)

SK-90

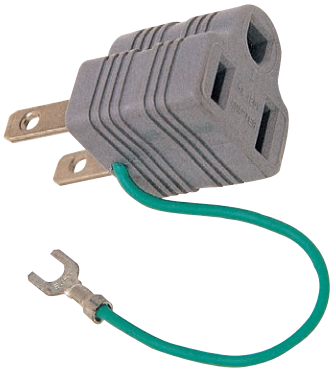
265ml

SK-95

480ml

## SS-15 2P-3P PLUG CONVERTER

●Convertes 3P Plug with ground wire into 2P.



## ZC-70・71 RoHS FLUX/DISPENSER

### Ideal for rework of SMD solders.

● Pin-point accuracy with no spillage

■ZC-70
● FLUX 50cc
● FLUX DISPENSER
● NEEDLE (Hole diam. 0.25/0.5㎜) 1pce. each
● CLEANING PIN 1pce. each

■ZC-71
● FLUX DISPENSER (BOTTLE)
● NEEDLE (Hole diam. 0.25/0.5㎜) 1pce. each
● CLEANING PIN 1pce. each

## SD-20(SD-21～26・SD-60～88) RoHS DESOLDERING TOOL

### High-capacity ceramic heater and powerful motor, capable of suction and hot air blow.

● Built-in motor, diaphragm type vacuum pump, temperature adjustable circuit and indicator light.
● Low noise and low vibration due to floating mechanism.
● Minimum reaching time to the maximum vacuum and powerful suction capacity.
● Ideal for desoldering on 4-8 layered PCB's.
● No static damage to IC etc. due to carboniferous body.

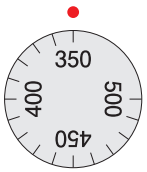
ESD SAFE

DESTINATIONS ARE LIMITED FOR EXPORT

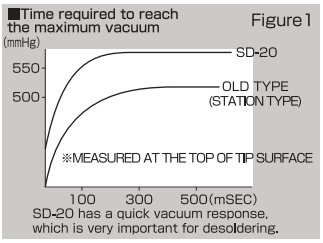
INDICATOR LIGHT
When the heater is on, light goes on and when the temperature reaches set-up level, it flickers.

●Contents
・Carrying case
・Desoldering tool
・Spare tip (φ1.5)
・Spare filter cartridge (2pcs.)
・Cleaning pin

Temperature Adjustment Dial (350～500℃)

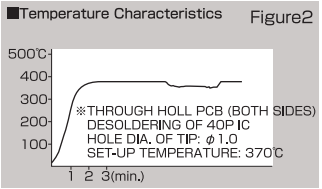



■Time required to reach the maximum vacuum Figure1




SD-20 has a quick vacuum response, which is very important for desoldering.

■Temperature Characteristics Figure2




■SPECIFICATIONS

| | |
|---|---|
| POWER SOURCE | AC100V・50/60Hz |
| PUMP | DIAPHRAGM TYPE |
| MOTOR OUTPUT | 12W |
| VACUUM ATTAINED | 650㎜Hg |
| TIME REQUIRED TO REACH MAXIMUM VACUUM | 0.2 seconds |
| AIR FLOW RATE (OPEN) | 15 liter/min. |
| HEATER | 100W(Ceramic) |
| CONTROL SYSTEM | Feed back zero cross over type |
| TEMPERATURE RANGE | 350～500℃ |
| TIP (HOLE DIA.) | 1.0φ(STANDARD) |
| POWER SUPPLY CORD | 3P CORD (W GROUND)1.8m |
| WEIGHT | 420g(excluding cord) |

■REPLACEMENT PARTS

| Item No. | DESCRIPTION |
|---|---|
| SD-61 | TIP φ0.8 |
| SD-62 | TIP φ1.0 |
| SD-63 | TIP φ1.5 |
| SD-87 | TAPERING SLIM TIPφ0.8 |
| SD-88 | TAPERING SLIM TIPφ1.0 |
| SD-21 | HEATER HOLER |
| SD-22 | HEATER ASSY |
| SD-23 | PIPE SETTER |
| SD-24 | FILTER CARTRIDGE (5pcs.) |
| SD-25 | SEAT VALVE |
| SD-26 | DIAPHRAGM |

TOOL STAND

SD-60

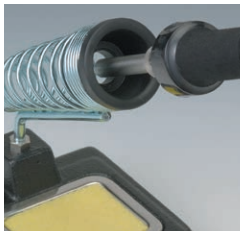
## SD-30(SD-29・31・86) RoHS SMD ACCESSORY KIT

● For easy removal of SMD components including QFP & SOP owing to Hot Blow function of SD-20

■Contents:
SD-29 Filter Pipe
SD-31 Stainless Wire Reel
SD-86 Hot Air Nozzle

## SS-20 IRON STAND

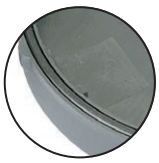
- Heat resistance engineering plastic on iron holder for cutting heat conduction to iron's grip
- Holds any soldering iron up to 13㎜ diam.
- 700g massive base stand creates high stability on bench.
- Dimensions:80Wx140Hx90D (㎜)



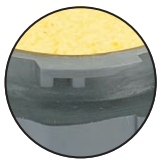
■Ring detachable

## SS-05 TIP CLEANER

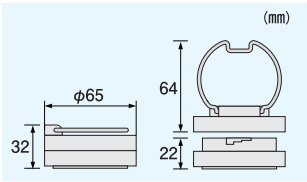
- Glass-filled nylon resin (Housing) featuring heat resistance of 130℃
- O-ring creates airtight condition to keep sponge moist.
- Comes with 2 pcs. of cleaning sponges of different density (blue & yellow)
- Easy to open the lid owing to sliding-lock structure
- Weight: 75g



■O-ring in lid



■Sliding lock




## SS-01・02 SOLDER SUCKER

- All aluminum construction, well designed to suck up melted solder easily and efficiently with one-hand plunger action.
- Self-cleaning shaft allows high productivity of continual work without clogging.

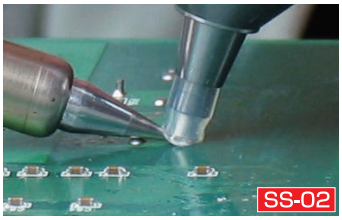
SS-01
- Teflon tip : φ2.2㎜ (Int.)
- Ideal for desoldering work at dense spot on PCB
- Body : φ14 x 170㎜

SS-02
- Silicone nozzle : φ2㎜ (Int.) φ4㎜ (Ext.)
- High-power and efficient absorption by means of elastic nozzle contact
- Low maintenance cost owing to spare tube only required for replacement
- 2 pcs. of spare silicone tubes (50㎜ long) originally included
- Body : φ20 x 153㎜

Heat resistant (350℃) silicone nozzle

Compact and durable aluminum body

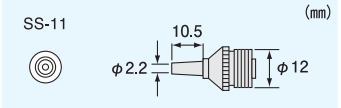
| Item No. | Cylinder Capa. | Wgt. |
|---|---|---|
| SS-01 | 5 ml | 33g |
| SS-02 | 9 ml | 52g |




Elastic and heat-resistant nozzle can stick to soldering iron on board closely and suck up solder powerfully with less residue.

Plunger is within easy reach of thumb.
It is ideal for one-hand operation in continuous work.

## SS-11 REPLACEMENT NOZZLE FOR SS-01



## SS-16 REPLACEMENT SILICONE TUBES

- φ2 x 50㎜ 2 pcs./set
- Cut desired length of tube freely.
- Use only for SS-02

## SWS-06~12 SUPERIOT RMA SOLDER

### No cleaning high performance resin core solder, highest grade flux construction

- Completely non-corrosive flux residue which requires no cleaning after soldering
- Everlasting and reliable bonding owing to non-conductive and non-absorbable residue
- Wide solder spread and wetting for speedy work
- Contains organic amine activated rosin to meet highest JIS grade & MIL-RMA.

■Superiot RMA / For use on precision PCB of copper and its alloy

| Item No. | Tin/Lead Ratio, Melting point | Flux(Wt%) | Soluble resistance Ω・cm | Insulation resistance Ω | Wire diam. (mm) | Wire length. (m) |
|---|---|---|---|---|---|---|
| SWS-06 | Sn60/Pb40 183~190℃ | 1.7% Noncleaning flux | $1\times10^{5}$ | $3\times10^{13}$ (Normal temp.) $5\times10^{12}$ (Higher humidity) | 0.6 | 5.6 |
| SWS-08 | | | | | 0.8 | 4.4 |
| SWS-10 | | | | | 1.0 | 5.5 |
| SWS-12 | | | | | 1.2 | 4.6 |

## SWA-06~12 SUPERIOT RA SOLDER

### No cleaning high performance resin core solder for soldering stainless steel

- Non-corrosive flux residue featuring everlasting bonding
- Featuring stable bonding owing to non-conductive and non-absorbable residue
- Continuous and high performance activation makes it possible to solder stainless steel.
- Contains organic amine activated rosin to meet JIS standard.

■Superiot RA / For use on stainless steel & nickel

| Item No. | Tin/Lead Ratio, Melting point | Flux(Wt%) | Soluble resistance Ω・cm | Insulation resistance Ω | Wire diam. (mm) | Wire length. (m) |
|---|---|---|---|---|---|---|
| SWA-06 | Sn60/Pb40 183~190℃ | 2.7% Noncleaning flux | $6\times10^{4}$ | $2\times10^{13}$ (Normal temp.) $2\times10^{12}$ (Higher humidity) | 0.6 | 5.6 |
| SWA-08 | | | | | 0.8 | 4.4 |
| SWA-10 | | | | | 1.0 | 5.5 |
| SWA-12 | | | | | 1.2 | 4.6 |

## SWS-56~82 SUPERIOT RMA SOLDER

SWS-80

SWS-58

| Item No. | Wire diam. (mm) | Weight (g) |
|---|---|---|
| SWS-56 | 0.6 | 500 |
| SWS-58 | 0.8 | |
| SWS-60 | 1.0 | |
| SWS-62 | 1.2 | |
| SWS-76 | 0.6 | 1000 |
| SWS-78 | 0.8 | |
| SWS-80 | 1.0 | |
| SWS-82 | 1.2 | |

## SWA-56~82 SUPERIOT RA SOLDER

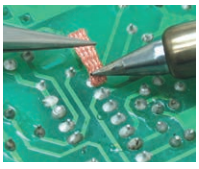
SWA-80

SWA-58

| Item No. | Wire diam. (mm) | Weight (g) |
|---|---|---|
| SWA-56 | 0.6 | 500 |
| SWA-58 | 0.8 | |
| SWA-60 | 1.0 | |
| SWA-62 | 1.2 | |
| SWA-76 | 0.6 | 1000 |
| SWA-78 | 0.8 | |
| SWA-80 | 1.0 | |
| SWA-82 | 1.2 | |

## SWU-02~06 RoHS SOLDER WICK

- SODER-WICK® Highest copper braid features fast absorption of solder.
- No cleaning process required and leaving less residue of flux on circuit board



For desoldering highly dense SMD

SWU-02 1.5㎜×1.5m

For desoldering small electronic parts or plated through hole

SWU-03 1.9㎜×1.5m

For desoldering medium electronic parts or solder bridges

SWU-04 2.8㎜×1.5m

For desoldering large-sized parts or terminals

SWU-05 3.9㎜×1.5m

For use at large solder lugs

SWU-06 5.6㎜×1.5m

※Product of chemtronics, U.S.A

## SW-11~53 SOLDER

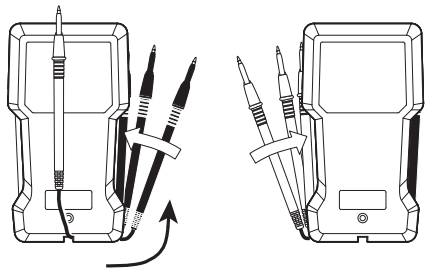
- High quality solder wire for precision electronic components.
- No paste is necessary because of activated rosin.

| Item No. | diam.(mm) | Weight(g) |
|---|---|---|
| SW-11 | 0.6 | 150 |
| SW-12 | | 500 |
| SW-13 | | 1000 |
| SW-21 | 0.8 | 150 |
| SW-22 | | 500 |
| SW-23 | | 1000 |
| SW-30 | 1.0 | 20 |
| SW-31 | | 150 |
| SW-32 | | 500 |
| SW-33 | | 1000 |
| SW-41 | 1.2 | 150 |
| SW-42 | | 500 |
| SW-43 | | 1000 |
| SW-51 | 1.6 | 150 |
| SW-52 | | 500 |
| SW-53 | | 1000 |

## SD-10 DIGITAL MULTIMETER

### Multifunctional and compact : The ultimate tool for all your measurements!

- 3999 Counts, Auto-ranging
- Magnetic attachment to a metallic surface
- Gold-plated test leads for corrosion-resistance



Test leads can be stored conveniently.

| | |
|---|---|
| Operating principle | Dual integration |
| Display | LCD, 3999 Counts |
| Range switch | Auto range |
| Auto power off | Approx. 30 minutes (can be disabled) |
| Sampling | 3 times / sec. |
| Operating temperature | 0℃ to 40℃ less than 80% RH (without condensation) |
| Storage temperature | -10℃ to 60℃ less than 70% RH (without condensation) |
| Power | CR2032(3V) lithium battery x 1 |
| Battery life | Approx. 120 hours |
| Dimensions and weight | 70(W) x 127(H) x 12.5(D)mm Approx. 101g (incl. battery) |
| Lead length | Approx. 70cm |
| Standard | IEC61010-1 CATⅡ 600V、CATⅢ 300V |
| Accessories | Operation manual, Soft case |

| Function | Range | Resolution | Accuracy |
|---|---|---|---|
| DCV | 4V | 0.001V | ±(1.0%+3dgt) |
| | 40V | 0.01V | |
| | 400V | 0.1V | |
| | 600V | 1V | |
| ACV | 4V | 0.001V | ±(2.0%+5dgt) |
| | 40V | 0.01V | |
| | 400V | 0.1V | |
| | 600V | 1V | |
| Resistance | 400Ω | 0.1Ω | ±(2.0%+5dgt) |
| | 4kΩ | 0.001kΩ | |
| | 40kΩ | 0.01kΩ | |
| | 400kΩ | 0.1kΩ | |
| | 4MΩ | 0.001MΩ | |
| | 40MΩ | 0.01MΩ | |
| Frequency | 5Hz | 0.001Hz | ±(0.5%+5dgt) |
| | 50Hz | 0.01Hz | |
| | 500Hz | 0.1Hz | |
| | 5kHz | 0.001kHz | |
| | 50kHz | 0.01kHz | |
| | 100kHz | 0.1kHz | |
| Capacitance | 50nF | 0.01nF | ±(5.0%+5dgt) |
| | 500nF | 0.1nF | |
| | 5uF | 0.001uF | |
| | 50uF | 0.01uF | |
| | 100uF | 0.1uF | |

※Accuracy assurance of ACV･Frequency is limited to sine wave.

## SL-50~53 POCKET LOUPE

SL-50
- 10x/20㎜ diam.
- 83㎜ length
- 50㎜ (case)

SL-51
- 8x/25㎜ dia.& 15x/13㎜ dia.
- 150㎜ length
- 84㎜ (case)

SL-52
- Combination of 3x, 4x & 5x lens for max. 10x magnification
- 19㎜ diam. lens
- 83㎜ length
- 50㎜ (case)

SL-53
- Sharp and very distinct images with no color distortion
- Ideal for jewelry appraisal
- 18x/17㎜ diam.
- 63㎜ length
- 40㎜ (case)

## SL-55~57 INSPECTION LOUPE

- Focus adjustment by sliding lens sleeve
- Built-in scale (detachable)

SL-55

- 10x
- 10㎜ diam. view
- Scale L

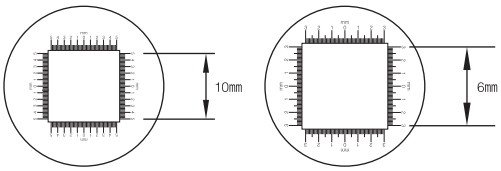
SL-56

- 15x
- 6㎜ diam. view
- Scale S

SL-57

- 22x
- 4㎜ diam. view
- Scale S

BUILT-IN SCALE



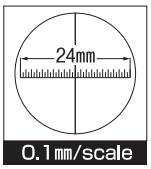

L: 0.2㎜/scale　　S: 0.1㎜/scale

## SL-12 INSPECTION LOUPE

- Inspection loupe equipped with crosshairs
- Wide type light-through cylinder for bright and clear view

SL-12

- x10 Glass Lens
- Lens diameter : 30㎜
- Crosshairs 0.1㎜ x 240
- Ext. Size : dia.38 x 50(H)
- with carrying pouch




| Item No. | SL-50 | SL-51 | SL-52 | SL-53 | SL-12 | SL-55 | SL-56 | SL-57 |
|---|---|---|---|---|---|---|---|---|
| Magnification | x10 | x8 & x15 | x3, 4 & 5 | x18 | x10 | x10 | x15 | x22 |
| Lens Material | Glass | Glass | White Glass | White Glass | White Glass | White Glass | White Glass | White Glass |
| Lens Structure | 1+1 | 1+1 | single | 5-fold | 1+1 | 1+1 | 1+1 | 1+1 |

※ 1+1 Structure : 1 pce. of eyepiece and 1 pce. of objective lens
※ 1+2 Structure : Achromatic Lens - combination of different refractive lens minimizes chromatic aberration.
※ 5-fold lens : superior to achromatic lens in aspect of no aberration and creates clearer image.

## SL-64 FOLDABLE MAGNIFIER

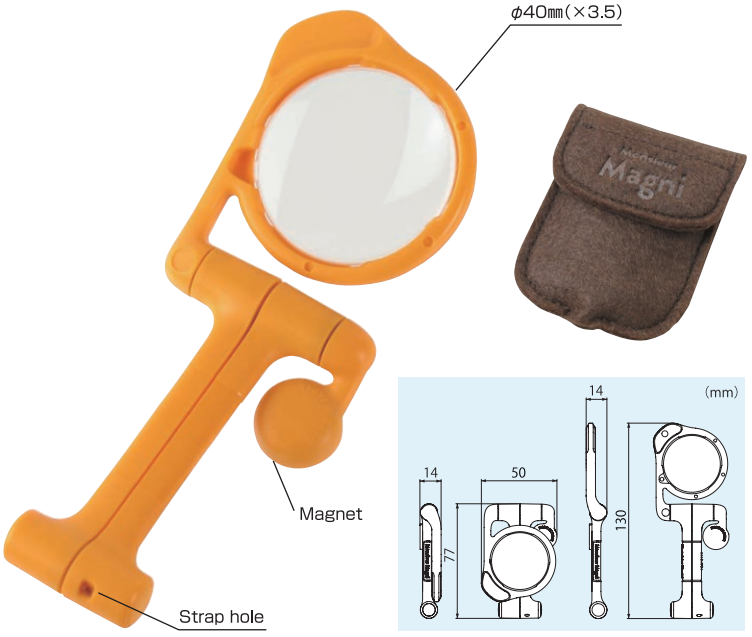
- x 3.5 Magnification acrylic lens
- Lens diameter: 40㎜
- Foldable arm, flexible design
- Magnet attachment
- with carrying case

Portable magnifier

Attachment to a crimp tool

Self-standing for handsfree

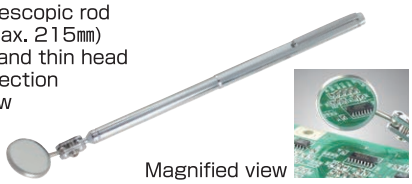
Collapsible to fit carrying case



## SL-01~03・11 INSPECTION MIRROR

SL-01
- 35㎜ diam. angle-adjustable mirror
- O.A. length: 245㎜

SL-11
- Anti-magnetic stainless steel (AISI304) frame ideal for work on electronic parts and devices
- 21㎜ diam. adjustable all-angle ball joint magnifying mirror
- 2-sectioned telescopic rod (Min. 150㎜ - Max. 215㎜)
- Compact body and thin head (frame) for inspection even at a narrow space



Magnified view



SL-02
- 35㎜ diam. adjustable all-angle ball joint mirror with pocket clip
- Telescopic rod extends from 192 to 540㎜ in length

SL-03
- 35㎜ diam. adjustable all-angle ball joint magnifying mirror (Concave)
- Telescopic rod extends from 265 to 740㎜ in length

with built-in magnet



## SL-04・07 DESK-TOP LOUPE

SL-07
- x 2.5 φ90㎜ lens
- 175㎜ Flexible shaft allows easy positioning.

SL-04
- Magnifying power: 2.5x/75㎜ diam. lens.
- Ball joint permits free change of angles and positions.

## SL-22 LED LIGHT LOUPE

- 2x/95㎜ diam. Acrylic lens with x4 bifocal lens built-in
- Long-life and bright LED (16 bulbs)
- DC power (AA battery x 4 pcs.) ※Battery is not included.
- AC adapter (Input voltage 100-240V) included
- Magnet base stand for handsfree work
- 310㎜ Flexible arm for easy positioning
- Desk clamp (Max. opening 65㎜. Depth 58㎜)

LED(16bulbs)

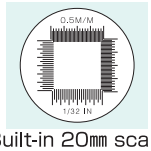
## SL-23 LED STAND LOUPE

Built-in LED

- 2x/105㎜ diam. Acrylic lens with x5 bifocal lens built-in
- Illuminated by 2 LED's, ideal for inspection and hobby use
- DC power (AA battery x 3 pcs.) ※Battery is not included.
- 300㎜ Flexible arm for easy positioning

## SL-71 FLASHLIGHT LOUPE

- Light beam illuminates magnified area.
- 10X, 30㎜ diam.
- 2 x C-cell battery adapted
- O.A. length: 177㎜



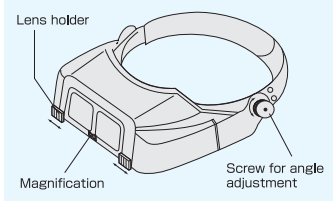
Built-in 20㎜ scale

## SL-72 UTILITY LOUPE

- 3X 65㎜ diam. lens consists of aberration-free white lens.
- Versatile use with chrome-plated frame and wooden shaft.
- O.A. length: 175㎜

## SL-80~83/85~88 HEAD LOUPE

- Suitable for inspection/repair of electronic and precise instruments
- Well-fitted head band with velcro tape
- Usable even while wearing glasses.



### ■Head loupe

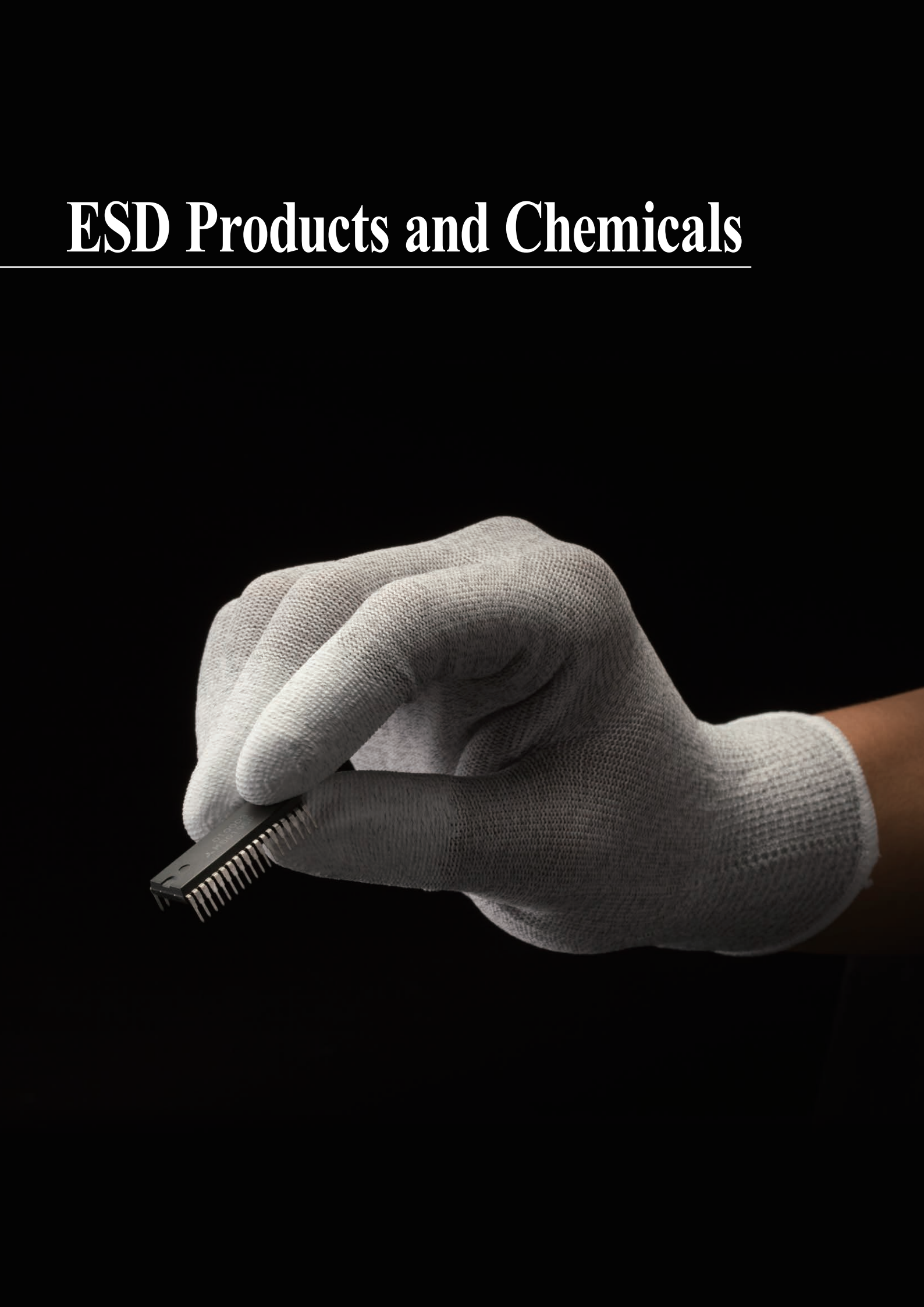
| Item No. | Magnification |
|---|---|
| SL-80 | 1.8 |
| SL-81 | 2.3 |
| SL-82 | 2.7 |
| SL-83 | 3.5 |

### ■Replacement lens

| Item No. | Magnification |
|---|---|
| SL-85 | 1.8 |
| SL-86 | 2.3 |
| SL-87 | 2.7 |
| SL-88 | 3.5 |

- The size of all the replacement lens is common and suitable for any head loupes.

# ESD Products and Chemicals

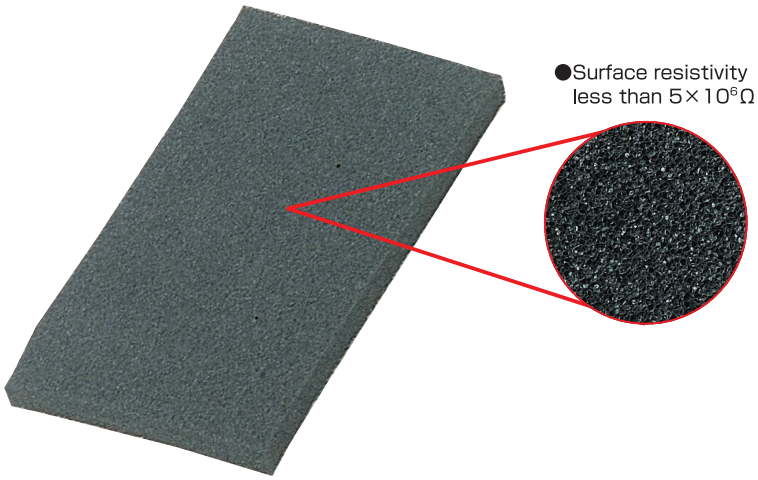


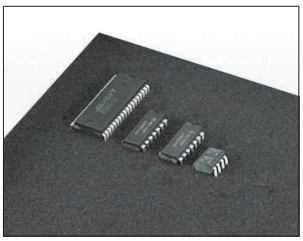
## ZC-01・02

RoHS **CONDUCTIVE FOAM**

ESD SAFE

- Conductive urethane foam with high density in 10mm thickness.
- Protects CMOS IC and other static-sensitive components during storage, in transit and in hand.
- Material: Polyethylene



| Item No. | Size(mm) |
|---|---|
| ZC-01 | 075×130×10 |
| ZC-02 | 100×290×10 |

## ZC-50

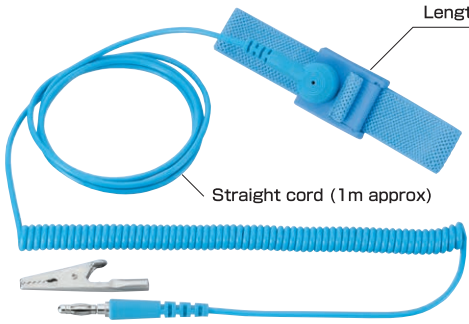
RoHS **WRIST STRAP**

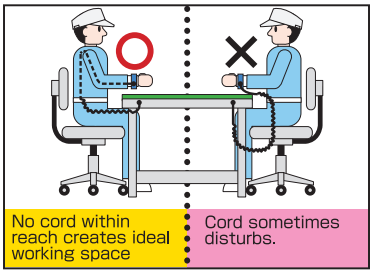
ESD SAFE

- Conveniently-designed earth cord to improve precise work efficiently
- Curving-shaped & wide plastic body (30x20mm) featuring higher conductivity around wrist
- Silver filaments in elastic band ideal for high conductivity & anti-metallic allergy

### ■Applications

Assembly or repair of electronics and precise instrument for anti-static electricity



### ■Specifications :

- Adjustable type wrist band
- Built-in 1MΩ resistor for safety
- Alligator clip included
- Polyester elastic band woven with silver filaments

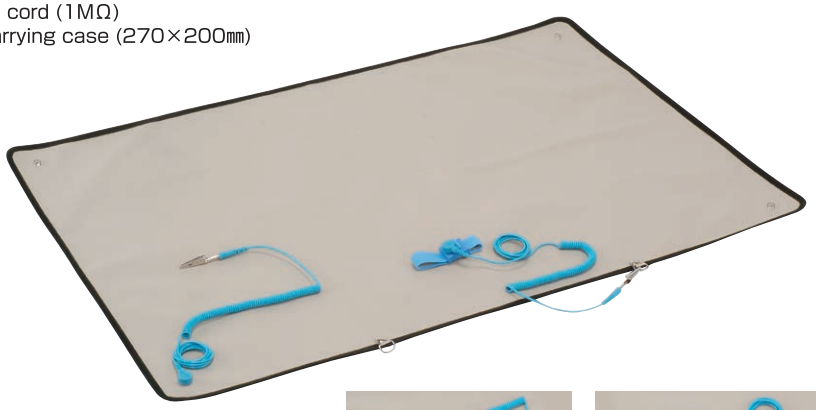
If anyone who is charged with static electricity through clothes touches IC's and electronic components, he discharges electricity through his fingers and gives a damage to IC's and electronic components. Wrist Strap can eliminate static electricity through his wrist to prevent them from being damaged.

## ZC-80

RoHS **ANTI-STATIC SERVICE KIT**

ESD SAFE

- Mat size : 900×600㎜ (Thickness 0.7㎜)
- Contents : Wrist strap with cord (1MΩ)
  Spare earth cord (1MΩ)
  Zippered carrying case (270×200㎜)



Rayon backing with stud

| Layer | Color | Material | Thickness | Surface Resistivity |
|---|---|---|---|---|
| Top | Beige | PVC | 0.35㎜ | 7.3X10⁸Ω |
| Bottom | Gray | Rayon | 0.3㎜ | 1.5X10⁹Ω |

Earth cord

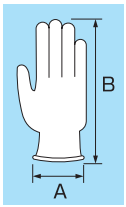
Wrist strap

## ZC-44~49 STATIC CONDUCTIVE GLOVES

- Surface resistivity : $10^5$~$10^6\Omega$ sq.(Finger) $10^7\Omega$ sq.(Palm)
- Ideal for clean room, assembly of electronic devices, handling of plastic products, etc.
- Copper sulfide mixed with acryl/nylon creates an excellent conductive effect (Finger Part)
- Seamless and dust-free mono-filament
- Chemical dyeing of conductive element features less reduction of conductivity withstanding repeated washing
- Material : Fabric - Nylon 90% Acryl 10%
  : Coating - Polyurethane Resin

■Fingertip Coating (mm)

| Item No. | Size | A×B |
|---|---|---|
| ZC-44 | S | 72×185 |
| ZC-45 | M | 83×190 |
| ZC-46 | L | 85×200 |




■Palm Coating (mm)

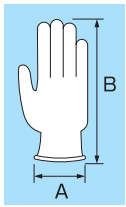
| Item No. | Size | A×B |
|---|---|---|
| ZC-47 | S | 80×210 |
| ZC-48 | M | 85×220 |
| ZC-49 | L | 90×230 |

## ZC-51~56 ANTI-STATIC GLOVES

- Surface resistivity : $10^6$~$10^9\Omega$ sq.
- Ideal for any work in the facility where anti-static should be controlled
- Seamless and dust-free mono-filament
- Washable with ordinary detergent
- Material : Fabric - Nylon 75% Acryl 25%
  : Coating - Polyurethane Resin

■Fingertip Coating (mm)

| Item No. | Size | A×B |
|---|---|---|
| ZC-51 | S | 75×190 |
| ZC-52 | M | 88×200 |
| ZC-53 | L | 89×215 |




■Palm Coating (mm)

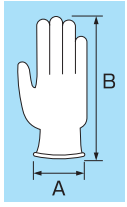
| Item No. | Size | A×B |
|---|---|---|
| ZC-54 | S | 77×210 |
| ZC-55 | M | 90×220 |
| ZC-56 | L | 95×230 |

## ZC-38~43 DUST-FREE GLOVES

- Flexible & comfortable gloves made of elastic and breathable nylon fiber
- Ideal for use in clean room and handling of C.R.T., electric bulb, compact disc, glass, etc.
- Seamless and dust-free mono-filament
- Non-slip coating for accurate assembly work
- Washable with ordinary detergent
- Material : Fabric - Wooly Nylon
  : Coating - Polyurethane Resin

■Fingertip Coating (mm)

| Item No. | Size | A×B |
|---|---|---|
| ZC-38 | S | 77×185 |
| ZC-39 | M | 90×190 |
| ZC-40 | L | 90×200 |

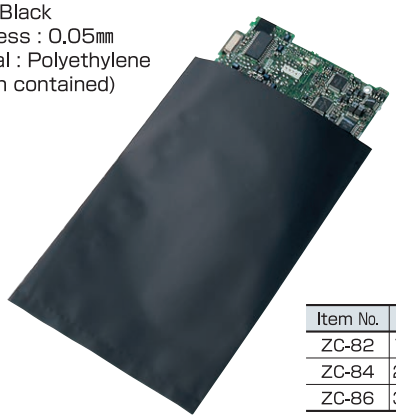



■Palm Coating (mm)

| Item No. | Size | A×B |
|---|---|---|
| ZC-41 | S | 80×210 |
| ZC-42 | M | 90×220 |
| ZC-43 | L | 95×230 |

## ZC-82·84·86 STATIC CONDUCTIVE BAG

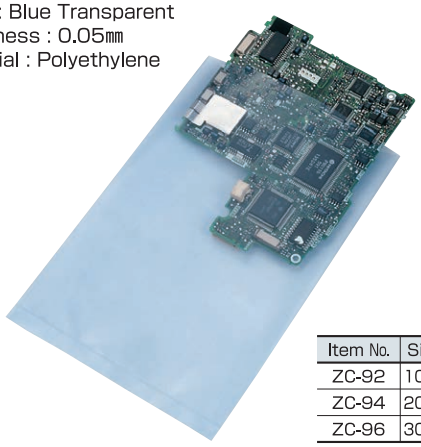
- Surface resistivity : $10^4\Omega$ or less
- Color : Black
- Thickness : 0.05㎜
- Material : Polyethylene
  (Carbon contained)



| Item No. | Size(mm) | Package |
|---|---|---|
| ZC-82 | 100×150 | 100pcs. |
| ZC-84 | 200×300 | 100pcs. |
| ZC-86 | 300×450 | 100pcs. |

## ZC-92·94·96 ANTI-STATIC BAG

- Surface resistivity : $10^{11}\Omega$ or less
- Color : Blue Transparent
- Thickness : 0.05㎜
- Material : Polyethylene



| Item No. | Size(mm) | Package |
|---|---|---|
| ZC-92 | 100×150 | 100pcs. |
| ZC-94 | 200×300 | 100pcs. |
| ZC-96 | 300×450 | 100pcs. |

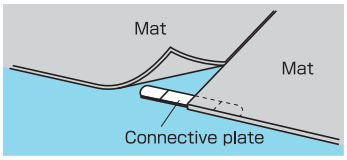
## ZCM-01～04

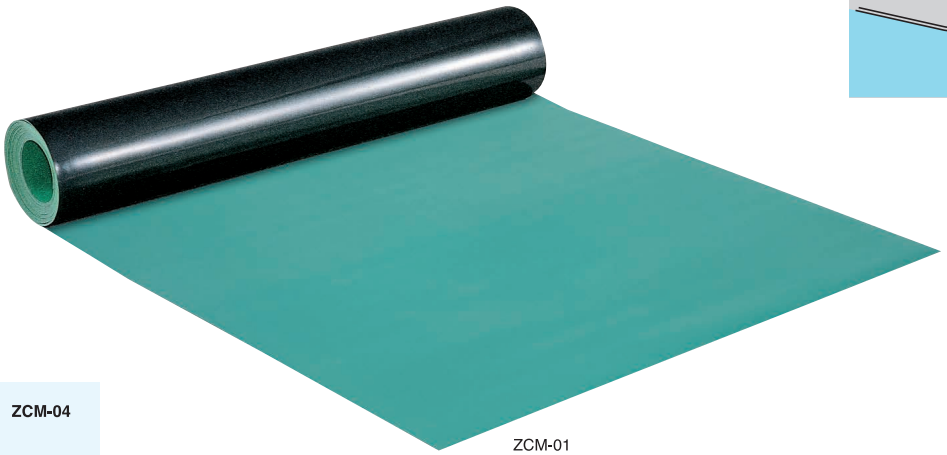
RoHS CONDUCTIVE COLORED MAT

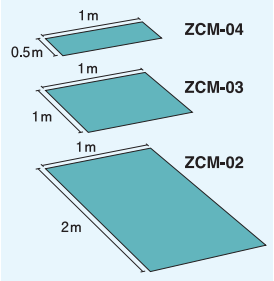
- Static-Dissipative mat maintains an ESD-Safe working surface.
- Anti-Fatigue rubber material that provides cushioning comfort.
- Available in pre-cut mats or rolls.

ESD SAFE

■Usage
Put ZC-62 on the reverse of the mat for grounding.
Use ZC-63 in connection of mat.





ZCM-01



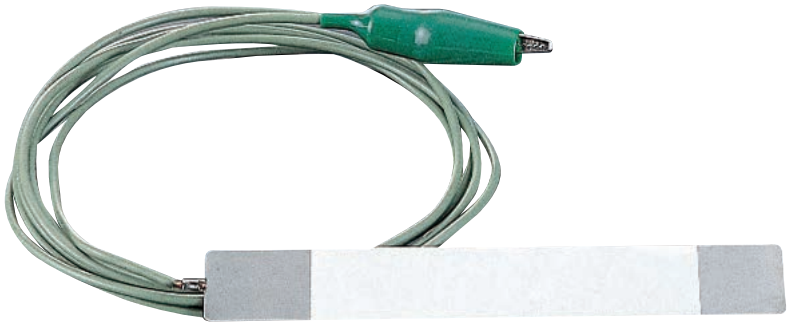

●Surface resistivity
Top Layer (Green) : $10^{8}$～$10^{10}\Omega$
Bottom Layer (Black) : $10^{3}$～$10^{5}\Omega$

| Item No. | Size |
|---|---|
| ZCM-01 | 1m×10m×2mm |
| ZCM-02 | 1m×2m×2mm |
| ZCM-03 | 1m×1m×2mm |
| ZCM-04 | 1m×0.5m×2mm |

## ZC-62

RoHS GROUND CORD

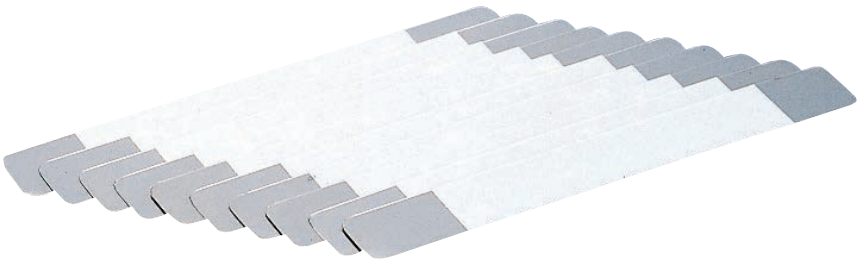
- For ZCM-01～04
  Size : Cord……2m　Plate…15cm×2cm



## ZC-63

RoHS CONNECTIVE PLATE

- For ZCM-01～04
- Contents : 10pcs.
  Size : 15cm×2cm

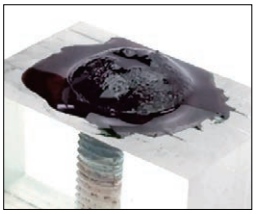


## ZC-28 RUST REMOVER

### Amazing - How quickly it cleans rust off!

- Since it is a neutral liquid, you can work safely (it does not contain acid or alkali).
- Rust on small components, such as rusted screws, can be removed in seconds.
- No need to scrub.

### How it works on rusty screws



**1. Penetration**

The liquid penetrates through small gaps and reaches the screw's thread in seconds!

**2. Rapid Action**

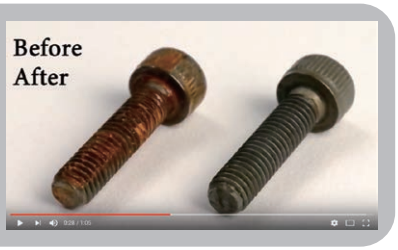
It instantly reacts on the rust and turns purple!

**3. Screw Removal**

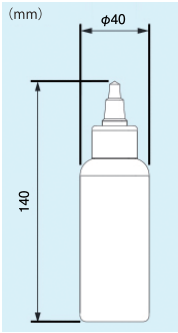
Utilize Screw Removal Pliers to loosen the treated screw with sure-gripping jaws.

**SAFE**:Neutral liquid
Less harmful to bare skin
(unlike acid or alkali)

PRODUCT VIDEO




| Item No. | pH | Capacity | Bottle size |
|---|---|---|---|
| ZC-28 | Neutral | 100ml | φ40 x H140mm |




## ZC-19 OILER

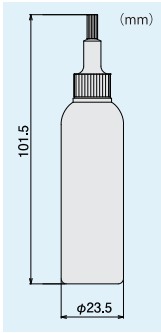
- Compact-sized and handy oiler
- Nozzle extendable (60㎜-long approx.) for oiling at hard-to-reach area
- Capacity: 20ml
- Material: PE (Bottle/Cap), Brass (Nozzle)
- Usage: Oil, Water, Cleaning fluid, etc.

■How to use

① Extend nozzle upward.
② Unscrew plastic cap.
③ Remove packing inside.
④ Pour oil in bottle.
⑤ Fasten the packing and the cap with nozzle in order.
※ Keep the bottle upright in storage.

Machinery maintenance

Lubrication



# D

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| DK-22 | Discon. | Precision Driver | |
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