PATRIOT

M30・M7

LA type soldering iron

Instruction manual

(User's manual)

Preparation in April 2004

The 5th edition

JAPAN BONKOTE CO., LTD.

BONKOTE

Contents

1. Preface

CAUTION!

Be sure to read this manual before using this machine.

- Never make the power and 5P core relay cord close to heat source. Otherwise burnt cord may cause fire, malfunction, electric shock and etc.
- Never touch the power and 5P core relay cord with dump hands. Otherwise, you may get hurt due to electric shock and etc. (death at worse)
- Never dampen the iron tip with water or other liquid. Otherwise, burst cord may cause fire, malfunction, electric shock and etc. (death at worse)
- Take great care to handle the soldering iron while it is not rested on the workbench. Otherwise the heated tip may cause fire or adjacent operators may get hurt.
- Be sure to place the heated soldering iron onto the iron stand. If you rest the heated soldering iron directly onto the workbench, fire may occur or other operators may get hurt.
- Do not overhaul the machine when the machine has trouble. Otherwise, it may cause malfunction, electric shock and etc (death at worst). Contact with our customer service department and follow instructions to make maintenance.
- Be sure to use proper replacement parts such as fuse, checking capabilities. Otherwise, parts with wrong capacities may cause fire, malfunction and etc.
- Never touch the iron tip while current is being passed. Otherwise, you may get burnt. If you have to touch the tip, turn off the power and wait for a while and check if it has already cooled down sufficiently by using a thermometer or etc.

Notes for installation and use

- This machine is designed with earth specification. For safety, be sure to use an earth-quipped receptacle. (If you do not have such receptacle, install an earth separately.)

- For surrounding conditions, use this machine on neat bench on which a conductive mat is put.

- Refrain from place where the machine would be exposed too much moisture, direct sunshine, much dust and vibration.

- In order to prevent static electricity, it is recommended using a static electricity removal device, wrist strap etc.

- Odor is generated due to the use of solder and flux. Be sure to ventilate work places. (E.g. fitting of ventilator etc.)

- Be sure to pull out the power plug, when the machine is not used.

- Be sure to grab the power plug instead of cable, when inserting and pulling out the plug.

- If the power voltage is changed from 100V to 220V, make be sure to make sure of specifications for the soldering section before the change.

- If flammable objects are placed near this machine, there is a danger of fire. Be careful.

- Before daily work, be sure to check for slack of thread sections of the soldering iron.

- Before maintenance (replacement and cleaning of soldering iron tip, heater, heater collar etc.) be sure to set the power switch to OFF, pull out the power plug from the receptacle, and wait for the iron tip to cool down well.

- For replacement parts (iron tip, heater, heater collar, etc.) use genuine parts. (If you use other parts, the machine may be in malfunction.)

- If you use non-genuine parts, consult with our service department for safety.

- After work, put preparatory solder onto the tip slightly in order to protect the tip before power cut. Then, store the machine at a safe place other than a workbench.

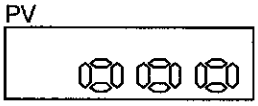
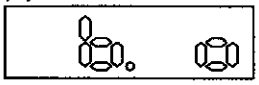
- Do not use this machine for purpose other than the original purpose.

- During the use of this machine, take great cares not to allow the iron tip to hit front side etc.

- Note for installation use should be followed completely for using this machine safety. If Error is indicated, turn off power and pull the plug from consent. Correct the error and turn on power again after confirmed tip was cooled down.

2. Standard specifications

2－1 Controller

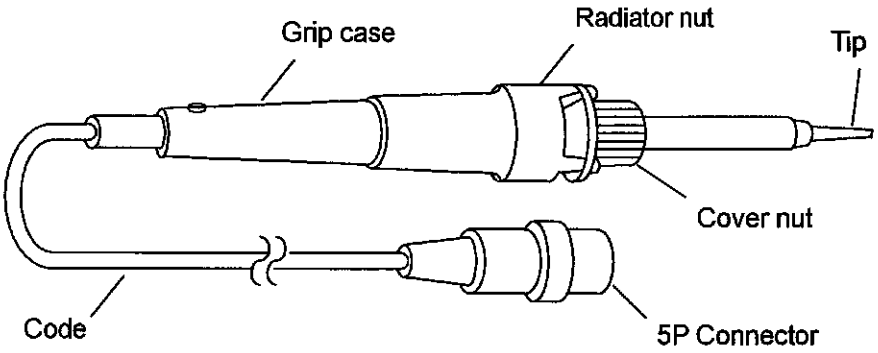
Input	AC100~240V
Controller temperature	0~600℃ (in the factory)
Power supply	1.5m: 3PCHI
Dimensions	97 (W) × 73 (H) × 130 (D) mm
Weight	Under ８００ｇ
Fuse	３．０Ａ
Control method	ＰＩＤ control (BONKOTE original control algorithm)
Display	ＰＶ：ＬＥＤ (red)、ＳＰ：ＬＥＤ (green)
Error display	PV  Over scale PV  Tip sensor disconnection
Material (Case)	Steel
Consumption	Under １０ＶＡ(Controller)
Communication function ※**This function is for M30 ONLY**	Communication specification ：ＲＳ－４８５ (２ lines type) Communication speed ：９６００ｂｐｓ Maximum connection ：３０units Maximum transmission distance ：１．２ｋｍ

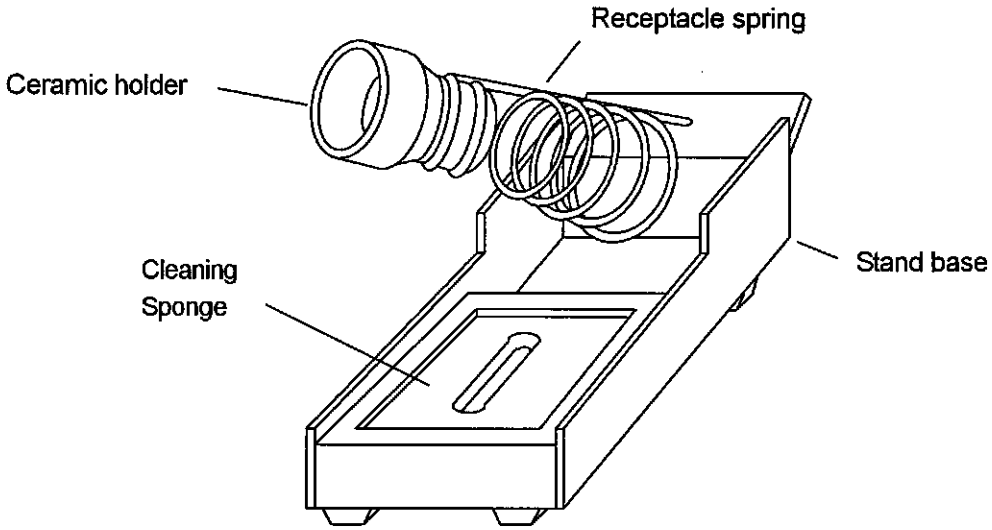
2－2 Iron unit

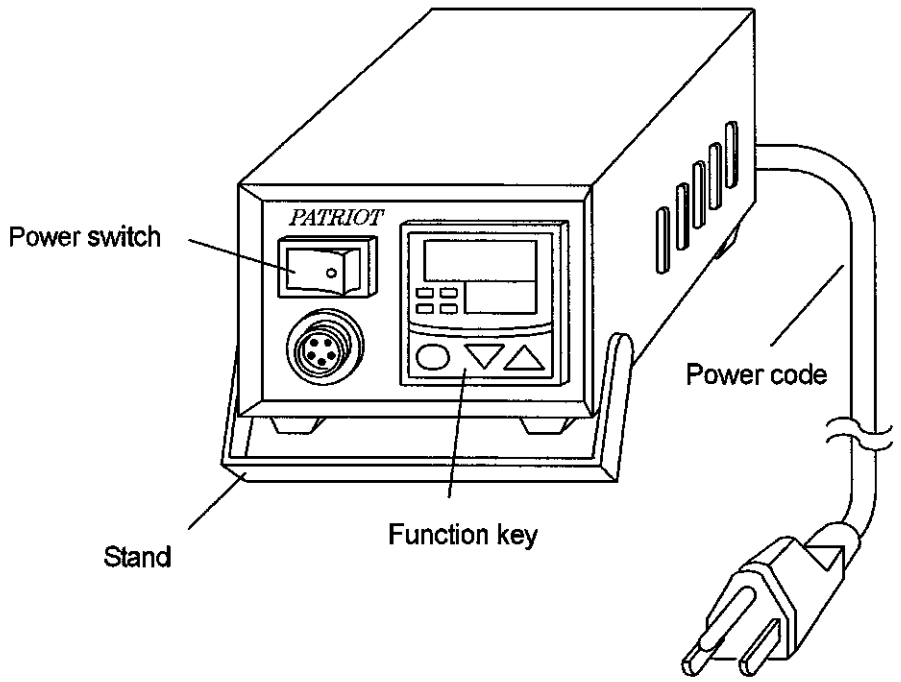
Iron unit no.	TB-118	TB-120J	TB-150	TB-240	TB-165	TB-265
Heater output	18W	20W	50W	40W	65W	65W
Heater voltage	100V	100V	100V	220V	100V	220V
Tip	BN5	BJ5	BN7 BN10	BN7 BN10	BNP10	BNP10
Heater	Alumina ceramics					
Leak voltage	Under ２．０ｍＶ (Initial value)					
Earth line residence	Under ２．０Ω (Initial value)					
Code	ＥＰ rubber code：１．５ｍ					

Iron unit no.	TB-155J	TB-255J	TB-1100	TB-2100		
Heater output	55W	55W	100W	100W		
Heater voltage	100V	220V	100V	220V		
Tip	BJ7	BJ7	BN12	BN12		
Heater	Alumina ceramics					
Leak voltage	Under ２．０ｍＶ (Initial value)					
Earth line residence	Under ２．０Ω (Initial value)					
Code	ＥＰ rubber code：１．３ｍ					

3. Name of parts







4. How to use

4 — 1 How to use the soldering iron system

① Connect the soldering iron to the temperature controller and set it onto the soldering iron stand.

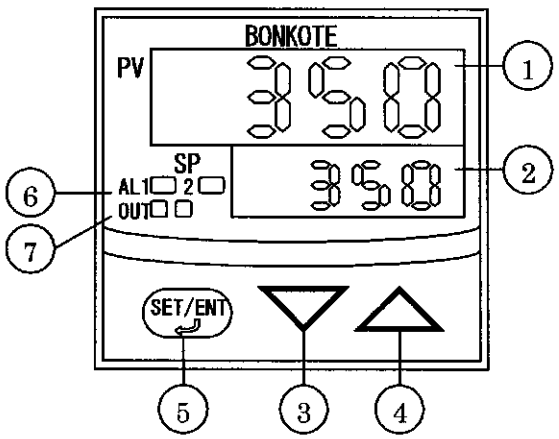
② Insert the power plug in the receptacle and set the power switch to ON.

③ Set a soldering temperature.
Set to a desired temperature by using the keys △ and ▽ of the temperature controller.
Push SET/ENT key to determine the entered value.

④ Make compensation of iron tip temperature, when needed. (See **Page.8** PV bias.)

4 — 2 How to use the temperature controller

(a) Names and functions of portions of controller

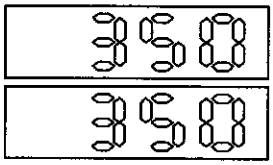


①	Indication of present iron tip temperature (PV)	• Present iron tip temperature (PV)is indicated. • Characters according to mode are indicated.
②	Indication of set iron tip temperature (SP)	• Set iron tip temperature (SP)is indicated. • Characters according to mode are indicated.
③	Down key of set value	This is used to lower a set value. Hereinafter, ▽ key
④	Up key of set value	This is used to raise a set value. Hereinafter, △ key
⑤	SET／ENT key	This is used to set a desired mode or change a mode. Hereinafter, SET/ENT key
⑥	AL light [red]	This glows when the present iron tip temperature has exceeded a preset alarm temperature range. (See **Page.7** Setting of alarm upper and lower limits)
⑦	Heater output light [orange]	This glows when the heater is ON.

(b) **How to operate** (Important matters are marked with ★)

① **Setting of soldering temperature**

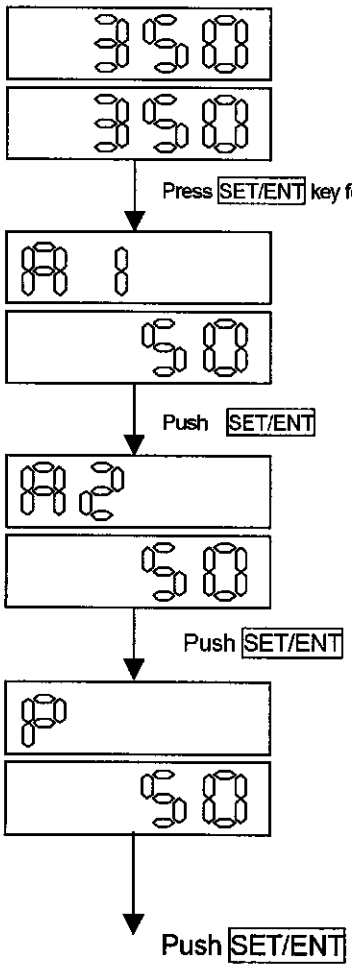
- Soldering iron tip temperature is set.
- Push SET/ENT key for 3 seconds, if a current mode is not the setting mode.
  After getting P V／S P indication & setting mode, set a desired temperature.



★ **P V／S P indication & setting mode**
(This is a mode just after turning on the system)
Set a desired temperature by using
▽ △ keys.

② **Setting of parameters**

- Parameters for controlling iron tip temperature are set.
- After changing a value on parameter screen by using ▽ △ key, push SET/ENT key to determine the value.
- The next parameter screen appears by pushing SET/ENT again.
- The initial screen appears by holding down SET/ENT for 3 seconds.



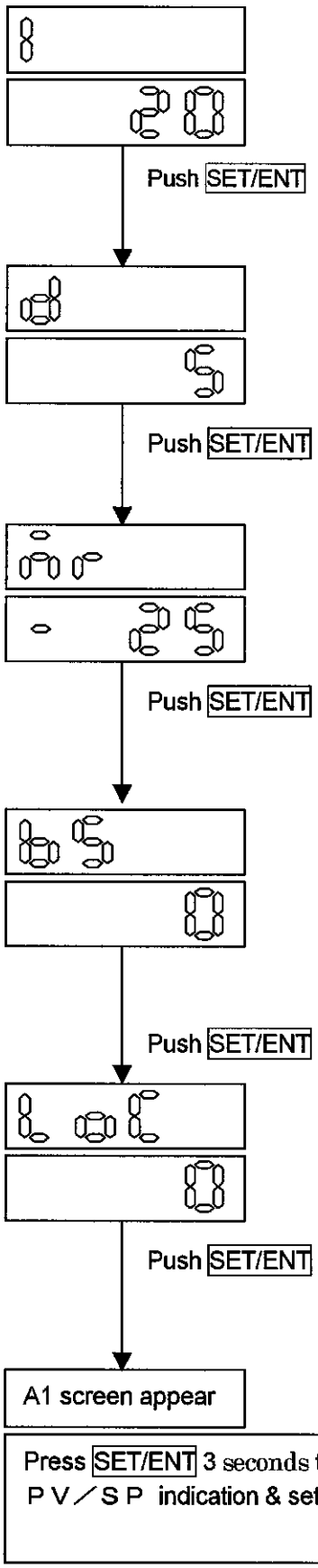
Set in P V／S P indication & setting mode.
(Mode just after turning on the system)

★ **Alarm upper limit set value** (A 1)
Upper limit is set.
Range : −6 0 0～6 0 0℃
Initial value : 5 0

★ **Alarm lower limit set value** (A 2)
Lower limit is set.
Range : −6 0 0～6 0 0℃
Initial value : 5 0

★ **Proportional band** (P)
Proportional bandwidth is set.
Range : 1～6 0 0℃
Initial value : 5 0(TB-150)
2 5 0(TB-155J)

※For the other iron unit, please see Page. 12 and set with your convenience.



★ **Integration time** (I)

The offset that (remaining deviation) appears by the proportion control is dissolved.

Range : O F F、 1～3 6 0 0 seconds

Initial value : 2 0 (TB-150), 4 0 (TB-155J)

※For the other iron unit, please set the value of P.12

★ **Differentiation time** (D)

A change in output is predicted, and it improves the stability of the temperature control.

Range : O F F、 1～3 6 0 0 seconds

Initial value : 5 (TB-150), 7 (TB-155J)

※For the other iron unit, please set the value of P.12

★ **Manual resetting** (at the time of I=0, movement)

Manual resetting (at the time of I=0, movement)

The offset appear by the proportion control is corrected. It does not become effective at the time of the one except PD control

Range : －1 0 0. 0～1 0 0. 0%

Initial value : －2 5 (TB-150), 1 6 (TB-155J)

※For the other iron unit, please set the value of P.12

★ **PV bias**

Perform temperature compensation of the tip.

Please refer instruction manual of Measurement of soldering iron for how to do.

Range : －6 0 0～6 0 0℃

Initial value : 0

★ **Setup data lock switching**

A set up data lock function is set up.

0 Non lock

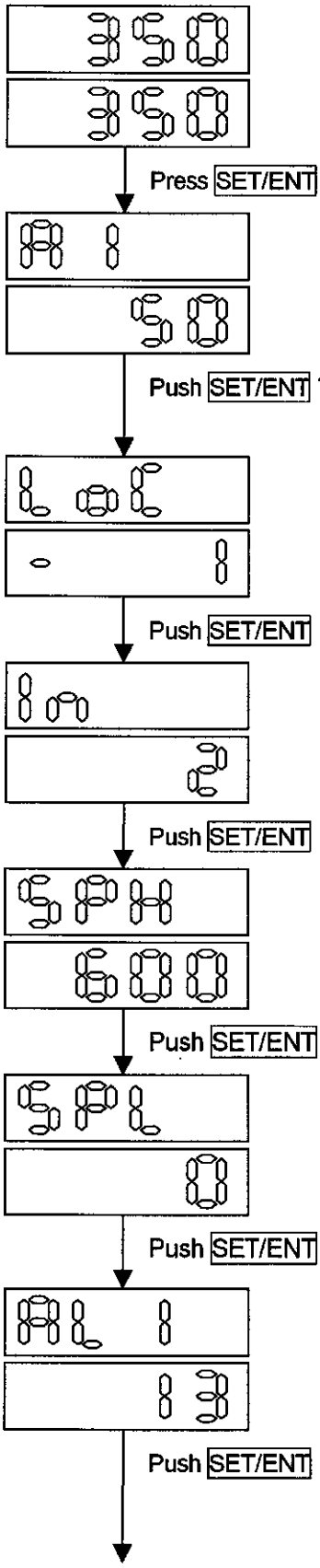
1 A change is prohibited except set up temperature.

2 All changes are prohibited.

－1 It shifts to SETUP.

Initial value : 0 (Non lock)

③ The settlement of others parameter



Set in PV／SP indication & setting mode.

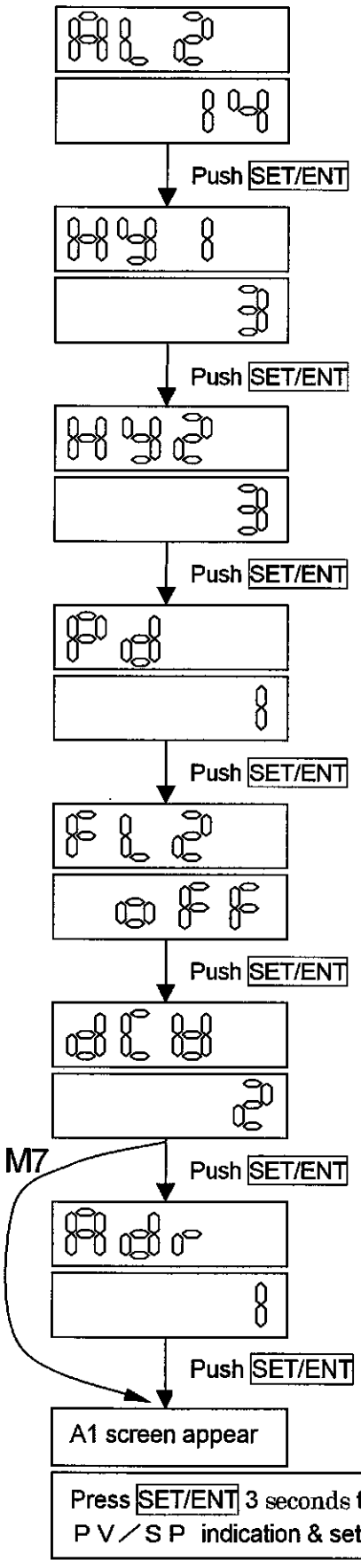
If Loc is indicated, it is set on −1
with ▽ △ key

★ **Soldering iron selection**
Set 5 with TB-120J, 155J, 255J
Set 2 with the other TB series.
Initial value : 2 (the other TB series)
: 5 (TB-120J, 155J, 255J)

★ **Scaling upper limit set value**
Upper limit is set
Range : Scaling lower limit value ～600
Initial : 600

★ **Scaling lower limit set value**
Lower limit is set
Range : 0～scaling upper value
Initial value : 0

★ **Alarm upper limit movement selection**
Upper limit is selected.
Take 13 usually
(Upper limit deviation with standing by)
Initial value : 13



★ **Alarm lower limit movement selection**

Lower limit is selected.
Take 14 usually
(Lower limit deviation with standing by)
Initial value : 1 4

★ **Alarm upper limit hysteresis**

Upper limit is set
Take 3 usually
Range : 0～600℃
Initial value : 3

★ **Alarm lower limit hysteresis**

Lower limit is set
Take 3 usually
Range : 0～600℃
Initial value : 3

★ **Control form selection**

The PID control system form is selected.
Range : 0 (PID control)
1 (BONKOTE original control)
Initial value : 1

★ **An internal filter time constant**

Take off usually
Range : 0～120 seconds
Initial value : off
※When to prevent overshooting, please set 1～2
(Temperature operation will be slowly.)

★ **An internal filter time constant**

Take 2 usually
Range : 0～100℃
Initial value : 2

★ **Device address set**
(This screen is for M30 ONLLY)
with communication function

The device address of communication is set.
It is used with QSS-2000
Range : 1～99

Caution in parameter changing !　　(Be sure to read)

When changing soldering iron ＜ I n ＞, the input bias＜ B S ＞ becomes "0" .

When changing scaling upper & lower limits＜ S P H、 S P L ＞, the soldering iron temperature set value ＜ S P ＞ is cleared and becomes "0" .

When changing alarm upper limit operation＜ A L 1 ＞, the alarm upper limit set value ＜ A 1 ＞ is cleared and becomes "0" .

When changing alarm lower operation ＜ A L 2 ＞, the alarm lower limit set value ＜ A 2 ＞ is cleared and becomes "0" .

When changing parameters above, restore cleared values.

※When changing parameters of M30 for Q S S－2 0 0 0 system from a personal computer, this restoring is not needed.
(Only model with communication function)

5. Setting of P I D constants

In using M30 or M7, overshooting phenomenon may occur. In this phenomenon, iron tip Temperature exceeds a set temperature in the middle of soldering work. It can be Lessened by changing PID constants of soldering iron. Effects and examples of those Constants are explained below. (For additional setting value, please see **page. 33**.)

	Major effects
P proportional band	Overshoot becomes less, as this value becomes larger. However, temperature restoring time becomes longer and temperature drop during work becomes larger.
I Integrating time	Overshoot becomes less, as this value becomes larger. However, temperature restoring time becomes longer and temperature drop during work becomes larger. Overshoot decreases drastically, if this constant is set to 0. However, controlled temperature might be unable to reach set value. If this happens, do manual resetting (Mr), so that temperature in stable state can agree with set temperature.
D Dividing time	Overshoot becomes less, as this value becomes smaller. However, temperature restoring time becomes longer. Adjust D, after P and I have been roughly determined.

For how to set, see **Page-6 ~ 10.**

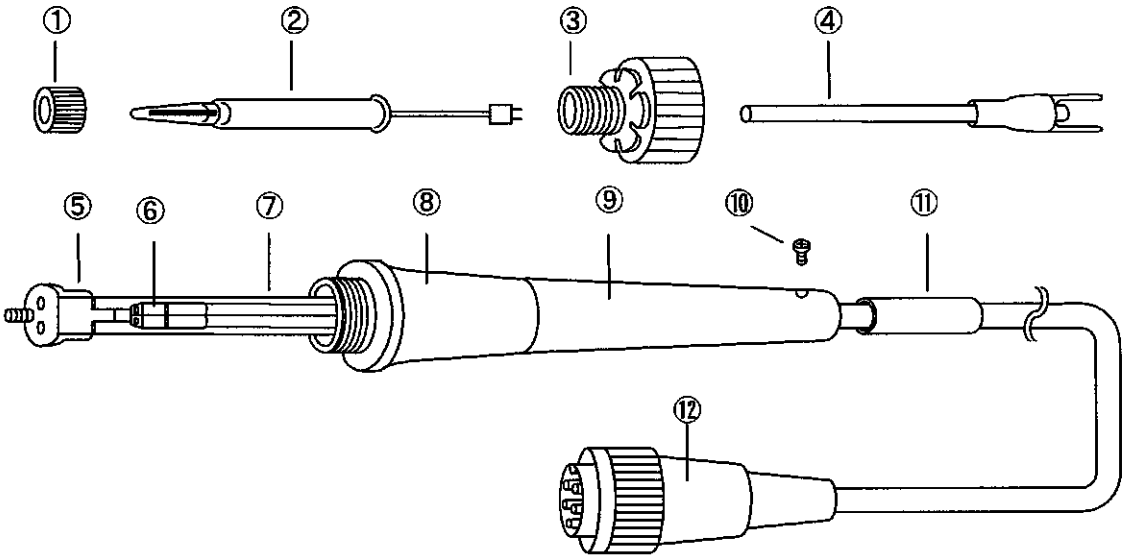
Table of P, I, D example values when setting temp. is 340℃
(as reference: In case of iron temp. 400℃)

Soldering iron unit model	Soldering iron tip model	P	I	D	Mr
TB-118	BN5-2B, 3B, 2D	50(40)	20	4(5)	10(25)
TB-140 TB-240	BN7-2C	50	20	6(7)	-5(10)
	BN7-2B	70	20	7	-10(-5)
	BN10-8BC	30	20	7	-10(15)
TB-150	BN7-2C	50	20	5	-25(-15)
	BN7-5B	60(55)	20	5(7)	-30(-24)
	BN7-KF	270	100	15	12(22)
	BN10-8BC	40	20	7	-20(-10)
TB-165 TB-265	BNP10-8BC	45(40)	25	8	-20(-15)
	BNP10-4B	80	25	12	-10
TB-120J	BJ5-2B, 2C, KF	210	75	2	20(30)
TB-120J	BJ5-2D, 0.4KF	240	30	5	19
TB-155J	BJ7-2C, 3C	250(220)	40(35)	7	16(18)
TB-255J	BJ7-2C, 3C	230	35	12(13)	-5
TB-1100	BN12-10BC	45	55	15	14(34)
TB-2100	BN12-10BC	65	55	12	-10(0)

※ For soldering iron tip models not shown here, use set values upon delivery or refer to the shown values of models which resemble in shape and size.

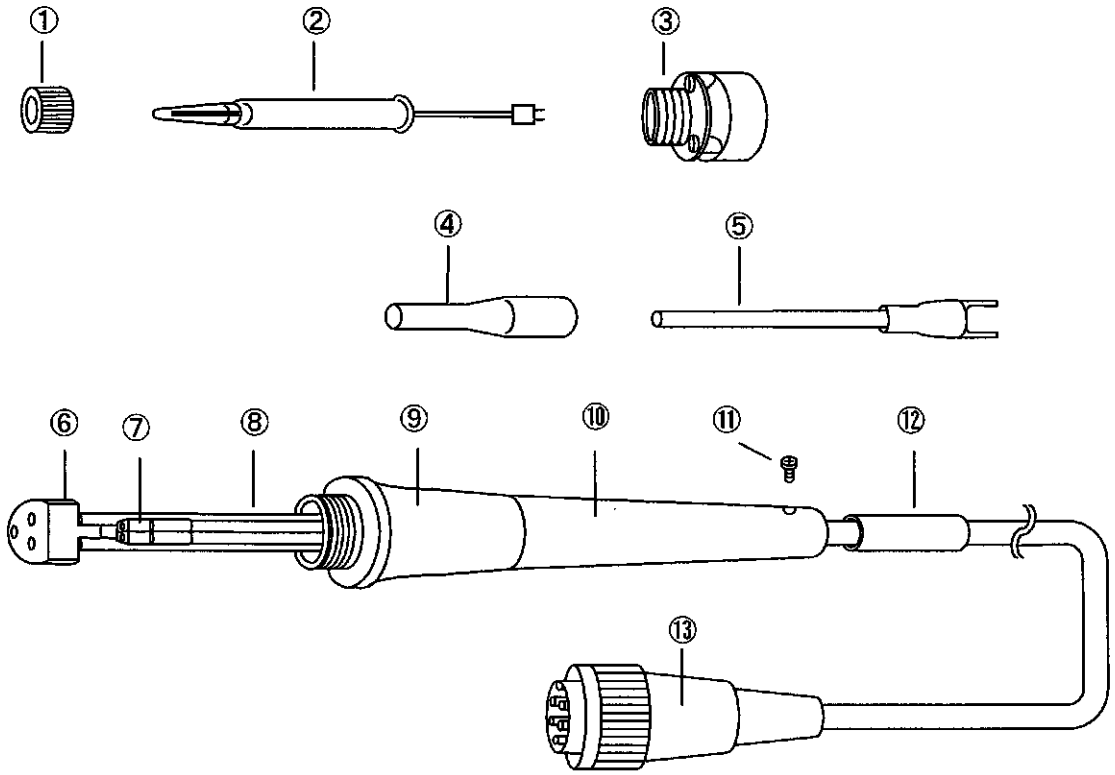
6. Iron unit

6 – 1 TB-118 Components



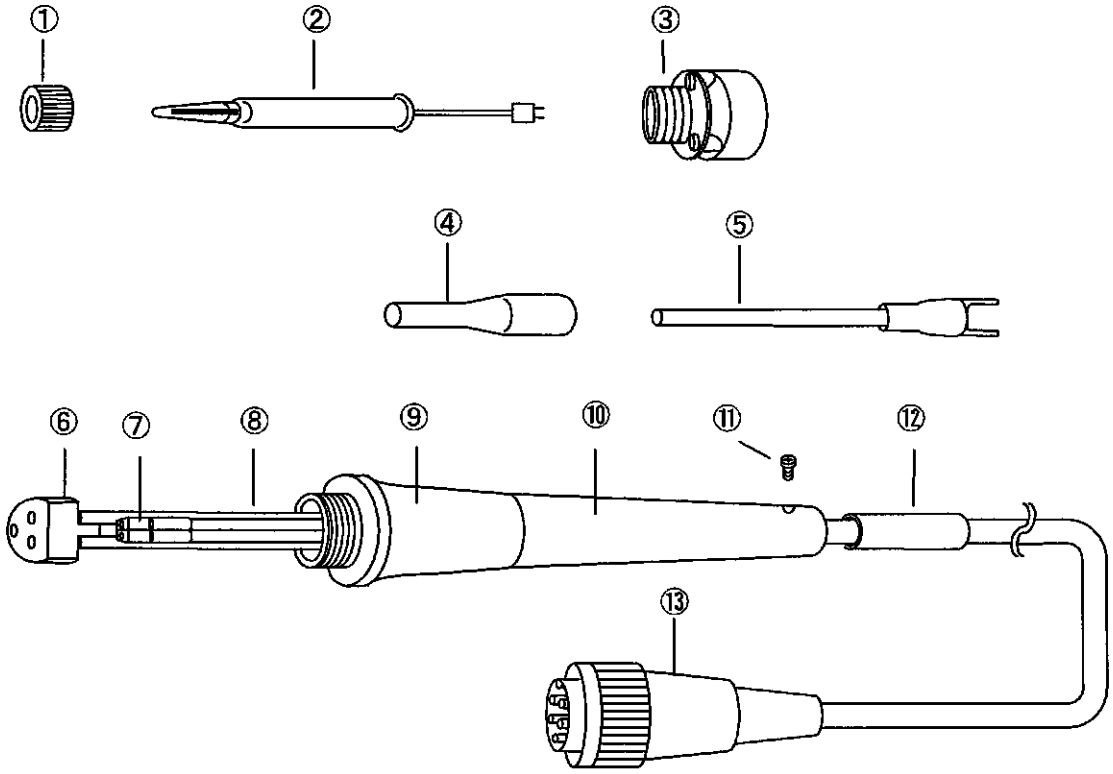
No.	Part name	Part no.	Q'ty	Note
①	Cover nut	CN-5	1	Ni plating
②	Tip	BN5	1	Cu+Fe plating
③	Radiator nut	NA-42	1	
④	Heater	KPCE-100-18	1	100V 18W
⑤	Connector	RC-113	1	
⑥	Sensor socket	PM-1	1	Polarity Red : +
⑦	Relay code	EP-6	1.5m	ESD EP elasticity rubber
⑧	Grip cover	GC-2	1	
⑨	Grip case	MK-51K	1	66 nylon
⑩	Set bolt	PB-3	1	
⑪	Code bush		1	Silicone rubber
⑫	5P connector		1	

6 — 2 TB-150, 240 Components



No.	Part name	Part no.		Q'ty	Note
①	Cover nut	CN-7	CN-10	1	Ni plating
②	Tip	BN7	BN10	1	Cu+Fe plating
③	Radiator nut	NA-50		1	
④	Earth collar	EC-10		1	
⑤	Heater	CE-100-50(TB-150)		1	100V 50W
		CE-220-40(TB-240)			220V 40W
⑥	Connector	RC-111		1	
⑦	Sensor socket	PM-1		1	Polarity Red : +
⑧	Relay code	EP-6		1.5m	ESD EP elasticity rubber
⑨	Grip cover	GC-3		1	
⑩	Grip case	GK-70K		1	66 nylon
⑪	Set bolt	PB-4		1	
⑫	Code bush			1	Silicone rubber
⑬	5P connector			1	

6 — 3 TB-165, 265 Components



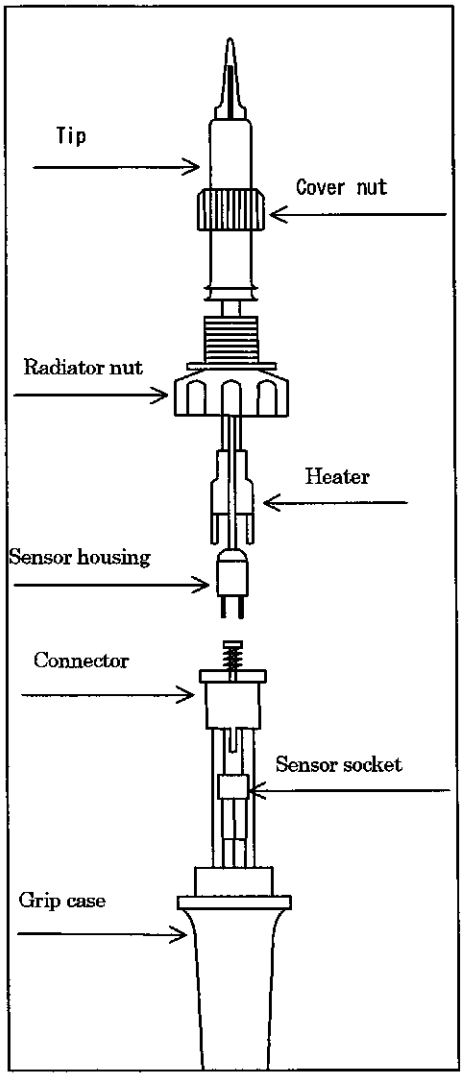
No.	Part name	Part no.	Q'ty	Note
①	Cover nut	CN-10	1	Ni plating
②	Tip	BNP10	1	Cu+Fe plating
③	Radiator nut	NA-50	1	
④	Earth collar	EC-20	1	
⑤	Heater	FCE-100-65(TB-165)	1	100V 65W
		FCE-220-65(TB-265)		220V 65W
⑥	Connector	RC-111	1	
⑦	Sensor socket	PM-1	1	Polarity Red : +
⑧	Relay code	EP-6	1.5m	ESD EP elasticity rubber
⑨	Grip cover	GC-3	1	
⑩	Grip case	GK-70K	1	66 nylon
⑪	Set bolt	PB-4	1	
⑫	Code bush		1	Silicone rubber
⑬	5P connector		1	

6－4 How to maintenance TB-118

（a）Replacing heater

1. Set the power switch to OFF and cool down the iron tip.
2. Loosen and remove the cover nut.
3. Loosen the radiator nut. (Do not remove the nut.)
4. Loosen the set bolt; push the 5P core relay cord toward the iron tip until the sensor socket comes out of the grip case.
5. Remove the sensor housing from the sensor socket, and remove the tip and radiator nut together.
6. Remove old heater and fit a new heater.
7. Pass the sensor housing into the radiator nut.
8. Insert the sensor housing in the sensor socket. Take great care not to make mistakes on polarity.
   Sensor housing : ●・・・＋
   Sensor socket : Red・・・＋
9. Tighten the radiator nut first, cover nut and set bolt.

※When you fasten a cover nut, please carry out with pressing down so that tip may not be turn.



（b）Replacing of Tip

1. Conduct the same step 1 to 4 with above.
2. Remove the sensor housing from the sensor socket and remove the old tip
3. Pass the new tip's sensor housing into the radiator nut.
4. Conduct the step 8 to 9 above.

※Before use, check the current condition between the tip and power supply.

6－5 How to maintenance TB-150, 240, 165, 265

（a）Replacing of heater

1. Set the power switch to OFF and cool down the iron tip.
2. Loosen and remove the cover nut.
3. Loosen the radiator nut. (Do not remove the nut.)
4. Loosen the set bolt; push the 5P core relay cord toward the iron tip until the sensor socket comes out of the grip case.
5. Remove the sensor housing from the sensor socket, and remove the tip and radiator nut together.
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   Take great care not to make mistakes on polarity.
   Sensor housing : ● ・ ・ ・ ＋
   Sensor socket : Red ・ ・ ・ ＋
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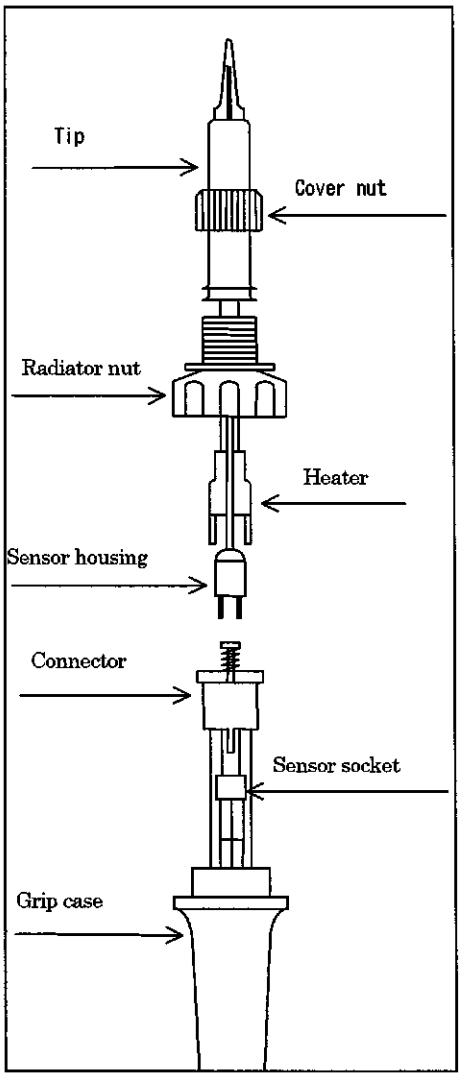
※When you fasten a cover nut, please carry out with pressing down so that tip may not be turn.

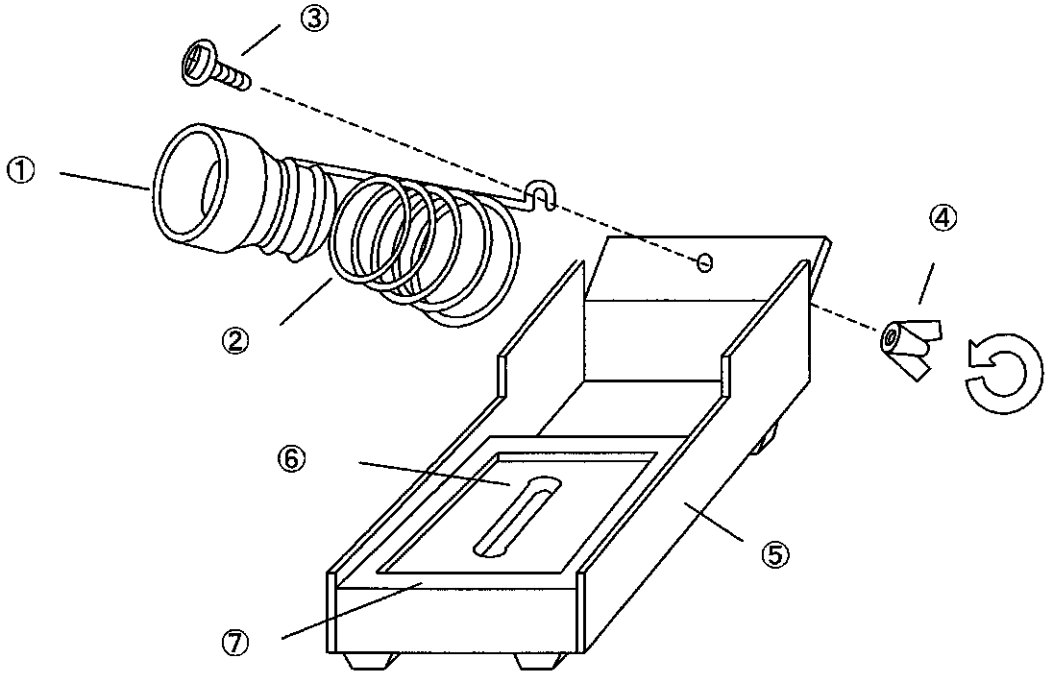


（b）Replacing of Tip

1. Conduct the same step 1 to 4 with above.
2. Remove the sensor housing from the sensor socket and remove the old tip
3. Pass the new tip's sensor housing into the radiator nut.
4. Conduct the step 8 to 9 above.

※Before use, check the current condition between the tip and power supply.

7. How to assemble the iron stand BON-9

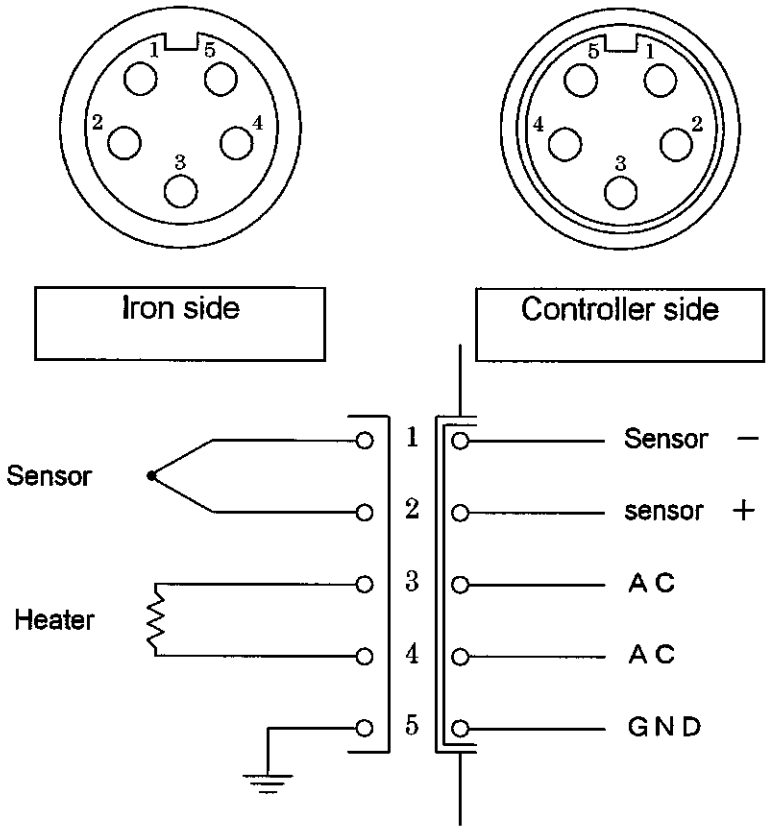


No.	Part name		Part no.
①	Holder	TB-118, TB-120J	B-9-1
		TB-155J, TB-255J	B-9-15
		TB-150, TB-165	B-9-2
②	Receptacle spring		ISP-2
③	Bolt		BLT-3
④	Wing nut		WN-3
⑤	Stand base		ISB-2
⑥	Cleaning sponge		S-5
⑦	Cleaner case		K-5

Please assemble as mentioned above.

Please be sure that water is included in cleaner sponge, clean the tip.

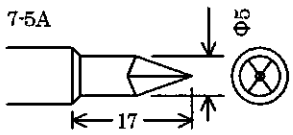
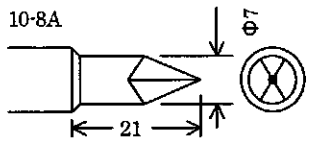
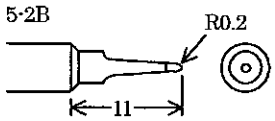
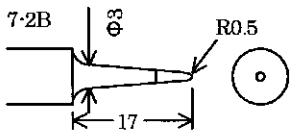
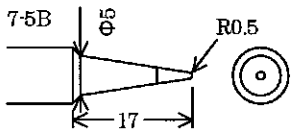
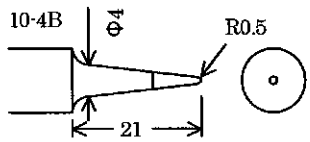
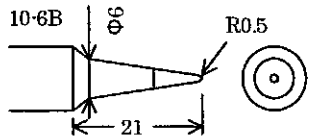
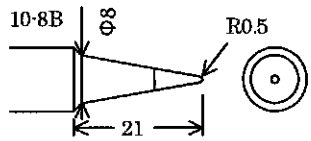
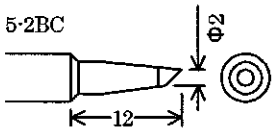
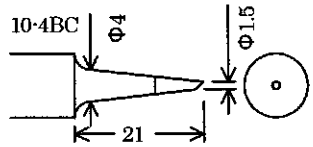
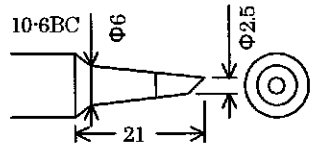
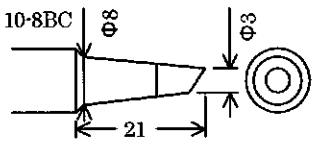
8. Connector Wiring

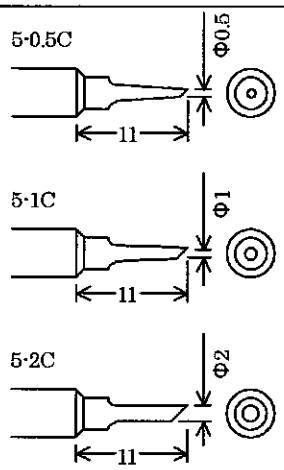
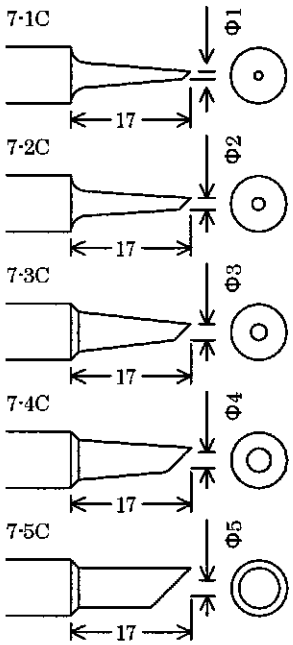
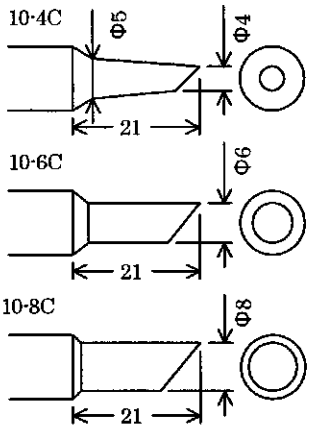
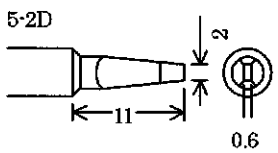
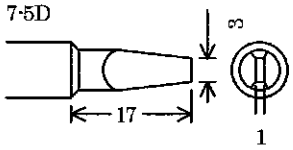
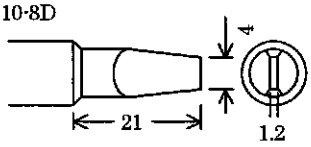


※Checking for tip and heater exchange

Between 1-2pin		1 8 ± 2 Ω
Between 3-4pin	T B − 1 1 8	1 1 2 ± 1 5 Ω
	T B − 1 5 0	3 5 ± 4 Ω
	T B − 1 6 5	3 2 ± 4 Ω
	T B − 2 4 0	2 8 0 ± 3 5 Ω
	T B − 2 6 5	1 5 3 ± 1 7 Ω
Between 3-5pin		∞
Between 4-5pin		∞
Between 5-tip		0 ~ 2 Ω

9. Replacement tip

Type	BN5	BN7	BN10	BNP10
Suitable unit	TB−118	TB−150 TB−240	TB−150 TB−240	TB−165 TB−265
A type				
B type	 ※ 3mm	  ※ 5mm	   ※ 7mm
BC type	 ※ 3mm		   ※ 7mm

Type	BN5	BN7	BN10	BNP10
Suitable unit	TB−118	TB−150 TB−240	TB−150 TB−240	TB−165 TB−265
C type				
D type	 ※ 3mm	 ※ 10mm	 ※ 7mm	

※Solder coating

Please refer our general catalogue for the other type of tips.

10. Soldering iron unit model TB-120J

10－1 About TB-120J

TB-120J has features of conventional soldering iron units. But at the same time, it has simpler structure, better durability and operability and is easier in maintenance.

Therefore, TB-120J uses input sensor of Type J, instead of using Type K which is used conventional soldering iron unit models (TB-118, 140, 150, 150KM, 165, 1100, 240, 265, 240KM, 2100). Its specifications are different from specifications of conventional units as well.

Before using TB-120J, understand the following matters.

① For conventional models, input sensor is Type K. But, TB-120 uses Type J.
In controller setting, set to Type J.
For setting method, see **page.9** Selection of soldering iron.
Furthermore, read **page.11** Caution in soldering iron selection.

② Components or parts related to the sensor are made of the same material as the sensor material to keep temperature precision. Be careful in handling sensor coil, relay sensor wire etc.

③ This product uses resin parts so as to make it smaller and lighter.
Do not give unnecessary shocks or strong force during operation and maintenance.

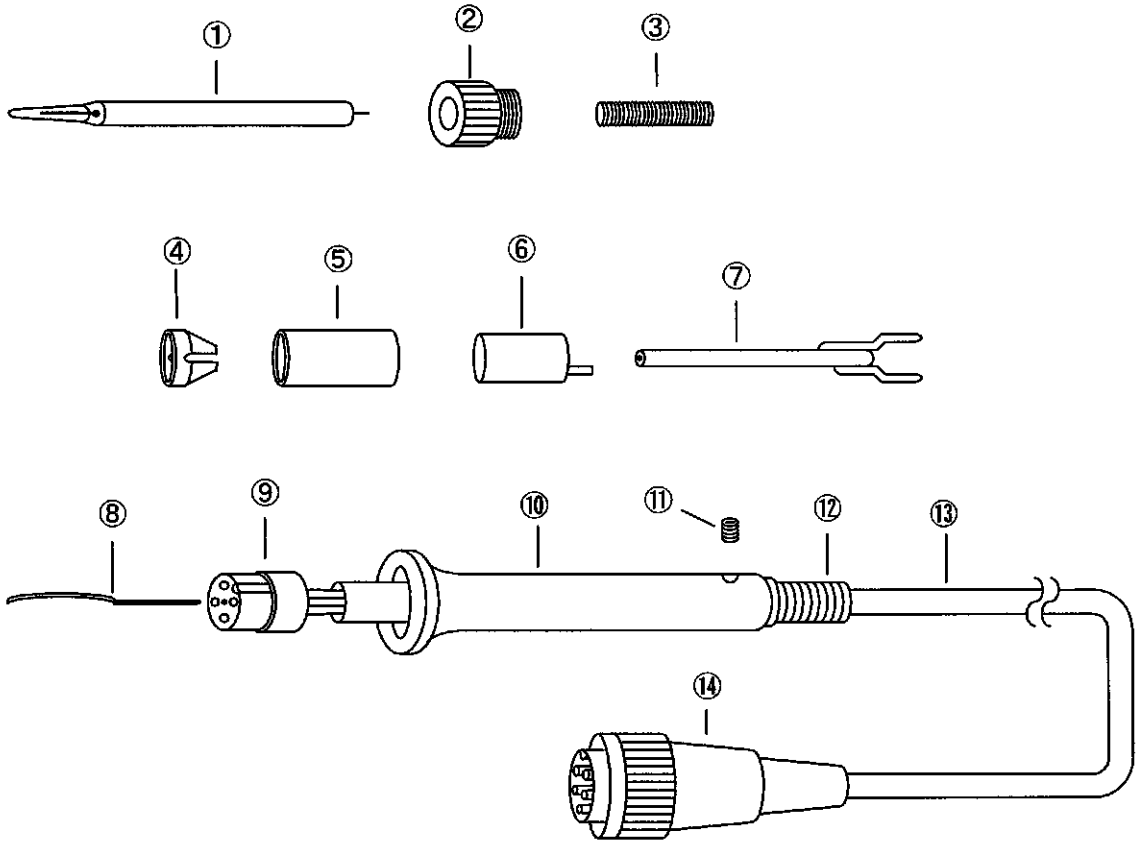
④ This product has different structure of sensor from those of conventional products so that its sensor can detect iron tip temperature on real time.
In order to keep sensor sensitivity longer, use under operating temperature of **450℃ or less.**

Major specifications of TB-120J

Product name	L A-type miniature electric soldering iron Jupiter
Model	TB-120J
Power consumption	20 (W)
Soldering iron tip	B J 5 series (with Type J sensor)
Heater	Ceramic heater 100 (V) — 20 (W)
Set temperance	100℃ - 450℃ (Do not set to 450℃ or higher.)
Relay cord	EP rubber 5-wire cord
Weight	Approx.22 (g) ※ not inclusive of relay cord
Size	Φ22×182 from end of soldering iron to rear end of cord bush
Insulation resistance	100 (MΩ) or higher DC-500 (V) megger meter ※ Between iron tip and power plug blade after becoming 450℃
Grounding resistance	2 (Ω) or less Initial value
Leak voltage	2 (mv) or less Initial value

10－2 TB-120J Components

Components of iron unit

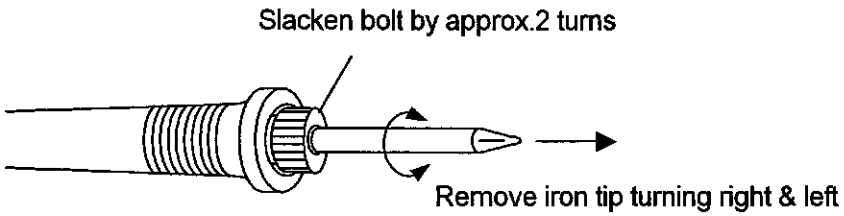


No.	Part name	Part no.	Q'ty	Note
①	Tip	BJ5	1	Cu+Fe plating
②	Holding bolt	CNJ-5	1	66 nylon
③	Sensor coil	JSC-01	1	Fe coil
④	Tip holder	TH-01	1	Aluminum
⑤	Earth pipe assembly		1	Aluminum
⑥	Terminal cover assembly	TCV-5	1	66 nylon
⑦	Heater	JCE-100-20	1	100V 20W
⑧	Relay sensor	CSW-01	1	
⑨	Main socket assembly		1	66 nylon
⑩	Grip case		1	66 nylon ESD safe
⑪	Set bolt	PSB-44	1	
⑫	Code bush		1	
⑬	Relay code		1	ESD EP elasticity rubber
⑭	5P connector		1	

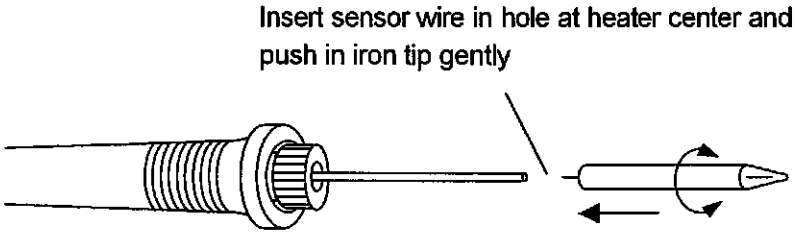
10－3 How to maintenance of TB-120J

1) Replacement of soldering iron tip
Replace iron tip as follows.

① Cut power and wait until iron tip temperature lowers to safe temperature
② Slacken the holding bolt by approx. 2 turns.
※Continue replacement activity, remaining the holding bolt attached to the grip case.
③ Pull off present iron tip quietly from the heater by rotating it clockwise and counterclockwise slightly.



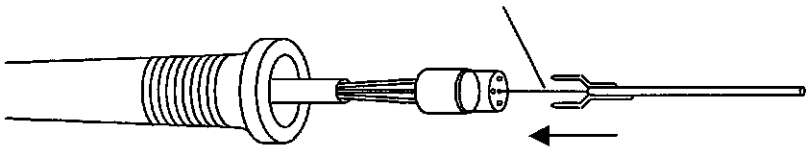
④ Insert sensor wire of new soldering iron tip in the through hole at the heater center and push in, rotating the iron tip right and left, up to the stopping point (until the soldering iron slightly contacts with heater head).
※Do not push in forcibly. Otherwise, sensor wire may be deformed. Push in gently.



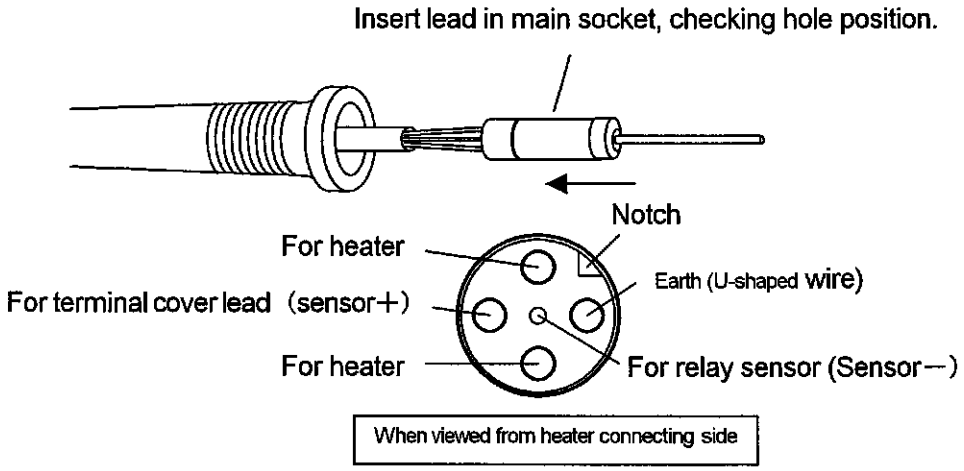
⑤ Tighten the holding bolt to fix.
※The holding bolt is made of resin. It may be damaged, when tightened too hard. Usually tighten with your hand.

2) Replacement of heater
Replace the heater as follows.

① Cut power and wait until soldering iron temperature reaches safe level.
② Slacken the holding bolt and remove it.
③ Pull off present iron tip quietly from the heater by rotating it clockwise and counterclockwise slightly.
④ Similarly, pull off sensor coil quietly from the heater by rotating it clockwise and counterclockwise slightly.
Note) Sensor coil is made of special material and different from ordinary spring in material. Therefore, it is easier to be deformed. Be careful about it.
⑤ Slacken the cord securing screw and shift the cord bush downward.
⑥ Push the replay cord upward and pull out the main socket assembly from the grip case.
⑦ Detach the earth pipe assembly and terminal cover assembly from the main socket assembly quietly.
⑧ Pull out the heater terminal (lead) from the main socket and insert it in the holes of main socket shown below, passing the relay sensor wire through the center hole of new heater.



⑨ Attach the terminal cover assembly, earth pipe and tip holder to the main socket assembly in this order.
※Align the connecting lead of terminal cover with the hole shown below.



⑩ Put back every component in the reverse steps.

3) Replacement of sensor coil
Replace sensor coil as follows.

① Cut power and wait until iron tip temperature lowers to safe temperature.
② Slacken the holding bolt by approx. 2 turns
※Continue replacement activity, remaining the holding bolt attached to the grip case.
③ Pull off present iron tip quietly from the heater by rotating it clockwise and counterclockwise slightly.
④ Pull off present sensor coil quietly from the heater by rotating it clockwise and counterclockwise slightly.
⑤ Attach new sensor coil, placing it along the heater.
Note) Sensor coil is made of special material and different from ordinary spring in material. Therefore, it is easier to be deformed. Be careful about it.
⑥ Tighten the holding bolt to fix, after attaching the soldering iron tip.
※The holding bolt is made of resin. It may be damaged, when tightened too hard. Usually tighten with your hand.

4) Replacement of relay sensor
Replace the relay sensor as follows.

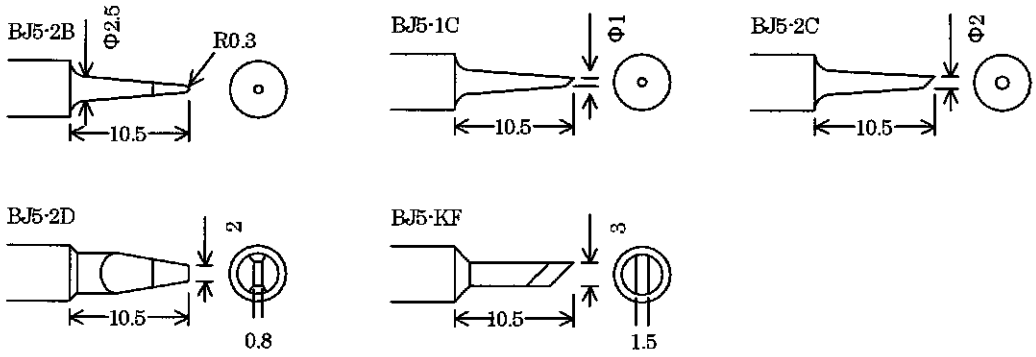
① Cut power and wait until iron tip temperature lowers to safe level.
② Remove the heater in accordance with Heater replacement procedures.
※See Heater replacement procedures **page.25**.
③ Pull off present relay sensor from the main socket and attach a new relay sensor.
※The relay sensor is connected to the pin socket at the bottom of main socket. After insertion, check the connection by slightly pulling with your fingers.
Cut off extra sensor wire which projects from the heater top, aligning the cut point with the heater top position.

④ For procedures after this step, follow the same procedures as Heater replacement. See Heater replacement procedures **page.25**.

5） Replacement parts

Please refer to the following for replacement parts.

①Tip

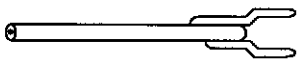


②Heater

ＪＣＥ－１００－２０

１００（Ｖ）－２０（Ｗ）

（Marking：ＢＯ－２６Ａ）



③Sensor coil

ＪＳＣ－０１

Φ４×５０（Long coil）

④Relay sensor

ＣＳＷ－０１

Φ０．５×１１０（Ｌ）

1 1. Soldering iron unit model TB-155J, 255J

1 1 — 1 About TB-155J, 255J

TB-155J, 255J has features of Lead free (also available to use for conventional) soldering iron units. But at the same time, it has simpler structure, better durability and operability and is easier in maintenance.

Therefore, TB-155J, 255J uses input sensor of Type J, instead of using Type K which is used conventional soldering iron unit models (TB-118, 140, 150, 165, 150KM, 1100, 240, 265, 240KM, 2100). Its specifications are different from specifications of conventional units as well.

Before using TB-155J, 255J, understand the following matters.

① For conventional models, input sensor is Type K. But, TB-155J, 255J uses Type J. In controller setting, set to Type J. For setting method, see **page.9** Selection of soldering iron. Furthermore, read **page.11**.

② Components or parts related to the sensor are made of the same material as the sensor material to keep temperature precision. Be careful in handling sensor coil, relay sensor wire etc.

③ This product is made compact and lighter.
Do not give unnecessary shocks or strong force during operation and maintenance.

④ This product has different structure of sensor from those of conventional products so that its sensor can detect iron tip temperature on real time.
In order to keep sensor sensitivity longer, use under operating temperature of **5 0 0℃ or less.**

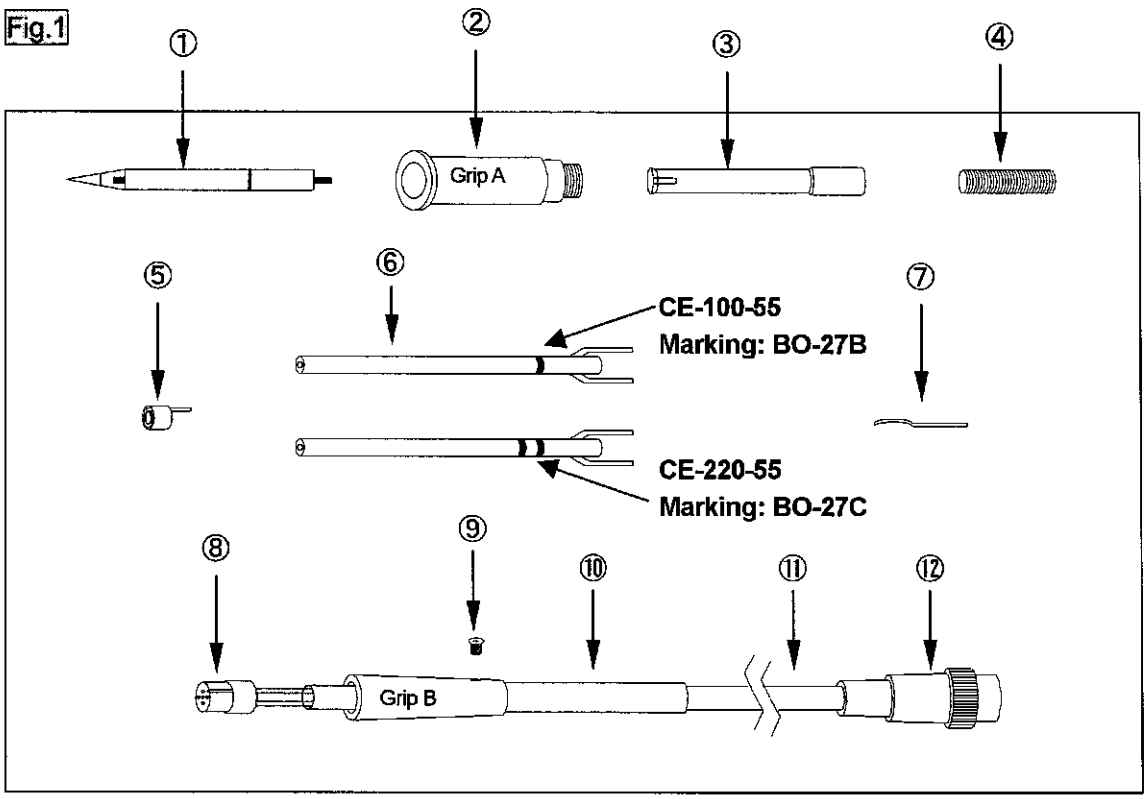
Major specifications of TB-155J, 255J

Product name	LA - type medium electric soldering iron	
Model	TB-155J	TB-255J
Power consumption	55 (W)	55 (W)
Soldering iron tip	B J 7 series (with Type J sensor)	
Heater	Ceramic heater 100 (V) – 55 (W)	Ceramic heater 220 (V) – 55 (W)
Set temperance	100℃ - 500℃ (Do not set to 500℃ or higher.)	
Relay cord	EP rubber 5-wire cord	
Grounding resistance	Under 2(Ω) Initial value	
Leak voltage	Under 2(mv) Initial value	

1 1 — 2 TB-155J, 255J Components

Components of iron unit

Fig.1



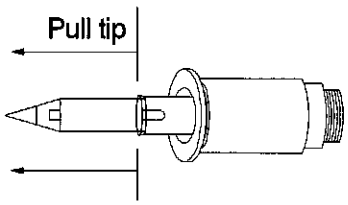
No.	Part name	Part no.	Q'ty	Note
①	Tip	BJ7 type	1	Cu+Fe plating
②	Grip A	JK-60A	1	
③	Holding pipe	KTP-1	1	SUS
④	Sensor coil	JSC-02	1	Fe
⑤	Terminal cover assembly	TCV-7	1	
⑥	Heater element	JCE-100-55(TB-155J)	1	100V/55W (Marking: BO-27B)
		JCE-220-55(TB-255J)		220V/55W (Marking: BO-27C)
⑦	Relay sensor	CSW-02	1	
⑧	Main socket assembly		1	
⑨	Set bolt	PB-3	1	
⑩	Code bush		1	
⑪	Relay code		1	ESD EP elasticity rubber
⑫	5P connector		1	

1 1 — 3 How to maintenance TB-155J, 255J

1) Replacement of soldering iron tip
Replace iron tip as follows

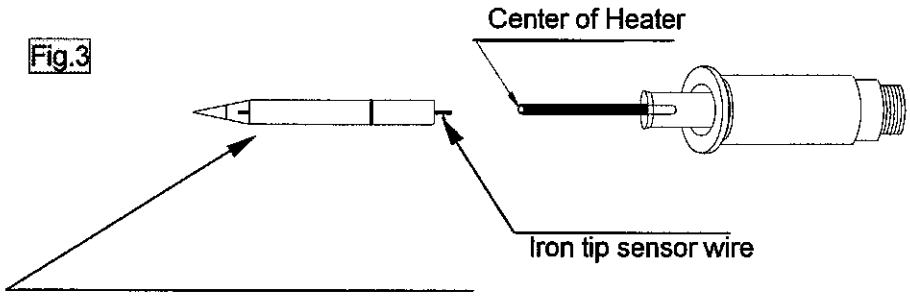
① Cut power and wait until iron tip temperature lowers to safe temperature.
② Pull off present iron tip quietly by hands from the holding pipe.
(As using this unit, it may be oxidized and not simply pulled but do not use any tool to pull the tip out.)

Fig.2



③ Insert sensor wire of new soldering iron tip in the through hole at the heater center and push in, rotating the iron tip right and left slightly, up to the stopping point (until the soldering iron slightly contacts with heater head).
※Do not push in forcibly. Otherwise, sensor wire may be deformed. Push in gently.

Fig.3



Insert iron tip by rotating right and left slightly

Insert tip till these lines overlapped as Fig.5

Fig.4

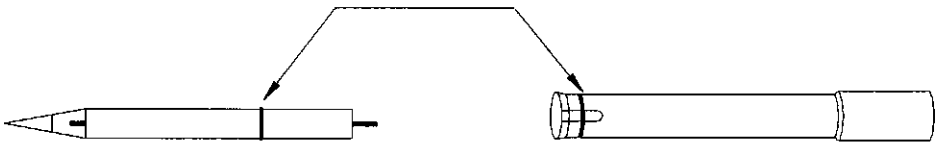
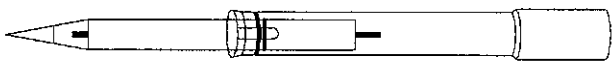


Fig.5



2） Replacement of heater
Replace the heater as follows

① Cut power and wait until soldering iron temperature reaches safe level.
② Pull off present iron tip quietly as same way with Replace tip.
③Similarly, pull off sensor coil quietly from the heater.
Note) Sensor coil is made of special material and different from ordinary spring in material.
Therefore, it is easier to be deformed. Be careful about it.
④ Remove Grip A from Grip B by rotating to counterclockwise.
⑤ Pull off holding pipe.
⑥ Remove terminal cover.
⑦ Remove present heater.
Note) Make sure to keep relay sensor in main socket. Do not remove the sensor.
⑧ Insert the new heater terminal (lead) in the holes of main socket shown below of Fig.9, passing the relay sensor wire through the center hole of new heater.
⑨ Attach the terminal cover assembly, and insert the lead to the main socket shown below of Fig.9.
⑩ Put back every component in the reverse steps.

※Checking for tip and heater exchange

Between 1-2pin	Under 10Ω
Between 3-4pin	28Ω±15%
Between 3-5pin	∞
Between 4-5pin	∞
Between 5-tip	Under 2Ω

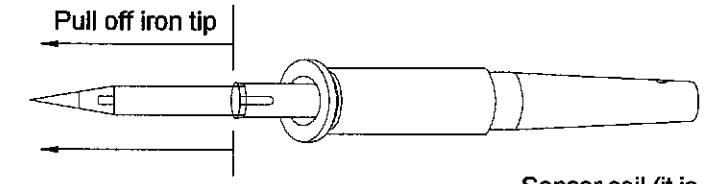


Fig.6

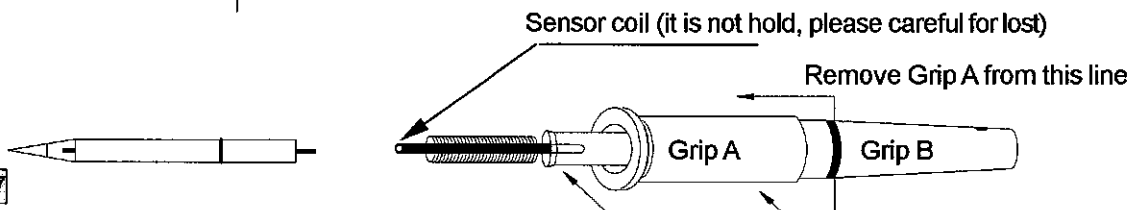


Fig.7

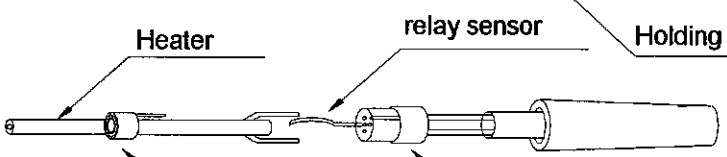


Fig.8

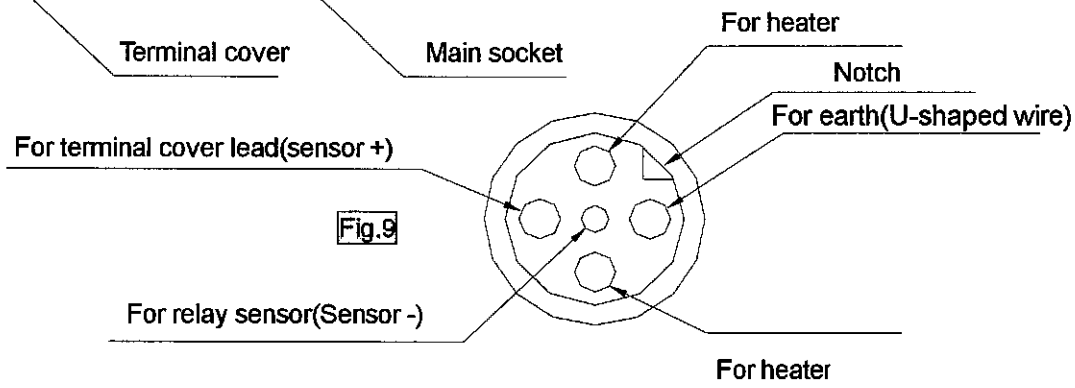


Fig.9

When viewed from heater connecting side

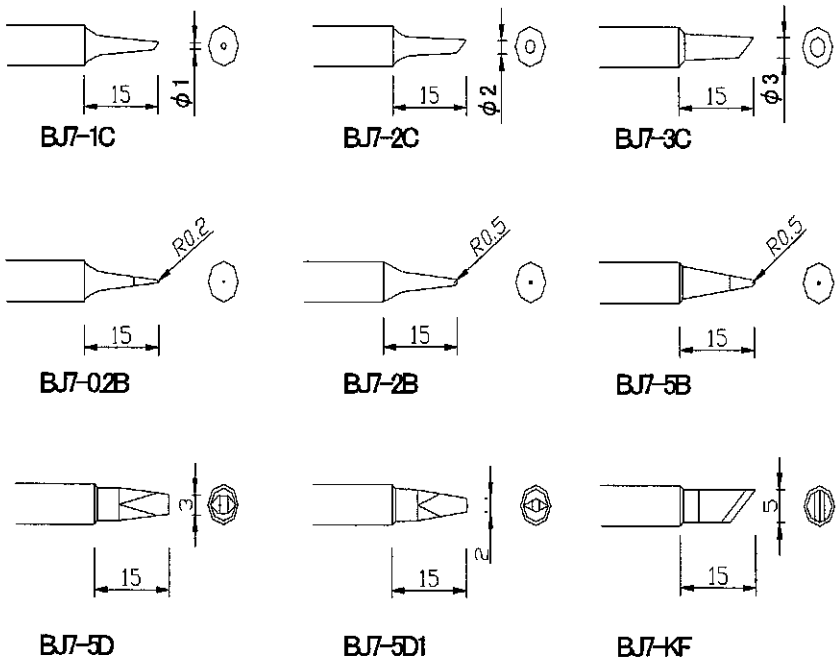
3） Replacement of sensor coil and maintenance
Replace sensor coil as follows.

① Cut power and wait until iron tip temperature lowers to safe temperature.
② Pull off present iron tip quietly from the heater.
③ Lay down heater and take off sensor coil.
④ Attach new sensor coil, placing it along the heater.
Note) Sensor coil is made of special material and different from ordinary spring in material. Therefore, it is easier to be deformed. Be careful about it.
⑤Insert Iron tip.

4） Replacement of relay sensor
Replace the relay sensor as follows

① Cut power and wait until iron tip temperature lowers to safe level.
② Remove the heater in accordance with Heater replacement procedures.
※See Heater replacement procedures **page.31**.
③ Pull off present relay sensor from the main socket and attach a new relay sensor.
※The relay sensor is connected to the pin socket at the bottom of main socket. After insertion, check the connection by slightly pulling with your fingers.
④ For procedures after this step, follow the same procedures as Heater replacement. See heater replacement procedures **page.31**.

5） Replacement
Regular type



Please contact us for the other shape and customize tip.

1 2. Additional setting PID constants

To prevent from overshooting

When desire to prevent from overshooting, please set the value of FL2 2 and set following value for your using soldering iron.

For setting method, please see **page.7**.

(When setting tem. is 3 4 0℃)

Iron unit no.	Iron tip	P	I	D	Mr
TB-118	BN5-2B, 2C	150	30	5	22
	BN5-2D, 3B	150	30	5	54
TB-150	BN7-2C	380	30	8	14
	BN7-1xx, 2xx	400	35	8	14
	BN10-xxx	100	30	8	16
	BN10-4xx	200	30	8	16
TB-165	BNP10-8BC	150	30	8	16
	BNP10-4xx	180	30	8	15
TB-120J	BJ5-2B,1C	210	30	5	22
	BJ5-2C, KF, 2D, 0.4KF	240	30	5	19

1 3. Guarantee and after service

Guarantee

Our products are shipped after several factory test & inspection. But if you find malfunctions or defects due to problems in workmanship or transportation, please contact with your dealer or us. The guarantee period of your system in one year after your purchase, except for replacement parts.

After service

When you think your system does not operate properly, read this manual again to check.
If still troubles are not solved, please contact with your dealer or us.

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BONKOTE®

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