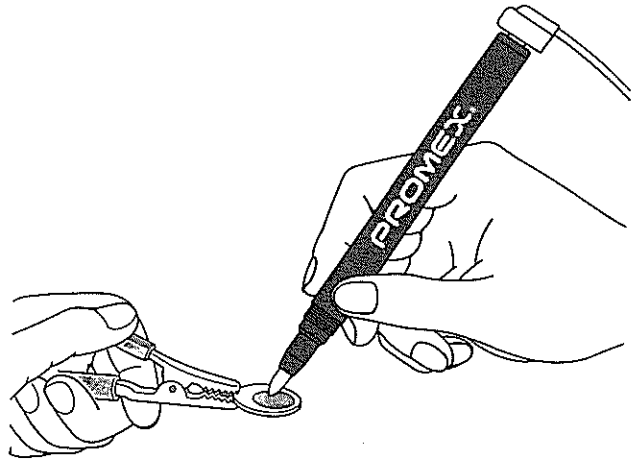


OPERATION MANUAL

HANDY PLATING SYSTEM **PROMEX**®

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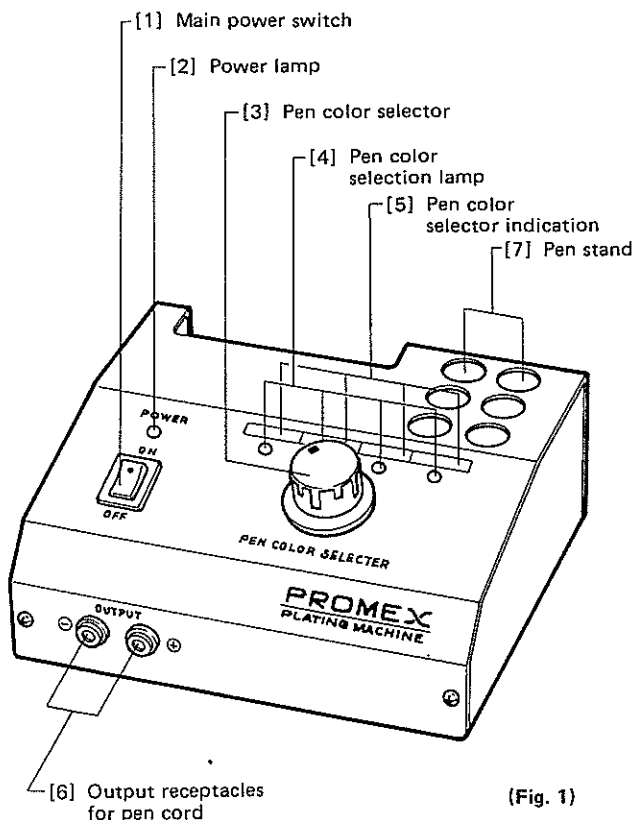
1. MAIN FEATURES

- 1) PROMEX is of a marker pen type plating system which merchandising had been considered impossible and is unprecedented in the world.
- 2) Many uses:
 - a. Partial plating for electronic circuits, their related components, jewelry, ornaments, accessories etc.
 - b. Touch up plating over the spot where partial defective gilt portion is found.
 - c. Two color plating over the ornaments and accessories etc. are also quite easy.
Plating for the purpose of adding values to the products can be done without difficulty.
 - d. Plating fine products such as prototype models etc.
 - e. Partial and touch up plating over the opticals.
- 3) Since PROMEX is of a marker pen type plating system, its maintenance is not complicate and moreover the pen unit itself is disposable.
- 4) The unit is easy to carry and can be used at any place so long as the AC power source and tapped water are available.
- 5) Plating can even be made within a short time of a few minutes.
- 6) A variety of plating in assorted color are available.
- 7) Since the input electrical frequency of the AC adaptor is 50 Hz or 60 Hz, it can be operated in either area.

②

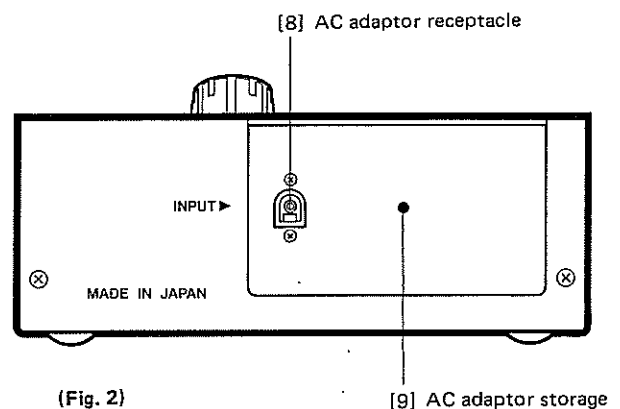
2. NOMENCLATURES OF COMPONENTS

■ Front View

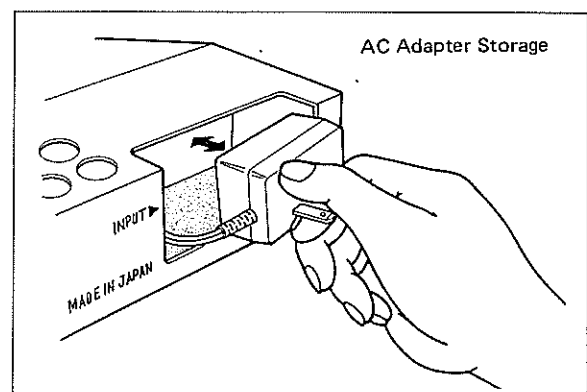


(Fig. 1)

■ Rear View

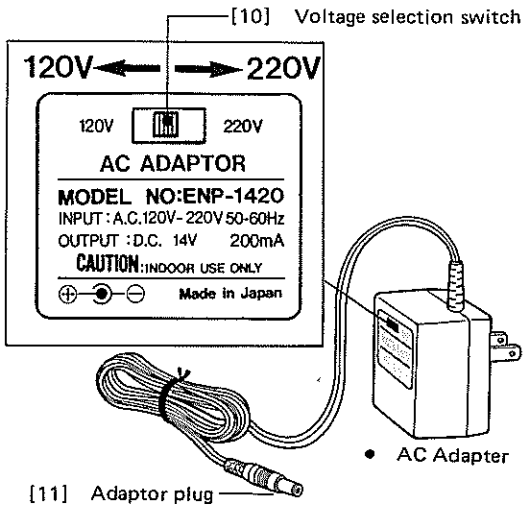


(Fig. 2)



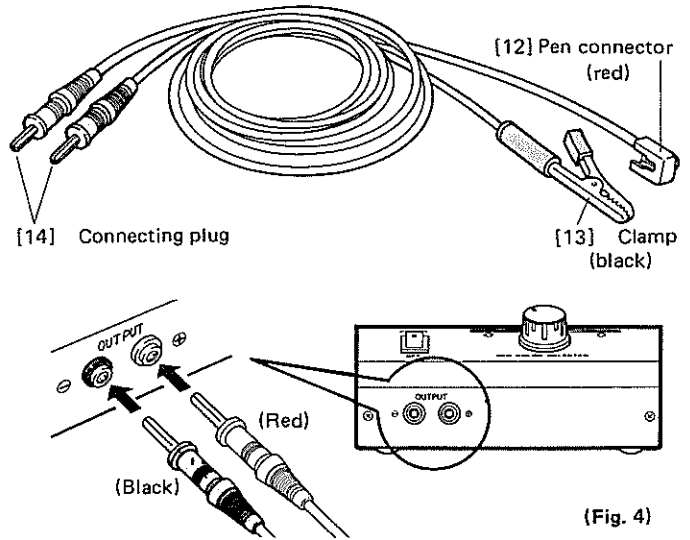
③

■ AC Adaptor



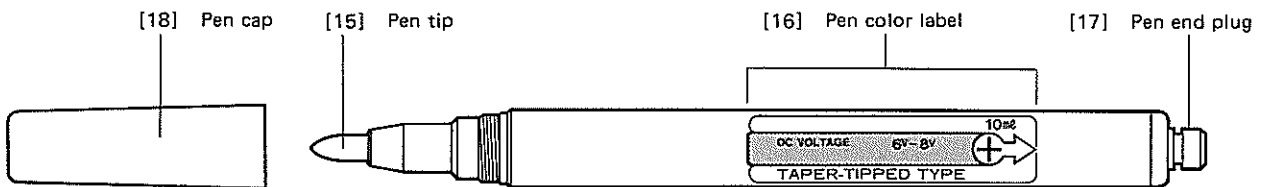
(Fig. 3)

■ Pen Cord



(Fig. 4)

■ Plating Pen



(Fig. 5)

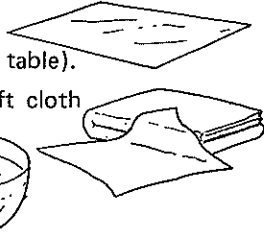
4

3. DOS AND DON'TS

- 1) Do not use AC adaptor of other made since the inconsistency in the electric current and the secondary polarity etc. will occur.
- 2) Handle carefully the AC adapter cord and the pen cord.
- 3) Take the plug out from receptacle while the unit is left unoperated for a long period.
- 4) Do not touch the inside of the unit since it is dangerous and there is great possibility the unit will get into trouble if touched.
- 5) Metals which do not conduct electricity such as aluminum, titanium, chrome can not be plated.
- 6) The object (to be plated) must be water resistant.
- 7) Do not drink the plating solution.
- 8) Do not break or open the plating pen no matter whether it is empty or not.
- 9) Do not mix the plating solution.
- 10) The plating pens should be capped with the tip up during stored.
- 11) Dispose the empty pens after use without any further treatment.
- 12) Wash hands clean whenever you change operation from plating to other work or after the plating operation is completed.
- 13) Do not scrub the PEN TIP [15] hardly even when you expect to obtain the darker plating quickly. It would be damaged without any desirable effects.
- 14) After opened the CAP [18] of pen, never fail to cap and stand pen in the PEN STAND [7] while it is not being used.
- 15) Use the pen with the PEN COLOR LABEL [16] facing toward you. (Ⓢ Fig. 14)
- 16) Keep inside the PEN CONNECTOR [12] clean using cotton bud with metal polisher or alcohol since dust or plating solution clinging the inside cause contact fault.
- 17) Do not leave the unit and pens exposed to the direct sun light, or close to the heat producing device such as heater, or in the room which is not well ventilated and contain high humidity or dust.
- 18) Keep the unit and pens at the place where children can not reach.

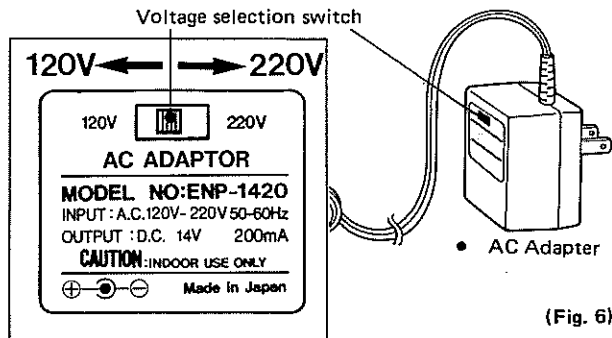
4. PREPARATION

- 1) Vinyl sheet and the like (for spreading over the work table).
- 2) A couple of sheets, clean soft cloth (handkerchief size).
- 3) A bowl of water (500-1,000 c.c.).



5. CONNECTION OF POWER

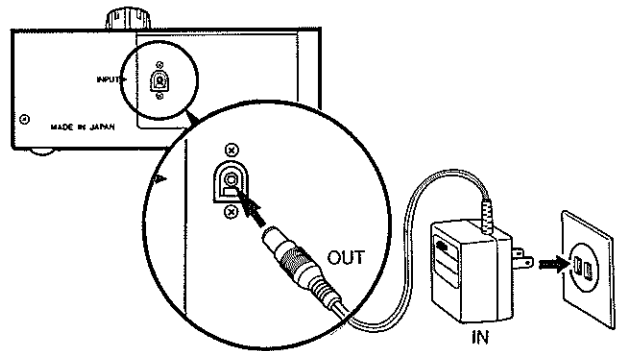
- 1) Adjust the VOLTAGE SELECTION SWITCH [10] of the AC adaptor to the correct side.



(Fig. 6)

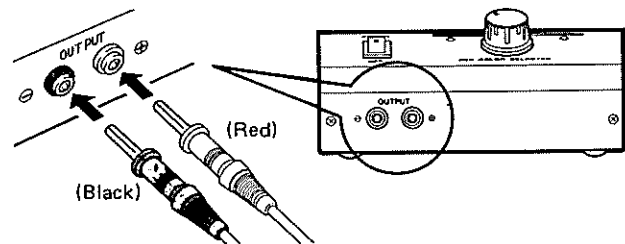
- 2) Connect the ADAPTOR PLUG [11] of the AC adaptor to the AC ADAPTOR RECEPTACLE [8] of the unit.

- 3) Connect the AC adaptor to AC power outlet.



(Fig. 7)

- 4) Connect the red and black CONNECTING PLUGS [14] to the OUTPUT RECEPTACLES [6]. Red plug goes into + side while the black plug into - side.



(Fig. 8)

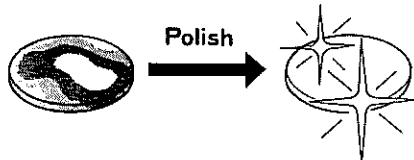
6. PLATING

- 1) CLEANING OF THE OBJECT:

Polish the object with the metal polisher to remove any trace of rust, discoloring and other detrimental substances and to have it shined (using a cloth Preparing in ⑥4-2).



- 2) Take a close look at the object to check for any black spot, fingerprints and oily stain.
- 3) If any, polish again the object thoroughly.



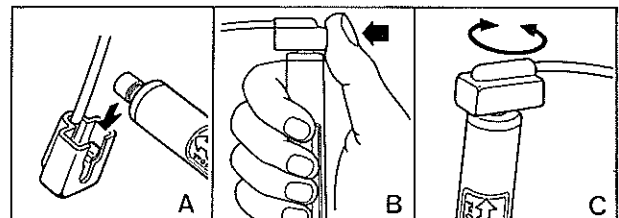
- 4) Remove any polishing powder left on the object with another cloth.

- 5) DEGREASING:

Degreasing means to remove oil and grease deposited on the surfaces of the metallic object. As oil and grease are most detrimental to plating, the operation to remove these is quite important process for beautiful plating finish.

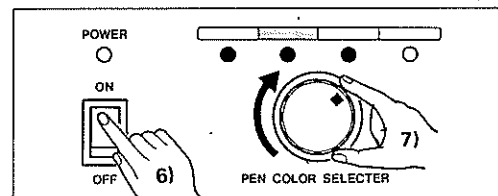
Install the degreasing pen at the PEN CONNECTOR [12].

(Fig. 9)



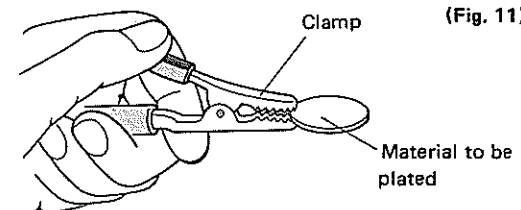
- 6) Turn the MAIN POWER SWITCH [1] on. The POWER LAMP [2] comes on.
- 7) Turn the PEN COLOR SELECTOR [3] to green position.

(Fig. 10)

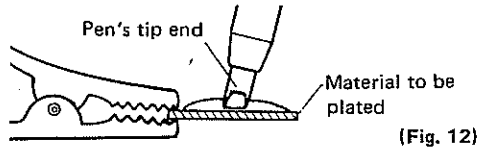


- 8) Hold the object (to be plated) horizontally with pinched by the CLAMP [13].

(Fig. 11)



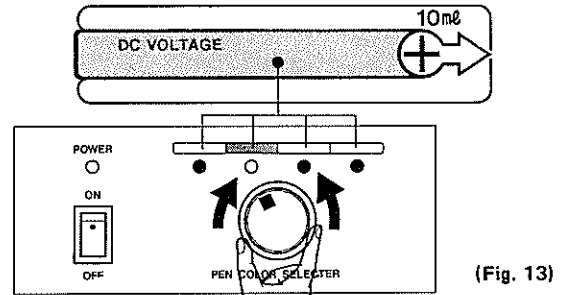
- 9) Open the CAP [18] of the degreasing pen, pointing upward.
It is of thread type and can be loosened by turning it counter clockwise.
- 10) Touch the tip end of the degreasing pen to the object and stroke slightly.
Do not press the pen hardily.
Fine bubbles begin to generate and degreasing starts.
Degreasing the copper coin will usually be finished in 20–30 seconds.



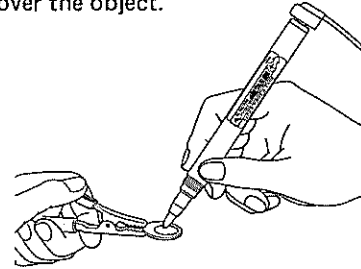
- 11) Degrease the part where the CLAMP [13] is holding the object by relocating its holding position.
- 12) Rinse the object with being held with the CLAMP [13] by shaking several times.
This will bring the object brighter than when it is polished with metal polisher.
- 13) When the object began not to repel water, the degreasing is complete.
At this time, do not remove the water deposited on the object since the next step (plating) can be followed immediately.
- 14) PLATING:
Change the degreasing pen to the plating pen.

8

- 15) Turn the PEN COLOR SELECTOR [3] to lit the PEN COLOR SELECTION LAMP [4] in the same color as that of PEN COLOR LABEL [16].
The selection of voltage will be done by matching the PEN COLOR LABEL [16] on pen and that of PEN COLOR SELECTOR [3].

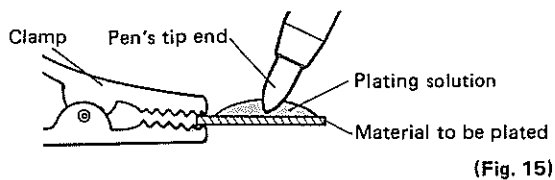


- 16) Open the CAP [18] of the pen, pointing upward.
- 17) Pick the Material with the CLAMP [13] of the PEN CORD.
- 18) Touch the PEN TIP [15] and move slowly to make a circle over the object.



(Fig. 14)

- 19) The plating solution begins to ooze on the object.
- 20) Observing the changes of the color of the object, plate the portion of copper plate where is held with the CLAMP [13] by changing the CLAMP [13] holding position.



- 21) Unclamp the object and place it in the water.
- 22) Turn off the POWER SWITCH [1].
The POWER LAMP [2] comes out.
- 23) Take out the object from the water washing with fingers.
- 24) Remove water with a clean dry cloth.

7. POOR PLATING

When the plating can not be made adequately, confirm the followings:

- 1) Is the MAIN POWER SWITCH [1] in? ➡ 7 See 6-7)
- 2) Are the connectors and connecting cords properly connected? ➡ 6 See 5
- 3) Does the PEN COLOR LABEL [16] match with the color of the SELECTOR SWITCH [3]? ➡ 7 See 6-1)
- 4) Has the proper cleaning (of the object) been done? ➡ 7 See 6-1)
- 5) Was the rinsing done after degreasing or plating? 8 ➡ See 6-12) 9 ➡ See 6-23)
- 6) Wasn't clear lacquer or the like coated (on the object)?
- 7) Does the pen contain sufficient solution?
 - Inside the pen, 10 ml of plating solution is contained.
 - The normal consumption rate of the plating solution is from 60 cm² to 90 cm², but it depends on the operator's skill.
- 8) The following materials cannot be done plating:
Aluminum, Titanium, Plastics, Chrome etc.
Material gilt with chrome and other non-conductible materials.

8 PLATING OVER THE PREVIOUSLY GILT PLATE

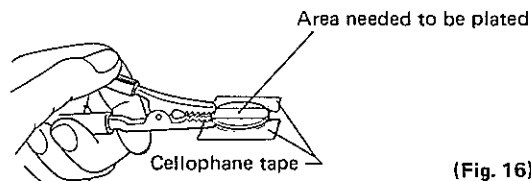
Normal degreasing process is necessary unless when the object was just finished the previous plating and the water is still deposited on the surface.

Just as same way as the previous plating, follow the steps by observing closely to plate uniformly.

To judge the uneven plating, dip the object into the water.

9 MASKING FOR PARTIAL PLATING

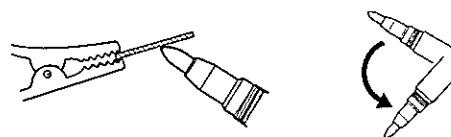
Apply masking tape (cellophane or vinyl tape) over the part where plating is not needed.



(Fig. 16)

Another way is to apply coating (the simplest way is using manicure) over the part where no plating is needed, and to remove such coating with thinner or benzene (or manicure remover) after the plating is over.

In case the plating part is small, point the PEN TIP [15] upward and stroke slightly.



(Fig. 17)

In case sufficient plating can not be made, turn the PEN TIP [15] downward once to run plating solution up to the pen tip and then continue plating again.

10 VARIATION OF PLATING PEN

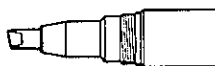
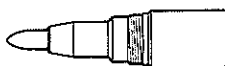
Type	Name of Plating pen	Label	Type of tip
Degreasing Pens	A Degreasing pen	Green	Normal tip
	B Degreasing pen	Green	Taper tip
	Degreasing pen for SS	Green	Taper tip
	Degreasing pen for nickel chrome (For Dentists)	Green	Taper tip
Gold	24K Gold	Blue	Taper tip
	20K Gold	Blue	Taper tip
	18K Gold	Blue	Taper tip
	14K Gold	Blue	Taper tip
	12K Gold	Blue	Taper tip
	Pink gold	Blue	Taper tip
For optical and ornaments only	Luna pink gold No. 1	Blue	Taper tip
	Luna pink gold No. 2	Blue	Taper tip
	Luna pink gold No. 3	Blue	Taper tip

Type	Name of Plating pen	Label	Type of tip
RAPID type plating pens	24K Gold (SUPER-RAPID) (For Aircraft Industry)	Blue	Taper tip
	24K Gold (RAPID)	Blue	Taper tip
	18K Gold (RAPID)	Blue	Taper tip
	Silver (RAPID)	Red	Taper tip
	For thick plating (RAPID) Pen contains metallic substance twice or triple times more than the normal pens*		
Other plating pens	Silver	Red	Taper tip
	Rhodium	Orange	Taper tip
	Nickel	Blue	Taper tip
	Chrome Nickel	Orange	Taper tip
	Copper	Blue	Taper tip
	Zinc	Blue	Taper tip
	Tin	Blue	Taper tip
	Chrome (Color mixture similar to chrome color) *From the environmental protection standpoint, real chrome is not used.	Blue	Taper tip

■ Type of Pen tip

● Taper tip

● Normal tip



(Fig. 18)

11. FEATURES OF EACH PLATING PEN

1) Degreasing Pen (Green label)

a. Degreasing pen, Normal tip

Normal degreasing can be applied to the surfaces of gold, silver, copper, iron, nickel, zinc, tin, cobalt, rhodium etc.

* For a certain type of brass, use the Degreasing pen for stainless steel.

(Brass has a great variety of types and for some types of brasses, the normal degreasing pen does not work effectively.)

Trick of Degreasing: In normal degreasing operation, apply the pen tip slightly to the material and move the pen on the flat material so that the tip describe circles and on the long material, move at the speed of describing the letters with a marker pen. The degreasing for the area of 4 cm² can be made within about twenty seconds.

b. Degreasing Pen for Stainless steel, Taper tip

The degreasing pen specially designed for stainless steel can also be utilized for degreasing the brass material which can not be degreased with the normal degreasing operation.

The degreasing for stainless steel can be applied to degreasing the stainless steel and to some kinds of brasses. Unlike the normal degreasing, sometime you feel that degreasing is not completely done even after rinsing with water. But this is a feature of stainless steel showing against degreasing. Therefore, exert extra care in degreasing stainless steel. The stainless steel surfaces usually develops a film of oxidization. Unless such oxidization film is removed, the plating cannot be proceeded. Some types of brasses may need the similar removal of oxidization film, it can be done quite easily.

c. Degreasing for Nickel chrome, Taper tip pen

This is the degreasing especially for the dentists and although it resembles degreasing for stainless steel, the mixing ratio of degreasing liquid differs.

The nickel chrome alloy used in the dentists is a metal having characteristics similar to that of stainless steel. So when degreasing the metal, exert the efforts similar to that required in degreasing the stainless steel.

2) Gold (Blue label), Taper tip

a. 24K gold, 20K gold, 18K gold, 14K gold, 12K gold

Plating for these metals can be done almost at the same speed, but the color of gold differs depending on the ratio of alloy. These metals have characteristics that the faster the movement of the pen is the quicker the plating deposits. Excellent plating can be achieved utilizing this characteristics.

b. 24K gold (RAPID), 18K gold (RAPID) (Blue label)

RAPID indicates quick and thicker plating. Compared with the golds stated in the previous chapter, these golds contain gold more than double. For rapid thicker plating, the RAPID type is recommendable.

c. Pink gold (Blue label), Taper tip

Golden color will turn into pink. Plating speed is almost the same as those for 24K-12K golds.

d. Gold for optical (Blue label), Taper tip

a) Luna Pink Gold No. 1

This color is most light golden color closer to pink with white is highlighted.

b) Luna Pink Gold No. 2

The color is most widely used for optical and pinky gold, glossy and sometimes whitish.

c) Luna Pink Gold No. 3

Pinky gold for optical

3) Silver

a. Silver (Red label), Taper tip

The plating on silver is quite swift and easy. Not bristle but whitish plating can be achieved. During plating, some parts turn into light brown or charcoal but don't worry about it and continue plating until the entire gets white before completion. The light brown or charcoal colored spots will disappear when rinsed with water. Polish with a clean dry cloth. Over the recessed spots, tap the area with a tooth brush lightly and rub if necessary. If you cannot get a glossy finish for a long period, apply the metal polisher and polish slightly. There is no need for a longer period of polishing at this time.

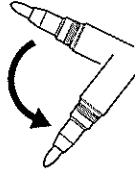
b. Silver (RAPID) (Red label), Taper tip

When an especially rapid and thick plating is needed, use the RAPID type.

4) Rhodium (Orange label), Taper tip

Apply one drop of the solution onto the material to be plated and then touch the pen's tip (shorter than others') to the material to be plated and move the pen slowly over the material to be plated. Since it takes a long time to plate on the rhodium, a quick pen movement will cause the plate black. Re-plating over the black spots will surely bring the area glossy white plating.

- When you need a drop of plating solution, turn the tip of the pen upward first and then turn down ward.



(Fig. 19)

5) Nickel (Blue label), Taper tip

A glossy and excellent plating can be achieved. Since the speed of plating is relatively slow, move the pen tip slowly.

6) Copper (Blue label), Taper tip

A quick and excellent plating can be made. Sometimes, it gets black same as in the case of silver, so polish with a clean dry cloth. And over the complicated spots polish lightly with a tooth brush and the like. When such black spots cannot be removed even polishing with a tooth brush, polish slightly using a cloth or tooth brush with metal polishing powder.

7) Tin (Blue label), Taper tip

A quick and excellent plating can be achieved. Sometimes it gets white. That can be removed with a clean dry cloth easily after plating.

8) Zinc (Blue label), Taper tip

A quick and simple plating can be made, but as the zinc has a unique feature of bi-polar phenomenon and if plate the tip end of a narrow material and then plate the bottom end, the one at the tip end will disappear, so it is a trick to quickly plate. It is better to hold the material to be plated at its center with a clamp.

9) Chrome nickel (Orange label), Taper tip

Plate quickly and stop plating when the material to be plated gets black. A prolonged plating will result in fading the black color slightly. Since a good black plating can be made if plating is applied over the gold plated material, it is recommendable to plate gold as a primer in order to an excellent plating. If the black color is slightly faded due to a prolonged plating, apply gold plate over it and then replating the chrome nickel.

10) Chrome-color (Blue label), Taper tip

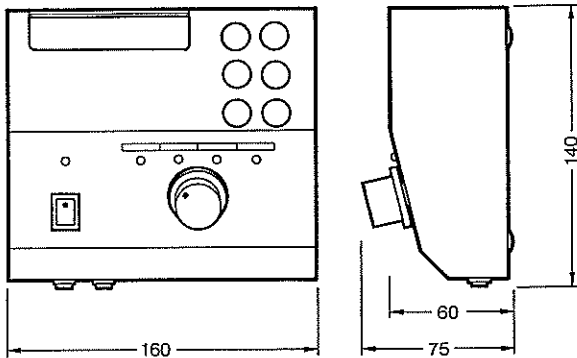
This is not a real chrome. It is color of plating similar to chrome color and can be easily and quickly done.

* From the point of pollution, the real chrome cannot be sold.

12

12. WEIGHT AND DIMENSIONS

- Weight: 300 g (Excl. AC Adapter and connecting cord)
- Outer dimensions: (mm)



* These specifications and design are subject to change due to improvement without notice.