HAKKO®

Quality Tools For The Electronics Industry

Europe version





HAKKO brand is much loved in more than 50 countries worldwide.

HAKKO has grown into a global brand. Our soldering irons and related equipment are hard at work in more than 50 countries. We have local branches and sales representatives around the world, and continue to expand our global network.

HAKKO®

http://www.hakko.com

bal Network



As of Aug. 2016

WORLDWIDE NETWORK



For more details on HAKKO affiliates and distributors, visit the official HAKKO website at www.hakko.com



Quality Tools for the



HAKKO is certified under ISO 9001 (JIS Q 9001),
the international standard for quality management systems.
We are also certified under ISO 14001 (JIS Q 14001)
and are actively involved in preserving the global environment.

See the official HAKKO website for all necessary information regarding HAKKO products and services.

• HAKKO WEBSITE



• SELECT TIP SHAPE

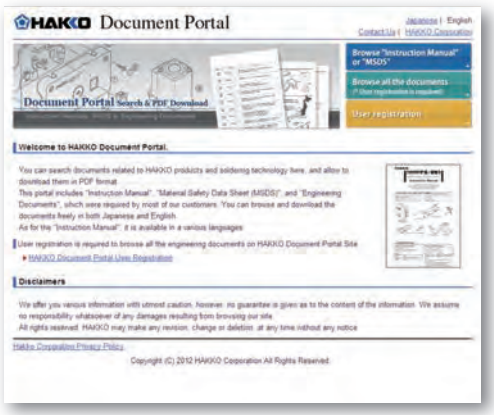
Search for the appropriate tip for your work by following the guidelines.



http://www.hakko.com/english/tip_selection/

• DOCUMENT PORTAL

Download instruction manuals, SDSs, and technical documents from the HAKKO Document Portal.



https://doc.hakko.com/?l=en

Electronics Industry

New Products

HAKKO FX-801 ESD SAFE
SOLDERING STATION

Heavy Duty Soldering Station

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HAKKO FR-400 ESD SAFE
DESOLDERING TOOL

Heavy Duty Desoldering Tool

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HAKKO FR-410 ESD SAFE
DESOLDERING TOOL

High-Power Desoldering Tool

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HAKKO FR-811 ESD SAFE
SMD REWORK STATION

Hot-Air SMD Rework Station

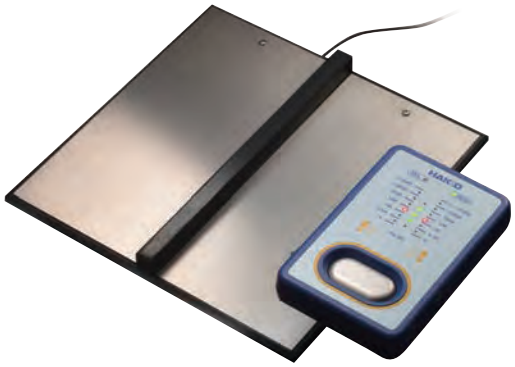
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HAKKO FG-460
FOOTWEAR TESTER

Footwear Tester

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HAKKO FG-102
THERMOMETER

Soldering Iron Thermometer with Traceability Management System

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Soldering Iron

All-round Soldering Station & Accessories

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65 W



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FX-889
2-Port Type



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Soldering Iron M type (65 W)



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FX-8803
Soldering Gun (65 W)



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FX-8804
SMD Hot Tweezers (65 W)



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FX-8805
Soldering Iron L type (65 W)



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Heavy Duty Soldering Station

FX-801
300 W



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FX-838
150 W



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IH Soldering Station

FX-100
IH



P.10

High Performance Soldering Station

FX-951
70 W



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FX-950
70 W



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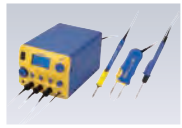
High Performance Rework Station & Accessories

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FX-780
N_2 Generator



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FX-781
N_2 Generator



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FX-791
N_2 Flow Meter



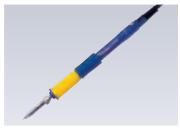
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FX-8802
N_2 Soldering Iron (65 W)



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FM-2026
N_2 Soldering Iron (70 W)



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FM-2031
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FX-8302
N_2 Soldering Iron (150 W)



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FX-8003
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Ceramic Heater Type

DASH



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Battery-powered Type

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P.37

Soldering Pot

Soldering Pot

FX-301B
High Performance Type



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FX-300
High Performance Type



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Soldering Related Equipment and Materials

Tools for Lead and Wire

FT-801
Thermal Wire Stripper



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Lead Cutter And Former



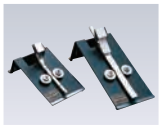
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DIPLINER
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Tip Cleaner / Polisher

FT-710
Tip Cleaner



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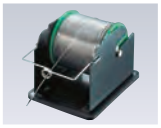
FT-700/FS-100
Tip Polisher



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Reel Stand

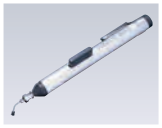
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Vacuum Pick-up Tool

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Dropper Type



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Bettery-Powered Type



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Flux Pen

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Desoldering / Rework

Heavy Duty Desoldering Tool

FR-400
300 W



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Desoldering Tool and Wire

FR-410
140 W



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FM-204
70 W



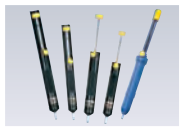
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FR-300
Portable Type



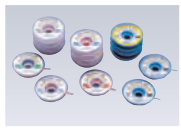
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WICK



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Repair System

FR-701
Repair System



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Rework System

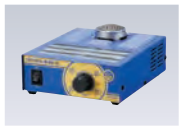
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SMD Rework Station

FR-810B
Hot-Air SMD Rework Station



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FR-811
Hot-Air SMD Rework Station



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Smoke Absorber

Air Purifying Type

FA-430



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FA-431



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FA-400



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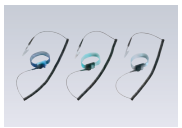


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Static Control

Wrist Strap

442B



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Tester / Meter

Wrist Strap Tester

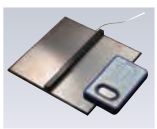
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Footwear Tester

FG-460



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Thermometer

FG-102



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FG-100



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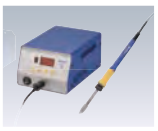
Soldering Tester

FG-101



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HAKKO Soldering Iron Lineup

		FX-888D	FX-889	FX-801	FX-838	FX-100
						
Specifications	Power consumption	70 W	135 W	300 W	158 W	25 W (85 W)
	Power consumption of Handpiece	65 W	65 W × 2 port	260 W	150 W	—
	Temperature Range	50 to 480°C	50 to 480°C	50 to 500°C	200 to 500°C	350°C/400°C/450°C
	Soldering Tip	T18 series	T18 series	T33 series	T20 series	T31 series
Applicable Standard	Lead Free Suggestible	●	●	●	●	●
	ESD Safe	●	●	●	●	●
	RoHS Suggestible	●	●	●	●	●
Accessories	Micro Soldering Iron connectable					
	SMD Hot Tweezers connectable	●	●			
	N_2 Soldering Iron connectable	●	●		●	
	Desoldering Iron connectable					
	Hot Air Handpiece connectable					
	Self Feeder connectable	●	●		●	
	Heavy Duty Soldering Iron connectable			● Standard feature	● Standard feature	
Function	**Auto Shutoff Function:** When a set time passed, the function stops to supply power to the heating element.					
	Auto off			●	●	●
	Auto Sleep Function: When a set time passed, the tip temperature decreases to a set lower temperature.					
	SLEEP			●	●	●
	Lock Function: Lockable by password, control card or lock key.					
		Password	Password	Password	Control card	Password
	Lower Temperature Error Alert: When the temperature drops below a set limit, an error is displayed and the buzzer sounds.					
	Low °C			●	●	
	Offset Temperature Function: Temperature offsettable by analog, digital or adjustment mode.					
	OFFSET	Adjustment mode	Adjustment mode	Digital	Digital	
	Preset Temperature Function: The function allows to input several frequently-used temperatures and recall with one push of a button.					
	PRE °C	●	●	●	●	

FX-951	FX-950	FM-203	FM-206	DASH	FX-901
					
75 W	75 W	140 W	410 W (max.)	15 to 16 W	Alkaline Batteries: 6 V (6 W)/ Nickel-Hydrogen Batteries (2150 mAh): 4.8 V (5 W)
70 W	70 W	70 W × 2 port	70 W × 3 port	—	—
200 to 450°C	200 to 450°C	200 to 450°C	200 to 450°C	—	—
T15 series	T15 series	T15 series	T15 series	T34 series	T11 series
●	●	●	●		
●	●	●	●		
●	●	●	●	●	●
●		●	●		
		●	●		
●	●	●	●		
		●	●		
			●		
●	●	●	●		
			●		
●		●	●		
●	● Option	●	●		
Control card	Lock key	Control card	Password		
●		●			
Digital	Manual	Digital	Digital		
			●		

HAKKO FX-801 ESD SAFE

New

Heavy Duty Soldering Station Digital

Tip not included



for LEAD FREE · ESD SAFE · RoHS · CE

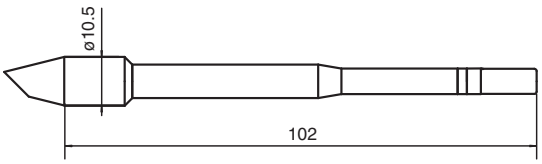
Heavy duty · Soldering (Option) N_2

Auto off · SLEEP · Low °C · OFFSET · PRE °C

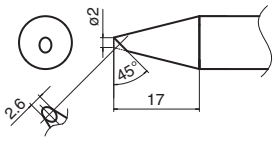
- Super power 300 W
- Best suited for soldering PWB with high heat capacity and high heat dissipation property

Optional Tips for FX-8002

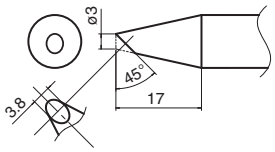
Unit: mm



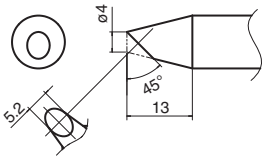
T33-BC2 Shape-2BC



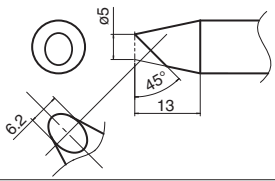
T33-BC3 Shape-3BC



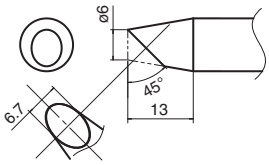
T33-BC4 Shape-4BC



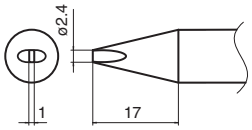
T33-BC5 Shape-5BC



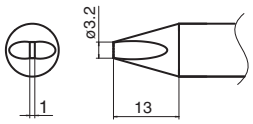
T33-BC6 Shape-6BC



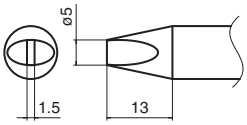
T33-D24 Shape-2.4D



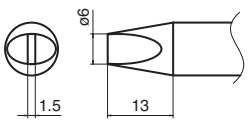
T33-D32 Shape-3.2D



T33-D5 Shape-5D

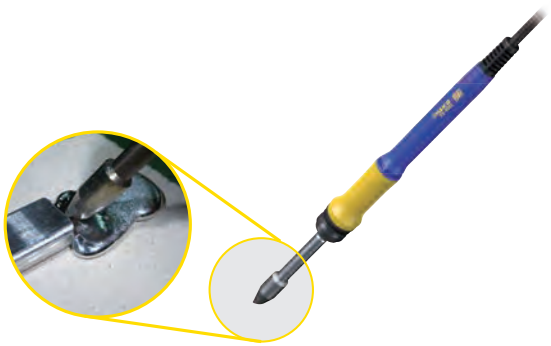


T33-D6 Shape-6D



Features

Make the impossible possible with Super Power of 300 W Heater



Check out the powerful performance of FX-801 easily melting a bar solder.
http://www.hakko/com/mov_e_fx801_feature1

QR code

Compact and lightweight (50 g) for heavy duty 300 W iron
The same weight as the iron part of FX-838, 150 W soldering station, for operator's comfort and better workability.

Large LED display enables easy viewing and operation.



Handles on unit body
Handles on unit body make it easy to carry.

Preset mode
Up to 6 settings can be preset and easily called up by Up/ Down buttons.

Password function
Settings can be locked from unnecessary changes by password function.



Selectable alphabets for password

Connectable with N_2 soldering iron
To improve solder wettability and spreadability

HAKKO FX-8003 ESD SAFE
SOLDERING IRON

N_2 Soldering Iron

Tip not included

for LEAD FREE | ESD SAFE | RoHS



For further details, see the N_2 soldering system (P.32 & P.33).

Packing List

FX-801	Station, Handpiece (FX-8002), Heat resistant pad, Power cord, Connecting cable, Iron holder (with cleaning wire), Instruction manual
FX-8003	Handpiece, Instruction manual

Specifications

Model No.	FX-801
Power consumption	300 W
Temperature range	50 to 500ºC
Temperature stability	±5ºC at idle temperature

Station

Output voltage	AC 29 V
Dimensions	145 (W) × 107 (H) × 211 (D) mm
Weight	3.9 kg

Soldering Iron

Power consumption	260 W (29 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	228 mm (with 4BC tip)
Weight*	50 g (with 4BC tip)

* Without cord

Model No.	FX-8003
Power consumption	260 W (29 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	253 mm (with 4BC tip)
Weight*	65 g (with 4BC tip and nozzle assembly A)

* Without cord

HAKKO FX-100 ESD SAFE

SOLDERING STATION

IH Soldering Station Digital

Tip not included



Soldering

- Provides the heat to the tip effectively by an 'Induction heater'
  Unique "Power assist" feature that assists the thermal recovery performance of the soldering iron tip
- No calibration is required
- Wide variety of tips available
- Meets or exceeds IPC J-STD-001 and ANSI ESD S20.20.

GOOD DESIGN

Good Design Award has been a sole comprehensive design evaluation and commendation system in Japan since 1957. "G Mark", the symbol of the award has been recognized widely as a mark representing good design.

Packing List

FX-100	Station, Handpiece (FX-1001), Heat resistant pad, Power cord, Sleeve (green), Sleeve (gray), Cleaning wire, Iron holder, Instruction manual

Specifications

Model No.	FX-100
Power consumption	28 W (85 W)
Temperature range	T31-01 Series: 450°C, T31-02 Series: 400°C T31-03 Series: 350°C
Temperature stability	±1.1°C
Station	
Output power	50 W
Output frequency	13.56 MHz
Dimensions	127 (W) × 150 (H) × 167 (D) mm
Weight	3 kg
Soldering Iron	
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	IH (Induction heating)
Cord length	1.3 m
Total length*	190 mm with 2.4D tip for 400°C or 350°C 193 mm with 2.4D tip for 450°C
Weight*	31 g (with 2.4D tip for 400°C)

* Without cord

Features

IH technology delivers the ultimate soldering iron
Excellent heat supply. Ideal for the most challenging soldering jobs.

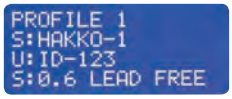


The FX-100 features IH (induction heater) that continuously powers the soldering iron and maintains the set temperature by automatically detecting even minute drops in temperature, plus HAKKO's proprietary **"Power Assist"** function. The FX-100 achieves powerful thermal recovery even with fine-shaped tips. It provides excellent thermal responsiveness that conventional IH and sensor feedback systems cannot offer.

Boost function
To increase tip temperature by 5 to 10°C (depends on tip shape) for better working efficiency.

Interactive method by LCD display with 3 buttons

PROFILE



Station ID, user name and solder type can be registered.

TIP LOAD



The soldering count is displayed.

TIP TIME



The cumulative running time on the iron tip is displayed.

TIP TYPE and NORMAL MODE/BOOST MODE



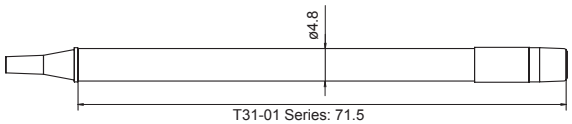
Visible tip type (01/02/03) and normal mode (N)/boost mode (B) on display.

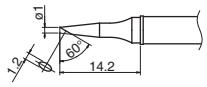
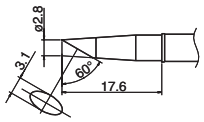
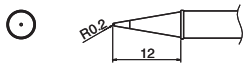
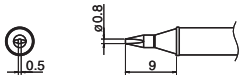
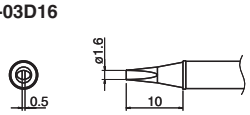
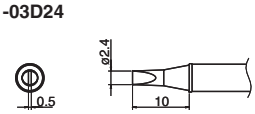
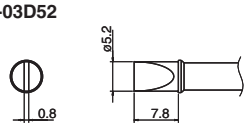
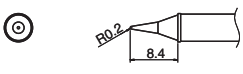
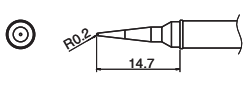
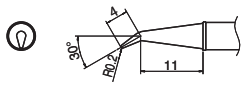
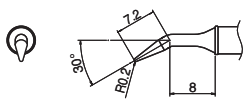
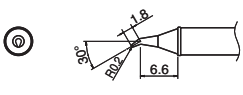
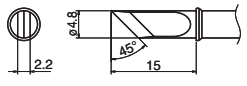
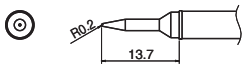
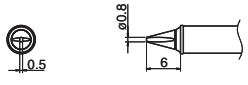
T31-XXBC1 — Indicates tip shape and size as usual.

"01" for 450°C
"02" for 400°C
"03" for 350°C

Optional Tips for FX-1001

Unit: mm



T31-01BC1 Shape-1BC **T31-02BC1** **T31-03BC1**	**T31-01BC28 Shape-2.8BC** **T31-02BC28** **T31-03BC28**	**T31-01BL Shape-BL** **T31-02BL** **T31-03BL**	**T31-01D08 Shape-0.8D** **T31-02D08** **T31-03D08**
			
T31-01D16 Shape-1.6D **T31-02D16** **T31-03D16**	**T31-01D24 Shape-2.4D** **T31-02D24** **T31-03D24**	**T31-01D52 Shape-5.2D** **T31-02D52** **T31-03D52**	**T31-01I Shape-I** **T31-02I** **T31-03I**
			
T31-01IL Shape-IL **T31-02IL** **T31-03IL**	**T31-01J02 Shape-0.2RSB** **T31-02J02** **T31-03J02**	**T31-01JL02 Shape-0.2RLB** **T31-02JL02** **T31-03JL02**	**T31-01JS02 Shape-0.2RSSB** **T31-02JS02** **T31-03JS02**
			
T31-01KU Shape-KU **T31-02KU** **T31-03KU**	**T31-01SBL Shape-SBL** **T31-02SBL** **T31-03SBL**	**T31-01WD08 Shape-0.8WD** **T31-02WD08** **T31-03WD08**	
			

HAKKO FX-888D ESD SAFE

SOLDERING STATION

All-Round Soldering Station Digital

Tip included



Soldering | Soldering (Option) | Soldering (Option) | Rework (Option)

Low °C | OFFSET | PRE °C

- Features Adjustment mode, Preset mode, and Password function
- Separable tip/heater design provides superior cost performance.
- L type (Large type) soldering iron FX-8805 is added to the lineup.

HAKKO FX-889 ESD SAFE New

SOLDERING STATION

2-Port All-Round Soldering Station Digital

Tip included

* 1 piece of FX-8801 is included as standard.



Soldering | Soldering (Option) | Soldering (Option) | Rework (Option)

Low °C | OFFSET | PRE °C

- All the user-friendly functions are succeeded from FX-888D.
- Two applications can be active at the same time.
- Applicable to all the options, N_2 soldering iron, Soldering gun, SMD Hot Tweezers, and L type (Large type) soldering iron.

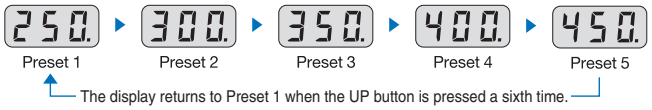
Common features

Strict temperature management

- **Digital display**
  The FX-888D's and FX-889's digital display makes it easy to check the set temperature at a glance.

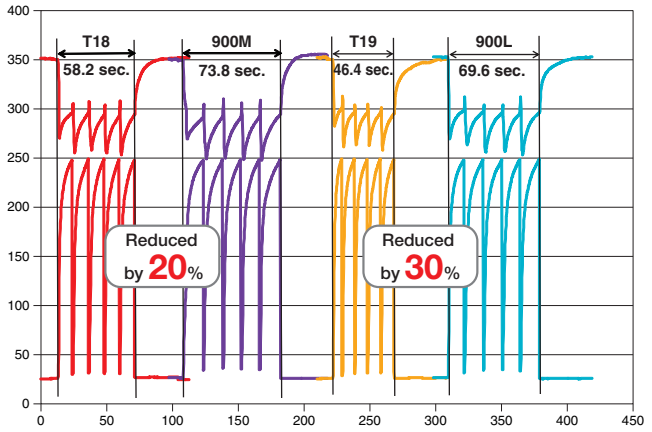
- **Password function**
  Settings can be locked using a password to prevent them from being changed unexpectedly.

- **Preset mode**
  Simply select the desired temperature from a selection of preset temperatures registered in advance. (Up to 5 preset temperatures can be registered.)



- **Adjustment mode**
  With adjustment mode, what used to be a troublesome procedure is now as simple as entering the measured tip temperature in the FX-888D and FX-889.

- **FX-888D and FX-889 deliver excellent thermal recovery by using T18 and T19 series tips for their terrific heat conductivity.**



Test criteria

Measurement method	Thermocouples are mounted on the tip and the soldered portion on the board, and the time until the soldered portion reaches 250°C is measured for 5 points.
Board	Paper phenol copper board
Component used	Terminal
Tip shape	Shape-2.4D
Temperature setting	350°C
Solder	Lead-free solder (Sn/Ag/Cu), diameter: 0.5 mm





Measuring the tip temperature with a tip thermometer (FG-100)

Packing List

FX-888D	Station, Handpiece (FX-8801), Iron holder, Instruction manual
FX-889	Station, Handpiece (FX-8801), Power cord, Dual Iron Holder, Color band (qty 2), Instruction Manual

Specifications

Model No.	FX-888D	FX-889
Power consumption	70 W	135 W
Temperature range	50 to 480°C	50 to 480°C
Temperature stability	±1°C at idle temperature (when set to 200 to 480°C)	

Station

Output voltage	AC 26 V	AC 26 V
Dimensions	100 (W) × 120 (H) × 120 (D) mm	157 (W) × 121 (H) × 149 (D) mm
Weight	1.2 kg*	2.1 kg

Soldering Iron

Power consumption	65 W (26 V)	65 W (26 V)
Tip to ground resistance	<2 Ω	<2 Ω
Tip to ground potential	<2 mV	<2 mV
Heating element	Ceramic heater	Ceramic heater
Standard tip	Shape-B (No.T18-B)	Shape-B (No.T18-B)
Cord length	1.2 m	1.2 m
Total length*	217 mm (with B tip)	222 mm (with B tip)
Weight*	46 g (with B tip)	52 g (with B tip)

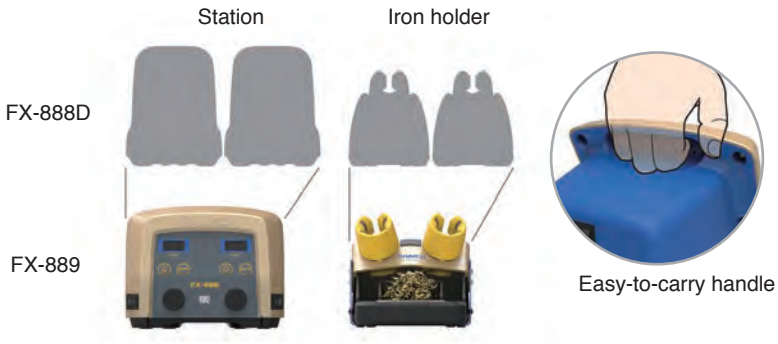
* Without cord

All-Round Soldering Station

Features of FX-889

User-Friendly Design

- **Space-saving design**
  The reduced foot print is smaller than 2 of FX-888D and its iron holder.
  Efficient setup is available even on smaller workbench.



- **Power-saving design**
  Independent switches cut the power for each iron when not in use.
  Power-saving design minimizes standby electricity.

- **Superior operability**
  Four buttons were symmetrically placed at the both sides on the front panel. The two buttons on each side allow simple and intuitive operation.
  A color band can be attached to the handle, and this makes it possible to see at a glance which side it is connected to. (2 pieces of color band are included as the standard accessories.)



- **Rich functions of iron holder**
  - Convenient pockets to stock soldering tips
  - Three different ways for tip cleaning with provided cleaning tools
  - Simple and easy cleaning of iron holder inside by removing holder base



HAKKO FX-8801 ESD SAFE

SOLDERING IRON

Soldering Iron M type

Tip included

for LEAD FREE · ESD SAFE · RoHS



Specifications

Model No.	FX-8801
Power consumption	65 W (26 V)
Temperature range	50 to 480°C
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Ceramic heater
Standard tip	Shape-B (No.T18-B)
Cord length	1.2 m
Total length*	217 mm (with B tip)
Weight*	46 g (with B tip)

* Without cord

HAKKO FX-8802 ESD SAFE

SOLDERING IRON

N_2 Soldering Iron

Tip included

for LEAD FREE · ESD SAFE · RoHS



Model No.	FX-8802
Power consumption	65 W (26 V)
Temperature range	50 to 480°C
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Ceramic heater
Standard tip	Shape-B (No.T18-B)
Cord length	1.2 m
Total length**	190 mm (with B tip)
Weight**	59 g (with B tip and nozzle assembly A)

* Use this N_2 soldering iron below 450°C.
** Without cord and tube

HAKKO FX-8803 ESD SAFE

SOLDERING GUN

Soldering Gun

Tip included

for LEAD FREE · ESD SAFE · RoHS



Model No.	FX-8803
Power consumption	65 W (26 V)
Temperature range	50 to 480°C
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Ceramic heater
Standard tip	Shape-3C pre-tinned surface 45° (No.T18-CF3)
Standard guide nozzle	ø1.0 mm
Usable solder diameter	0.6, 0.8, 1.0, 1.2, 1.6 mm
Cord length	1.1 m
Dimensions	170 (W) × 180 (H) × 23 (D) mm
Weight*	207 g

* Without cord

HAKKO FX-8804 ESD SAFE

SMD HOT TWEEZER

SMD Hot Tweezers

Tip included

for LEAD FREE · ESD SAFE · RoHS



Model No.	FX-8804
Power consumption	65 W (26 V)
Temperature range	200 to 400°C
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Ceramic heater
Standard tip	Shape-2L (No. A1378) 2 pcs/set
Cord length	1.2 m
Total length*	186 mm
Weight*	93 g

* Without cord
* The recommended (process) temperature is from 200°C to 400°C while setting temperature range of FX-888D is from 50°C to 480°C.

HAKKO FX-8805 ESD SAFE New

SOLDERING IRON

Soldering Iron L type

Tip included

for LEAD FREE · ESD SAFE · RoHS



Model No.	FX-8805
Power consumption	65 W (26 V)
Temperature range	50 to 480°C
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Ceramic heater
Standard tip	Shape-B (No.T19-B)
Cord length	1.2 m
Total length*	222 mm (with B tip)
Weight*	52 g (with B tip)

* Without cord

Accessories for FX-888D & FX-889

Packing List

FX-8801	Handpiece, Instruction Manual
FX-8802	Handpiece, Shield plate, Instruction manual
FX-8803	Handpiece, Instruction manual
FX-8804	Handpiece, Caution label, Heat resistant pad, Instruction manual
FX-8805	Handpiece, Instruction Manual

NOTE: The soldering iron cannot be used as a standalone device.

Option

FX-8803

Part No.	Name	Specifications
C1437	Iron holder (with cleaning sponge)	–

FX-8804

Part No.	Name	Specifications
FH800-04BY	Iron holder (with cleaning sponge)	Blue & yellow

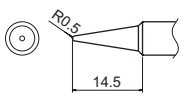
FX-8801 & FX-8805

Part No.	Name	Specifications
B5122	Tip enclosure	With nut, required when converting from FX-8801 to FX-8805
B3730	Nut and tip enclosure	Required when converting from FX-8805 to FX-8801

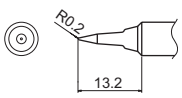
Replacement Tips for FX-8801 and FX-8803

Unit: mm

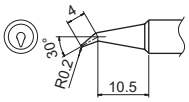
Applicable for FX-8803
T18-B Shape-B



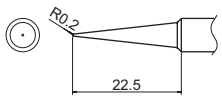
Applicable for FX-8803
T18-SB Shape-SB



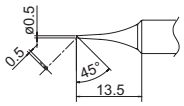
T18-BR02 Shape-0.2BR



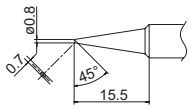
T18-BL Shape-BL



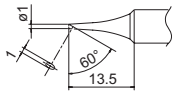
T18-C05 Shape-0.5C



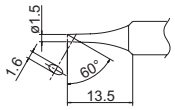
Applicable for FX-8803
T18-C08 Shape-0.8C



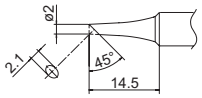
T18-C1 Shape-1C
T18-CF1*



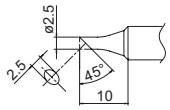
T18-CF15* Shape-1.5C



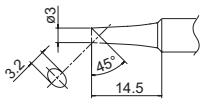
Applicable for FX-8803
T18-C2 Shape-2C
T18-CF2*



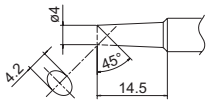
Applicable for FX-8803
T18-CSF25* Shape-2.5CS



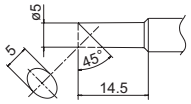
Applicable for FX-8803
T18-C3 Shape-3C
T18-CF3*



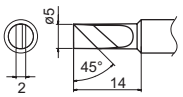
Applicable for FX-8803
T18-C4 Shape-4C
T18-CF4*



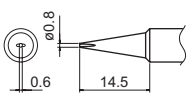
T18-C5 Shape-5C



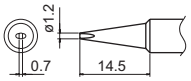
Applicable for FX-8803
T18-K Shape-K



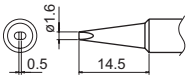
T18-D08 Shape-0.8D



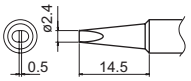
T18-D12 Shape-1.2D



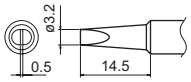
Applicable for FX-8803
T18-D16 Shape-1.6D



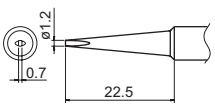
Applicable for FX-8803
T18-D24 Shape-2.4D



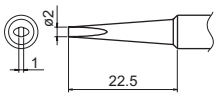
Applicable for FX-8803
T18-D32 Shape-3.2D



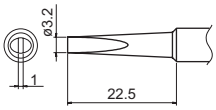
T18-DL12 Shape-1.2DL



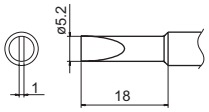
T18-DL2 Shape-2DL



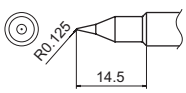
T18-DL32 Shape-3.2DL



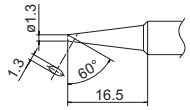
T18-S3 Shape-S3



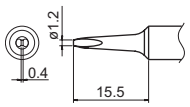
Applicable for FX-8803
T18-S4 Shape-S4



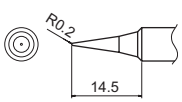
T18-S6 Shape-S6



T18-S9 Shape-S9



T18-I Shape-I



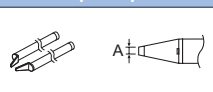
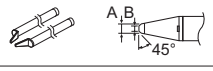
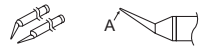
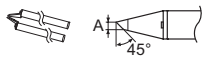
* These tips are tinned on the soldering surface only.

Replacement Tips and Nozzles for FX-8802

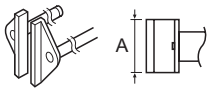
Please see the replacement tips on P.34

Replacement Tips for FX-8804

For Chip Component

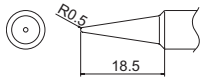
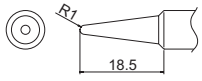
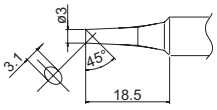
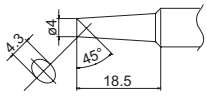
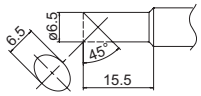
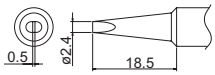
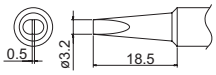
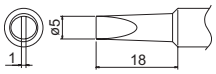
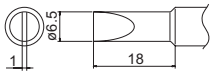
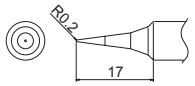
Part No.	Name	Size of A (B)	Tip Shape
A1577	Tip/CHIP 0.5L	0.5 mm	
A1379	Tip/CHIP 1L	1 mm	
A1378	Tip/CHIP 2L	2 mm	
A1388	Tip/CHIP 0.5C	1.5 (0.5) mm	
A1389	Tip/CHIP 0.5I	R0.25 mm	
A1576	Tip/CHIP 2.6C	2.6 mm	

For SOP Component

Part No.	Name	Size of A	Tip Shape
A1390	Tip/SOP 4L	4 mm	
A1391	Tip/SOP 6L	6 mm	
A1380	Tip/SOP 8L	8 mm	
A1381	Tip/SOP 10L	10 mm	
A1382	Tip/SOP 13L	13 mm	
A1392	Tip/SOP 15L	15 mm	
A1383	Tip/SOP 18L	18 mm	
A1384	Tip/SOP 20L	20 mm	
A1385	Tip/SOP 25L	25 mm	

Replacement Tips for FX-8805

Unit: mm

T19-B Shape-B 	**T19-B2 Shape-2B** 	**T19-C3 Shape-3C** 	**T19-C4 Shape-4C** 	**T19-C65 Shape-6.5C** 
T19-D24 Shape-2.4D 	**T19-D32 Shape-3.2D** 	**T19-D5 Shape-5D** 	**T19-D65 Shape-6.5D** 	**T19-I Shape-I** 

HAKKO FX-951 ESD SAFE

High Performance Soldering Station Digital

Tip not included



for LEAD FREE · ESD SAFE · RoHS · CE

Soldering · Micro Soldering · Soldering (Option)

Auto off · SLEEP · Low °C · OFFSET

- Compact high-power thermally-controlled soldering iron
- Informs you of errors by a warning buzzer or display

HAKKO FM-2032 ESD SAFE



Micro soldering Iron is available optionally.

For further details, see the micro soldering iron (P.25).

HAKKO FX-950 ESD SAFE

High Performance Soldering Station Analog

Tip not included



for LEAD FREE · ESD SAFE · RoHS · CE

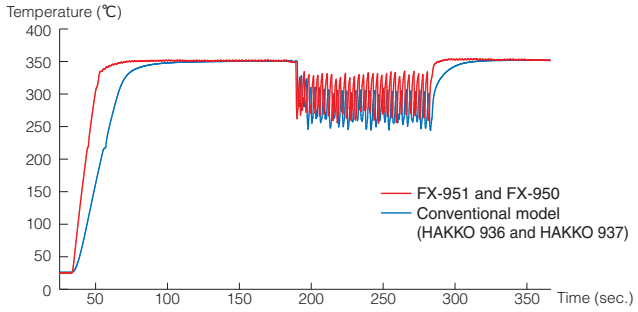
Soldering · Soldering (Option)

SLEEP · OFFSET

- Analog type high-power soldering iron
- “Lock key” can lock the temperature setting.
- Informs you of various errors by a lamp

Features

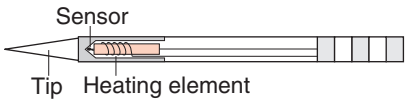
Thermal recovery graph (Comparison of HAKKO products)



Test criteria

Measurement method	A thermocouple is mounted on the tip and the tip temperature is measured when soldering ø1.6 mm × 5 mm solder to paper phenol copper board once every 3 seconds.
Board	Paper phenol copper board.
Temperature setting	350°C
Solder	Lead-free solder (Sn/Ag/Cu), diameter: 1.6 mm x 5 mm

Composite tip



The composite tip with an integrated heating element and sensor offers superior thermal responsivity and thermal recovery.

Variety of tips



Connectable with N_2 soldering iron

To improve solder wettability and spreadability



For further details, see N_2 soldering system (P.32 & P.33).

Packing List

FX-951	Station, Handpiece (FM-2028), Control card, Power cord, Connecting cable, Heat resistant pad, Iron holder, Instruction manual
FX-950	Station, Handpiece (FM-2028), Lock key, Heat resistant pad, Iron holder, Instruction manual

Specifications

Model No.	FX-951	FX-950
Power consumption	75 W	
Temperature range	200 to 450°C	
Temperature stability	±5°C at idle temperature	

Station

Output voltage	AC 24 V
Dimensions	FX-951: 80 (W) × 130 (H) × 131 (D) mm FX-950: 80 (W) × 118 (H) × 138 (D) mm
Weight	1.2 kg

Soldering Iron

Power consumption	70 W (24 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	188 mm (with 2.4D tip)
Weight*	30 g (with 2.4D tip)

* Without cord

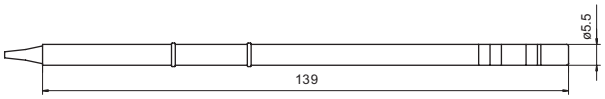
Option

Part No.	Name	Specifications
FH200-01	Iron holder	With power-save function and cleaning wire
FH200-02	Iron holder	With power-save function and cleaning sponge

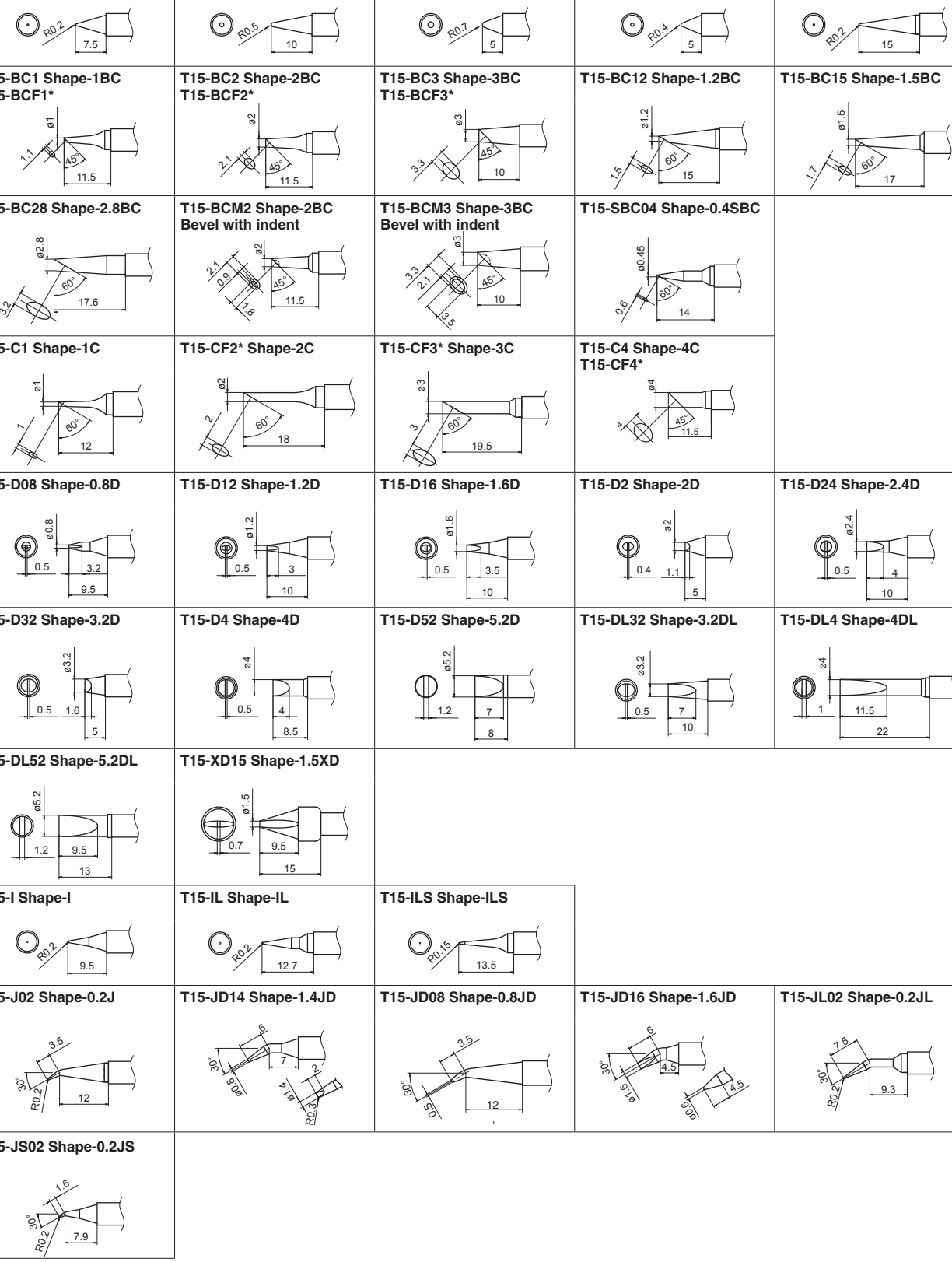
* In order to use the power-save function with FX-950, FH200-01 or FH200-02 iron holder is required.

Optional Tips for FM-2028

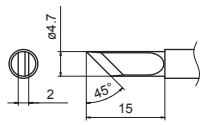
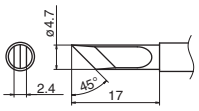
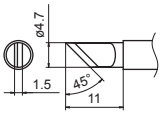
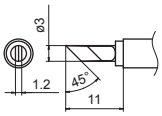
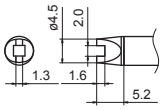
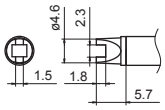
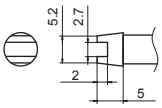
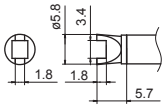
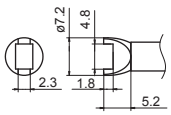
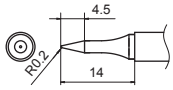
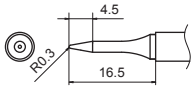
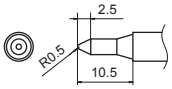
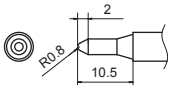
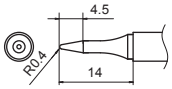
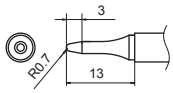
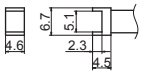
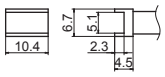
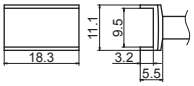
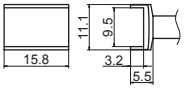
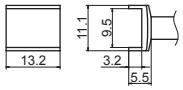
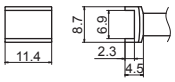
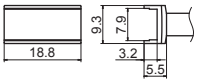
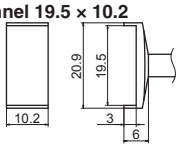
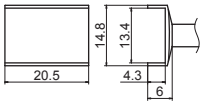
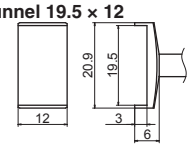
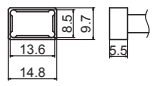
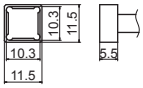
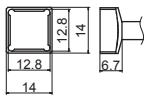
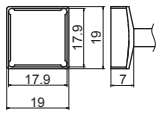
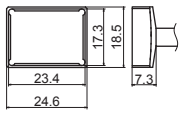
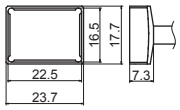
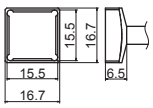
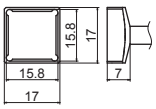
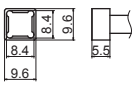
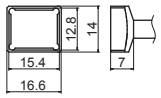
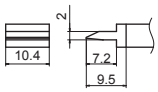
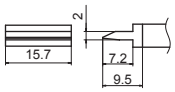
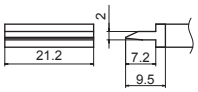
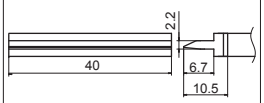
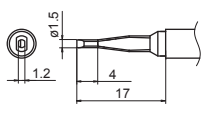
Unit: mm



B	T15-B Shape-B	T15-B2 Shape-0.5B	T15-B3 Shape-0.7B	T15-B4 Shape-0.4B	T15-BLL Shape-BLL
BC	T15-BC1 Shape-1BC T15-BCF1*	T15-BC2 Shape-2BC T15-BCF2*	T15-BC3 Shape-3BC T15-BCF3*	T15-BC12 Shape-1.2BC	T15-BC15 Shape-1.5BC
	T15-BC28 Shape-2.8BC	T15-BCM2 Shape-2BC Bevel with indent	T15-BCM3 Shape-3BC Bevel with indent	T15-SBC04 Shape-0.4SBC	
C	T15-C1 Shape-1C	T15-CF2* Shape-2C	T15-CF3* Shape-3C	T15-C4 Shape-4C T15-CF4*	
D	T15-D08 Shape-0.8D	T15-D12 Shape-1.2D	T15-D16 Shape-1.6D	T15-D2 Shape-2D	T15-D24 Shape-2.4D
	T15-D32 Shape-3.2D	T15-D4 Shape-4D	T15-D52 Shape-5.2D	T15-DL32 Shape-3.2DL	T15-DL4 Shape-4DL
	T15-DL52 Shape-5.2DL	T15-XD15 Shape-1.5XD			
I	T15-I Shape-I	T15-IL Shape-IL	T15-ILS Shape-ILS		
J	T15-J02 Shape-0.2J	T15-JD14 Shape-1.4JD	T15-JD08 Shape-0.8JD	T15-JD16 Shape-1.6JD	T15-JL02 Shape-0.2JL
	T15-JS02 Shape-0.2JS				



*These tips are tinned on the soldering surface only.

K	**T15-K Shape-K** 	**T15-KF Shape-KF** 	**T15-KL Shape-KL** 	**T15-KU Shape-KU** 	
R	**T15-R20 Shape-2.0R** 	**T15-R23 Shape-2.3R** 	**T15-R27 Shape-2.7R** 	**T15-R34 Shape-3.4R** 	**T15-R48 Shape-4.8R** 
SB	**T15-SB02 Shape-0.2SB** 	**T15-SB03 Shape-0.3SB** 	**T15-SB05 Shape-0.5SB** 	**T15-SB08 Shape-0.8SB** 	**T15-SBS04 Shape-0.4SBS** 
	T15-SBS07 Shape-0.7SBS 				
TUNNEL	**T15-1001**** **Tunnel 5.1 × 4.6** 	**T15-1002**** **Tunnel 5.1 × 10.4** 	**T15-1003**** **Tunnel 9.5 × 18.3** 	**T15-1004**** **Tunnel 9.5 × 15.8** 	**T15-1005**** **Tunnel 9.5 × 13.2** 
	T15-1006** **Tunnel 6.9 × 11.4** 	**T15-1007**** **Tunnel 7.9 × 18.8** 	**T15-1008**** **Tunnel 19.5 × 10.2** 	**T15-1009**** **Tunnel 13.4 × 20.5** 	**T15-1010**** **Tunnel 19.5 × 12** 
QUAD	**T15-1201**** **Quad 13.6 × 8.5** 	**T15-1202**** **Quad 10.3 × 10.3** 	**T15-1203**** **Quad 12.8 × 12.8** 	**T15-1204**** **Quad 17.9 × 17.9** 	**T15-1205**** **Quad 23.4 × 17.3** 
	T15-1206** **Quad 22.5 × 16.5** 	**T15-1207**** **Quad 15.5 × 15.5** 	**T15-1208**** **Quad 15.8 × 15.8** 	**T15-1209**** **Quad 8.4 × 8.4** 	**T15-1210**** **Quad 15.4 × 12.8** 
SPATULA	**T15-1401** Spatula 10.4** 	**T15-1402** Spatula 15.7** 	**T15-1403** Spatula 21.2** 	**T15-1406** Spatula 40** 	
SPECIAL APPLICA-TIONS TYPE	**T15-1603** Shape-Long reach chisel** 	**T15-1605** Shape-Long reach bent chisel** 			

* These tips are tinned on the soldering surface only.
** The iron tips marked with double asterisk (**) have a temperature accuracy of 25°C. Others have a temperature accuracy of 15°C.

HAKKO FX-838 ESD SAFE

SOLDERING STATION

Heavy Duty Soldering Iron Digital

Tip not included



for LEAD FREE · ESD SAFE · RoHS · CE

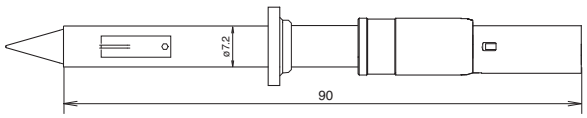
Heavy duty · Soldering (Option) (N_2)

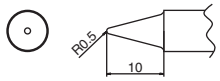
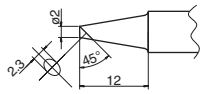
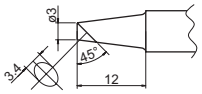
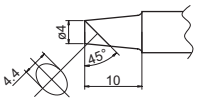
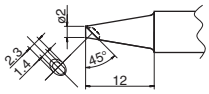
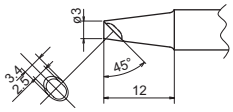
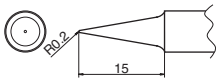
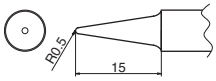
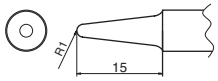
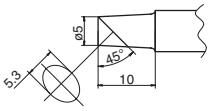
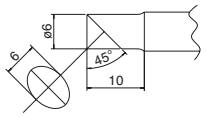
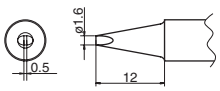
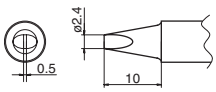
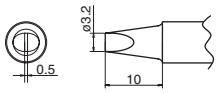
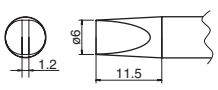
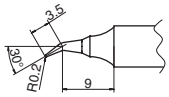
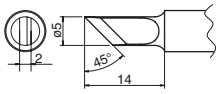
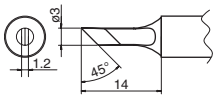
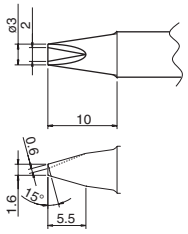
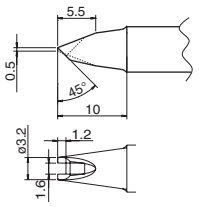
Auto off · SLEEP · Low °C · OFFSET · PRE °C

- High powered 150 W soldering iron
- Best suited for soldering of power-supply boards, heat sinks, and shield cases
- Applicable also to the soldering of multilayer boards with micro components

Optional Tips for FX-8301

Unit: mm

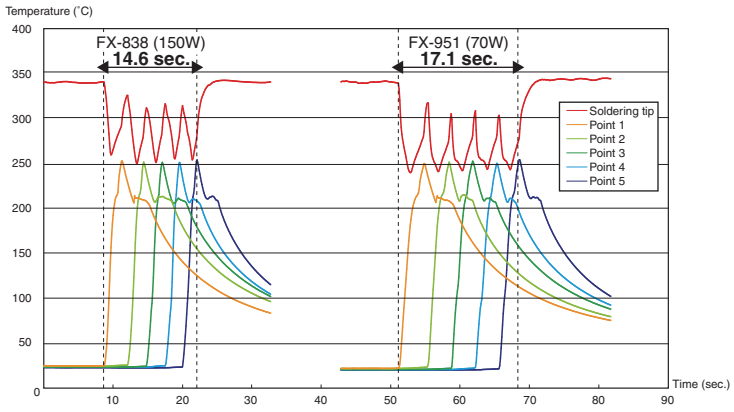


T20-B2 Shape-0.5B	**T20-BC2 Shape-2BC** **T20-BCF2***	**T20-BC3 Shape-3BC** **T20-BCF3***	**T20-BC4 Shape-4BC** **T20-BCF4***	**T20-BCM2 Shape-2BC** **Bevel with indent**
				
T20-BCM3 Shape-3BC **Bevel with indent**	**T20-BL Shape-BL**	**T20-BL2 Shape-2BL**	**T20-BL3 Shape-3BL**	**T20-C5 Shape-5C**
				
T20-C6 Shape-6C	**T20-D16 Shape-1.6D**	**T20-D24 Shape-2.4D**	**T20-D32 Shape-3.2D**	**T20-D6 Shape-6D**
				
T20-J02 Shape-0.2J	**T20-K Shape-K**	**T20-KU Shape-KU**	**T20-1610**	**T20-1611**
				

* These tips are tinned on the soldering surface only.

Features

Graph of a comparison of the performance of FX-838 and a conventional station



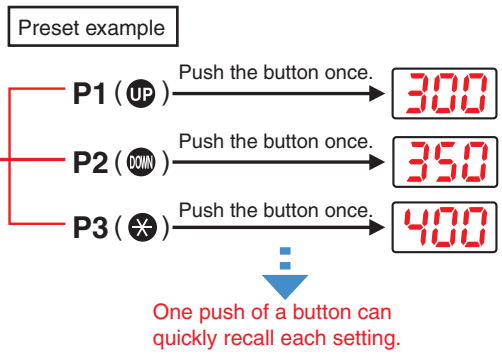
Test criteria

Measurement method	Thermocouples are mounted on the tip and the soldered portion on the board, and the time until the soldered portion reaches 250°C is measured for 5 points.
Board	Bakelite board
Component used	Terminal
Tip shape	Shape-1.6D
Temperature setting	340°C
Solder	Lead-free solder (Sn/Ag/Cu), diameter: 0.5 mm

Temperature preset mode

The temperature preset mode allows you to input three frequently-used temperatures in advance and recall them with one push of a button.





Connectable with N_2 soldering iron

To improve solder wettability and spreadability

HAKKO FX-8302 ESD SAFE

SOLDERING IRON

N_2 Soldering Iron

Tip not included

for LEAD FREE · ESD SAFE · RoHS



For further details, see the N_2 soldering system (P.32 & P.33).

Packing List

FX-838	Station, Handpiece (FX-8301), Control card, Power cord, Heat resistant pad, Connecting cable, Iron holder, Instruction manual
FX-8302	Handpiece, Instruction manual

Specifications

Model No.	FX-838
Power consumption	158 W
Temperature range	200 to 500°C
Temperature stability	±5°C at idle temperature

Station

Output voltage	AC 27 V
Dimensions	110 (W) × 110 (H) × 205 (D) mm
Weight	3.2 kg

Soldering Iron

Power consumption	150 W (27 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Ceramic heater
Cord length	1.2 m
Total length*	175 mm (with 2.4D tip)
Weight*	31 g (with 2.4D tip)

* Without cord

Model No.	FX-8302
Power consumption	150 W (27 V)
Temperature range	200 to 500°C
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Ceramic heater
Cord length	1.2 m
Total length*	195 mm (with 2.4D tip)
Weight*	41 g (with 2.4D tip and nozzle assembly D)

* Without cord and tube

HAKKO FM-203 ESD SAFE
SOLDERING STATION

2-Port High Performance Rework Station Digital

Tip not included



for LEAD FREE · ESD SAFE · RoHS · CE · VDE · GS · VDE EMC

Soldering · Micro Soldering · Heavy duty · Soldering (Option) · Desoldering (Option) · Rework (Option)

Auto off · SLEEP · Low °C · OFFSET

- 2 handpieces can be connected at the same time.

HAKKO FM-206 ESD SAFE
REWORK SYSTEM

3-Port High Performance Rework Station Digital

Tip not included · Nozzle not included



for LEAD FREE · ESD SAFE · RoHS · CE · VDE · GS · VDE EMC

Soldering · Micro Soldering · Heavy duty · Soldering (Option) · Desoldering · Rework (Option) · Hot Air Rework

Auto off · SLEEP · Low °C · OFFSET

- 3-port rework station that enables soldering, desoldering, and SMD rework all with a single unit
- Graphic LCD enables easy viewing and operation.

Handpiece Combination Examples

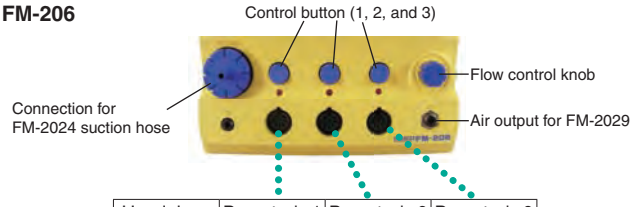
FM-203



Handpiece	Channel D connector	Channel S connector
FM-2027	○	○
FM-2022 *1	○	×
FM-2023 *1	○	×
FM-2024 *2	○	○
FM-2026 *3	○	○
FM-2032	○	○

*1 When FM-2022 or FM-2023 is connected to the channel D connector, both channel connectors can't be used at the same time.
*2 When two FM-2024s are connected to the channel connectors, each FM-2024 must be connected to the desolder control box.
*3 For FM-2026, each handpiece needs an N_2 generator (FX-780), flow meter (FX-791), compressor, regulator, etc. For further details, see the N_2 soldering system (P.32 & P.33).

FM-206



Handpiece	Receptacle 1	Receptacle 2	Receptacle 3
FM-2027	○	○	○
FM-2024	○ *1	○	○ *1
FM-2029	×	×	○
FM-2022	×	○	×
FM-2023	×	○	×
FM-2026	○	○	○
FM-2030	×	○	○
FM-2031	×	○ *2	○ *2
FM-2032	○	○	○

*1 FM-2024 can be connected to receptacle 2 and 3. However, only one FM-2024 can be used with the station.
*2 For FM-2031 and FM-2026, each handpiece needs an N_2 generator (FX-780), flow meter (FX-791), compressor, regulator, etc. For further details, see N_2 soldering system (P.32 & P.33).
NOTE: FM-2024 and FM-2029 can't be used at the same time.

Accessories

HAKKO FM-2027 ESD SAFE
SOLDERING IRON

Soldering Iron

Tip not included

for LEAD FREE · ESD SAFE · RoHS



HAKKO FM-2026 ESD SAFE
SOLDERING IRON

N_2 Soldering Iron

Tip not included

for LEAD FREE · ESD SAFE · RoHS



HAKKO FM-2029 ESD SAFE
HOT AIR HANDPIECE

Hot-Air Pencil

Nozzle not included

for LEAD FREE · ESD SAFE · RoHS



HAKKO FM-2030 ESD SAFE
SOLDERING IRON

Heavy Duty Soldering Iron

Tip not included

for LEAD FREE · ESD SAFE · RoHS



HAKKO FM-2031 ESD SAFE
SOLDERING IRON

N_2 Soldering Iron

Tip not included

for LEAD FREE · ESD SAFE · RoHS



HAKKO FM-2032 ESD SAFE
SOLDERING IRON

Micro Soldering Iron

Tip not included

for LEAD FREE · ESD SAFE · RoHS



HAKKO MODEL FM-2022 ESD SAFE
PARALLEL REMOVER

SMD Hot Tweezers

Tip not included

for LEAD FREE · ESD SAFE · RoHS



HAKKO MODEL FM-2023 ESD SAFE
MINI PARALLEL REMOVER

Mini SMD Hot Tweezers

Tip included

for LEAD FREE · ESD SAFE · RoHS



HAKKO MODEL FM-2024 ESD SAFE
DESOLDERING TOOL

Desoldering Tool

Nozzle not included

for LEAD FREE · ESD SAFE · RoHS



Specifications

Model No.	FM-203
Power consumption	140 W
Temperature range	FM-2026/2027: 200 to 450°C FM-2022/2023: 200 to 400°C FM-2032: 200 to 450°C FM-2024: 350 to 450°C
Temperature stability	±5°C at idle temperature

Station

Output voltage	AC 24 V
Dimensions	120 (W) × 120 (H) × 190 (D) mm
Weight	2.7 kg

Soldering Iron (FM-2027)

Power consumption	70 W (24 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	188 mm (with 2.4D tip)
Weight*	30 g (with 2.4D tip)

* Without cord

Model No.	FM-206
Power consumption	Max. 410 W (450 W)
Temperature range	FM-2026/2027: 200 to 450°C FM-2022/2023: 200 to 400°C FM-2024: 350 to 450°C FM-2029: 100 to 550°C FM-2030: 200 to 500°C FM-2031: 200 to 500°C FM-2032: 200 to 450°C
Temperature stability	±5°C at idle temperature

Station

Output voltage	AC 24 V
Vacuum generator	Vacuum pump, cylinder type
Vacuum pressure	80 kPa (600 mmHg, max.)
Suction flow	14 L/min.
Air flow	6 L/min. (max.)
Dimensions	162 (W) × 136 (H) × 245 (D) mm
Weight*	6.2 kg

Soldering Iron (FM-2027)

Power consumption	70 W (24 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	188 mm (with 2.4D tip)
Weight*	30 g (with 2.4D tip)

Desoldering Tool (FM-2024)

Power consumption	70 W (24 V)
Nozzle to ground resistance	<2 Ω
Nozzle to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	180 mm (with ø1.0 mm nozzle)
Weight**	65 g (with ø1.0 mm nozzle)

Hot Air Handpiece (FM-2029)

Power consumption	140 W (24 V)
Nozzle to ground resistance	<2 Ω
Nozzle to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length**	232 mm (with ø4.0 mm nozzle)
Weight***	50 g (with ø4.0 mm nozzle)

* Without cord ** Without cord and hose *** Without cord and tube

Model No.	FM-2022
Power consumption	140 W (24 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	148 mm (with SOP 25L tip)
Weight*	64 g (with SOP 25L tip)

* Without cord

Model No.	FM-2023
Power consumption	140 W (24 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Standard tip	Shape-I: 2 pcs/set (No.T9-I)
Cord length	1.2 m
Total length*	117 mm (with I tip)
Weight*	37 g (with I tip)

* Without cord

Model No.	FM-2024

Desoldering Tool

Power consumption	70 W (24 V)
Nozzle to ground resistance	<2 Ω
Nozzle to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	180 mm (with ø1.0 mm nozzle)
Weight*	65 g (with ø1.0 mm nozzle)

Desolder Control Box

Power consumption	12 W (24 V)
Vacuum generator	Ejector type
Vacuum pressure	Max. 93 kPa (700 mmHg)
Suction flow	20 L/min.
Nozzle to ground potential	<2 mV
Applied air pressure	490 kPa (5.0 kgf/cm²) While in use (trigger or button is pressed)
Compressed air consumption	46 L/min.
Outer dimensions	119 (W) x 45 (H) x 172 (D) mm
Weight*	1.2 kg

* Without cord

Model No.	FM-2026
Power consumption	70 W (24 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length**	205 mm (with 2.4D tip)
Weight**	45 g (with 2.4D tip and nozzle assembly C)

* Use this N_2 soldering iron below 400°C.
** Without cord and tube

Model No.	FM-2027
Power consumption	70 W (24 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	188 mm (with 2.4D tip)
Weight*	30 g (with 2.4D tip)

* Without cord

Specifications

Model No.	FM-2030
Power consumption	140 W (24 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.3 m
Total length*	224 mm (with 2.4D tip)
Weight*	41 g (with 2.4D tip)

* Without cord

Model No.	FM-2031
Power consumption	140 W (24 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	231 mm (with 2.4D tip)
Weight*	47 g (with 2.4D tip and nozzle assembly E)

* Without cord and tube

Model No.	FM-2032
Power consumption	48 W (24 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.3 m
Total length*	170 mm (with 1D tip)
Weight*	14 g (with 1D tip)

* Without cord

Packing List

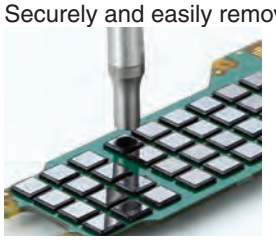
FM-203	Station, Handpiece (FM-2027), Sleeve assembly, Connecting cable, Power cord, Control card, Iron holder, Tip tray, Heat resistant pad, Instruction manual
FM-206	Station, Power cord, Tip tray, Desoldering tool (FM-2024), Handle (for gun configuration for FM-2024), Iron holder (for FM-2024), Ceramic paper filter (10 pcs; for FM-2024), Nozzle remover (for FM-2024), Cleaning drill for heating element (for FM-2024), Connecting cable (for FM-2024), Handpiece (FM-2027), Iron holder (for FM-2027), Heat resistant pad (for FM-2027), Connecting cable (for FM-2027), Hot air handpiece (FM-2029), Iron holder (for FM-2029), Heat resistant pad (for FM-2029), Connecting cable (for FM-2029), Instruction manual
FM-2022 (Conversion kit)	Parallel remover, Heat resistant pad, Iron holder, Connecting cable, Instruction manual
FM-2023 (Conversion kit)	Mini parallel remover, Soldering tip (T9-I), Heat resistant pad, Iron holder, Component bed, Connecting cable, Instruction manual
FM-2024 (Conversion kit, with DCB)	Desoldering tool, Handle (for gun configuration), Desoldering control box, Filter pipe assembly, Iron holder, Cleaning drill for heating element, Nozzle remover, Ceramic paper filter (10 pcs), Connecting cable, Instruction manual
FM-2026 (Conversion kit)	Handpiece, Sleeve cover, Sleeve assembly (yellow), Heat resistant pad, Iron holder, Connecting cable, Instruction manual
FM-2027 (Conversion kit)	Handpiece, Sleeve assembly (yellow), Heat resistant pad, Iron holder, Connecting cable
FM-2029 (Conversion kit)	Handpiece (hot air), Handpiece holder, Heat resistant pad, Connecting cable, Instruction manual
FM-2030 (Conversion kit)	Handpiece (soldering), Heat resistant pad, Iron holder, Connecting cable, Instruction manual
FM-2031 (Conversion kit)	Handpiece (soldering), Heat resistance pad, Iron holder, Connecting cable, Instruction manual
FM-2032 (Conversion kit)	Handpiece, Heat resistant pad, Iron holder, Connecting cable, Instruction manual

FM-2024 Features

Please see the features on P.58.

FM-2029 Features

Securely and easily remove 10 × 10 (mm) chips.

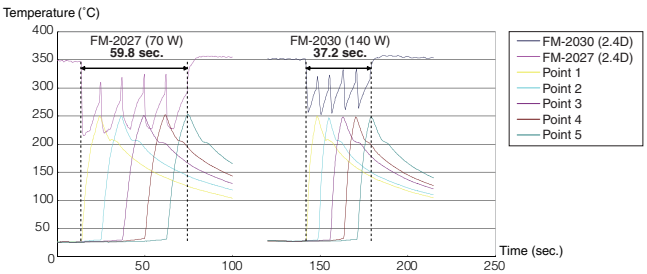


FM-2032 Size



FM-2030 Features

Graph of a comparison of the performance of FM-2027 (70 W) and FM-2030 (140 W)

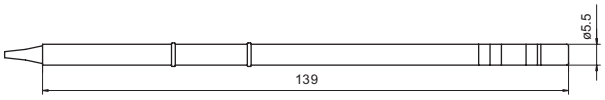


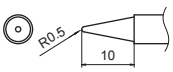
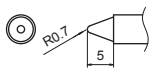
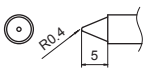
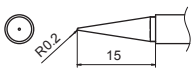
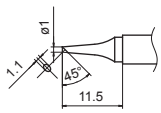
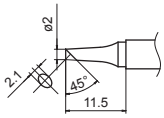
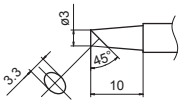
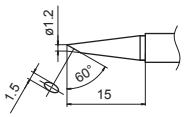
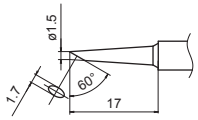
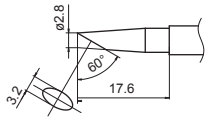
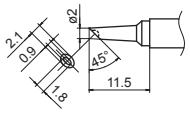
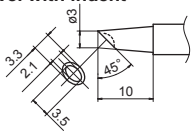
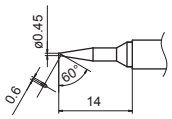
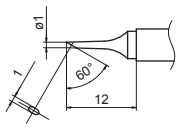
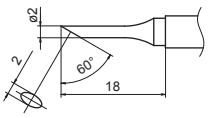
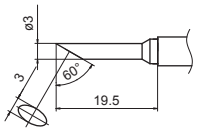
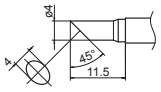
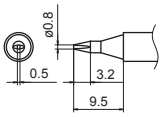
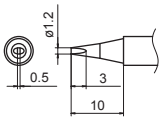
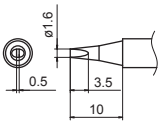
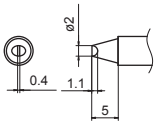
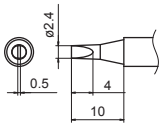
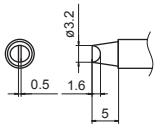
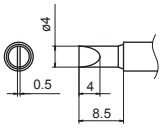
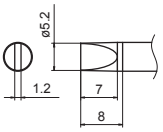
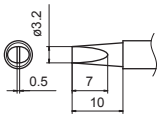
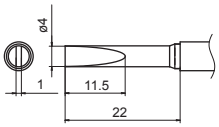
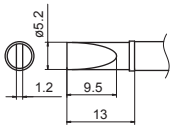
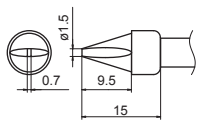
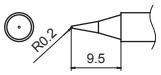
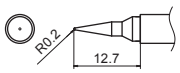
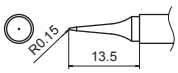
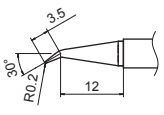
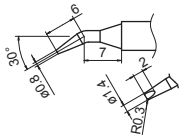
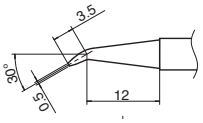
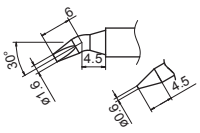
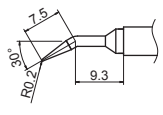
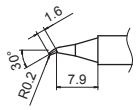
Test criteria

Test method	Solder at 5 points and measure the time until the temperature of the workpiece reaches 250°C.
Board	Bakelite board
Component used	Screw
Tip shape	Shape-2.4D
Temperature setting	350°C
Solder	Lead-free solder (Sn/Ag/Cu), diameter: 1.0 mm

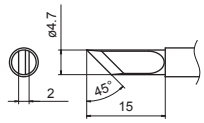
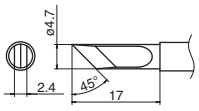
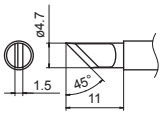
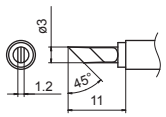
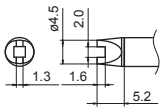
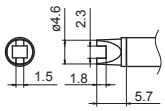
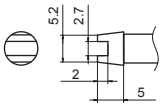
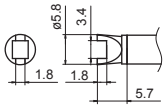
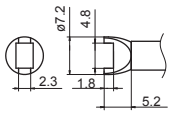
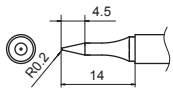
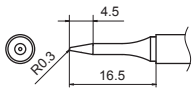
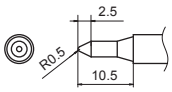
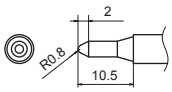
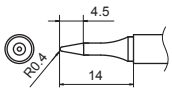
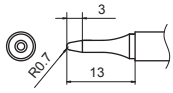
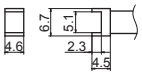
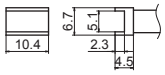
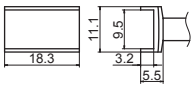
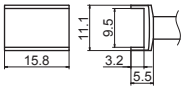
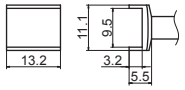
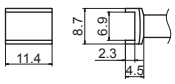
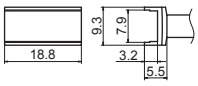
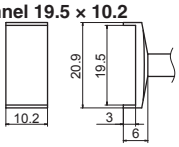
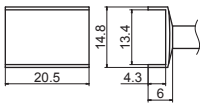
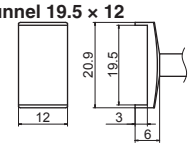
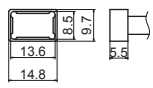
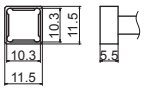
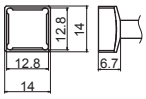
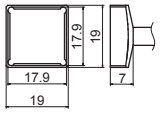
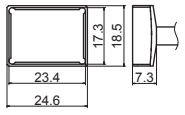
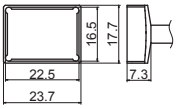
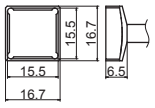
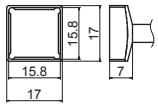
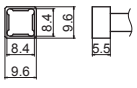
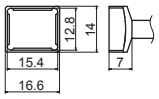
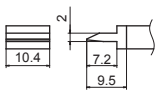
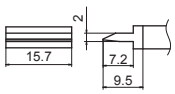
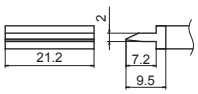
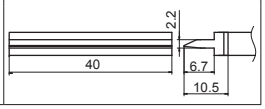
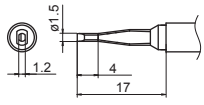
Optional Tips for FM-2027

Unit: mm



B	T15-B Shape-B 	T15-B2 Shape-0.5B 	T15-B3 Shape-0.7B 	T15-B4 Shape-0.4B 	T15-BLL Shape-BL Long 
BC	T15-BC1 Shape-1BC T15-BCF1* 	T15-BC2 Shape-2BC T15-BCF2* 	T15-BC3 Shape-3BC T15-BCF3* 	T15-BC12 Shape-1.2BC 	T15-BC15 Shape-1.5BC 
	T15-BC28 Shape-2.8BC 	T15-BCM2 Shape-2BC Bevel with indent 	T15-BCM3 Shape-3BC Bevel with indent 	T15-SBC04 Shape-0.4SBC 	
C	T15-C1 Shape-1C 	T15-CF2* Shape-2C 	T15-CF3* Shape-3C 	T15-C4 Shape-4C T15-CF4* 	
D	T15-D08 Shape-0.8D 	T15-D12 Shape-1.2D 	T15-D16 Shape-1.6D 	T15-D2 Shape-2D 	T15-D24 Shape-2.4D 
	T15-D32 Shape-3.2D 	T15-D4 Shape-4D 	T15-D52 Shape-5.2D 	T15-DL32 Shape-3.2DL 	T15-DL4 Shape-4DL 
	T15-DL52 Shape-5.2DL 	T15-XD15 Shape-1.5XD 			
I	T15-I Shape-I 	T15-IL Shape-IL 	T15-ILS Shape-ILS 		
J	T15-J02 Shape-0.2J 	T15-JD14 Shape-1.4JD 	T15-JD08 Shape-0.8JD 	T15-JD16 Shape-1.6JD 	T15-JL02 Shape-0.2JL 
	T15-JS02 Shape-0.2JS 				

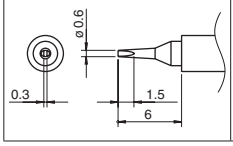
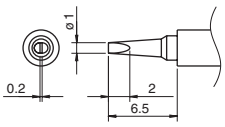
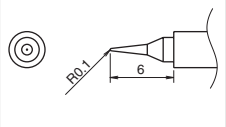
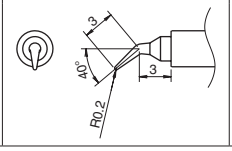
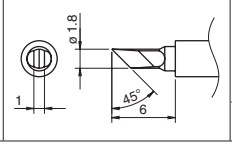
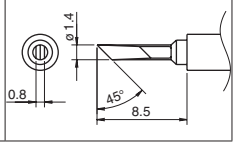
*These tips are tinned on the soldering surface only.

K	**T15-K Shape-K** 	**T15-KF Shape-KF** 	**T15-KL Shape-KL** 	**T15-KU Shape-KU** 	
R	**T15-R20 Shape-2.0R** 	**T15-R23 Shape-2.3R** 	**T15-R27 Shape-2.7R** 	**T15-R34 Shape-3.4R** 	**T15-R48 Shape-4.8R** 
SB	**T15-SB02 Shape-0.2SB** 	**T15-SB03 Shape-0.3SB** 	**T15-SB05 Shape-0.5SB** 	**T15-SB08 Shape-0.8SB** 	**T15-SBS04 Shape-0.4SBS** 
	T15-SBS07 Shape-0.7SBS 				
TUNNEL	**T15-1001**** **Tunnel 5.1 × 4.6** 	**T15-1002**** **Tunnel 5.1 × 10.4** 	**T15-1003**** **Tunnel 9.5 × 18.3** 	**T15-1004**** **Tunnel 9.5 × 15.8** 	**T15-1005**** **Tunnel 9.5 × 13.2** 
	T15-1006** **Tunnel 6.9 × 11.4** 	**T15-1007**** **Tunnel 7.9 × 18.8** 	**T15-1008**** **Tunnel 19.5 × 10.2** 	**T15-1009**** **Tunnel 13.4 × 20.5** 	**T15-1010**** **Tunnel 19.5 × 12** 
QUAD	**T15-1201**** **Quad 13.6 × 8.5** 	**T15-1202**** **Quad 10.3 × 10.3** 	**T15-1203**** **Quad 12.8 × 12.8** 	**T15-1204**** **Quad 17.9 × 17.9** 	**T15-1205**** **Quad 23.4 × 17.3** 
	T15-1206** **Quad 22.5 × 16.5** 	**T15-1207**** **Quad 15.5 × 15.5** 	**T15-1208**** **Quad 15.8 × 15.8** 	**T15-1209**** **Quad 8.4 × 8.4** 	**T15-1210**** **Quad 15.4 × 12.8** 
SPATULA	**T15-1401** Spatula 10.4** 	**T15-1402** Spatula 15.7** 	**T15-1403** Spatula 21.2** 	**T15-1406** Spatula 40** 	
SPECIAL APPLICATIONS TYPE	**T15-1603** Shape-Long reach chisel** 	**T15-1605** Shape-Long reach bent chisel** 			

* These tips are tinned on the soldering surface only.
** The iron tips marked with double asterisk (**) have a temperature accuracy of 25°C. Others have a temperature accuracy of 15°C.

Optional Tips for FM-2032

Unit: mm

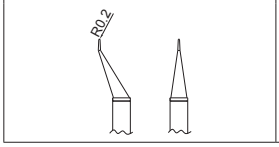
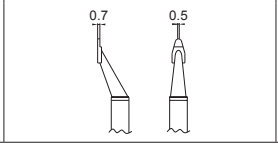
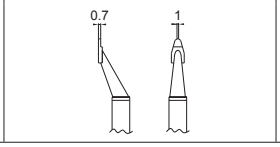
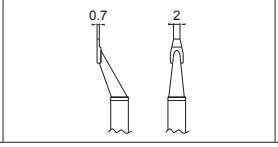
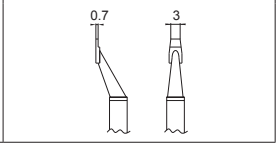
T30-D06 Shape-0.6D	T30-D1 Shape-1D	T30-I Shape-I	T30-J Shape-J	T30-KU Shape-KU	T30-KN Shape-KN
					

Optional Tips for FM-2022

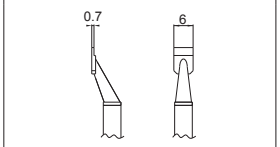
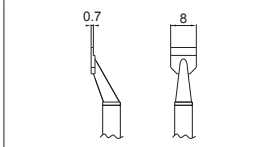
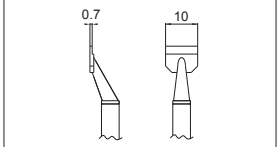
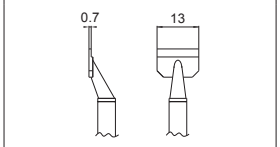
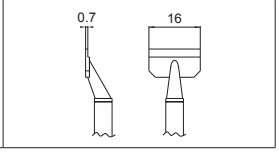
Unit: mm

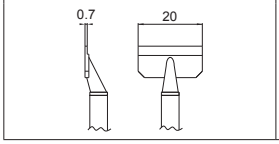
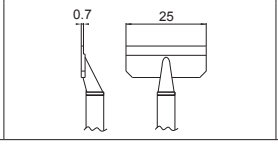
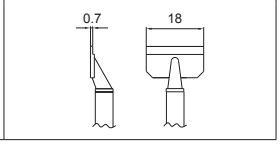
*1 set: 2 pcs

CHIP

T16-1001 Chip 0.5I	T16-1002 Chip 0.5C	T16-1003 Chip 1L	T16-1004 Chip 2L	T16-1013 Chip 3L
				

SOP

T16-1005 SOP 6L	T16-1006 SOP 8L	T16-1007 SOP 10L	T16-1008 SOP 13L	T16-1009 SOP 16L
				

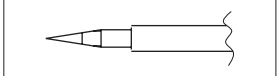
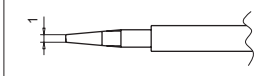
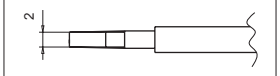
T16-1010 SOP 20L	T16-1011 SOP 25L	T16-1012 SOP 18L
		

Replacement Tips for FM-2023

Unit: mm

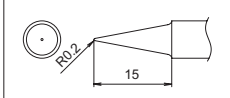
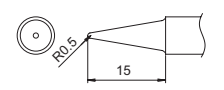
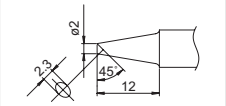
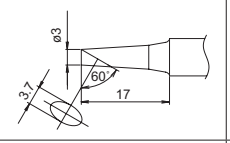
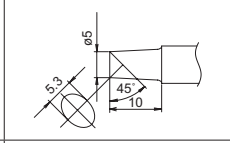
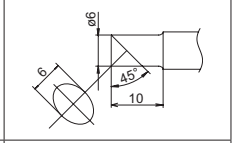
CHIP

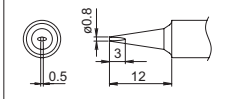
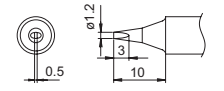
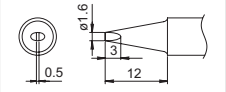
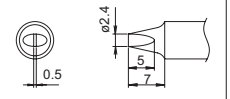
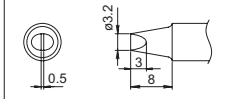
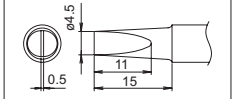
*1 set: 2 pcs

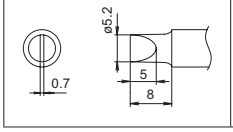
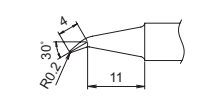
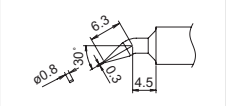
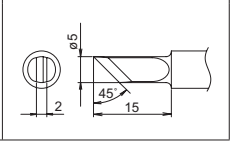
T9-I Chip I	T9-L1 Chip 1L	T9-L2 Chip 2L
		

Optional Tips for FM-2030

Unit: mm

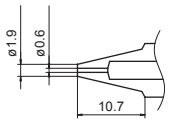
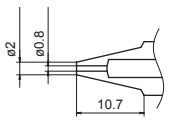
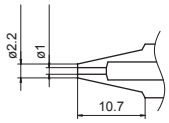
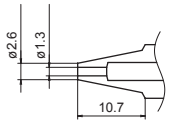
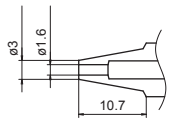
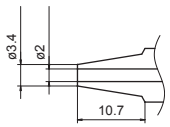
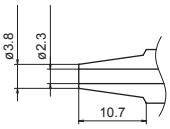
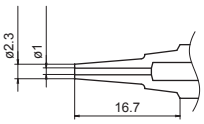
T22-BL Shape-BL	T22-BL2 Shape-2BL	T22-BC2 Shape-2BC	T22-C3 Shape-3C	T22-C5 Shape-5C	T22-C6 Shape-6C
					

T22-D08 Shape-0.8D	T22-D12 Shape-1.2D	T22-D16 Shape-1.6D	T22-D24 Shape-2.4D	T22-D32 Shape-3.2D	T22-D45 Shape-4.5D
					

T22-D52 Shape-5.2D	T22-J02 Shape-0.2J	T22-JD08 Shape-0.8JD	T22-K Shape-K
			

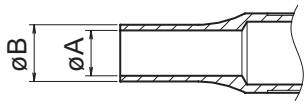
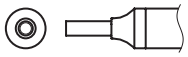
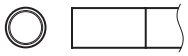
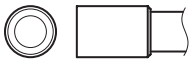
Optional Nozzles for FM-2024

Unit: mm

N3-06 Nozzle ø0.6	**N3-08 Nozzle ø0.8**	**N3-10 Nozzle ø1.0**	**N3-13 Nozzle ø1.3**	**N3-16 Nozzle ø1.6**
				
N3-20 Nozzle ø2.0	**N3-23 Nozzle ø2.3**	**N3-L10 Nozzle ø1.0 Long**		
				

Optional Nozzles for FM-2029

Unit: mm

			
		øA	**øB**
N4-01 Nozzle ø2.0		2.0	2.5
N4-02 Nozzle ø4.0		4.0	5.0
N4-03 Nozzle ø6.0		6.0	7.0
N4-04 Nozzle ø8.0		8.0	9.0

Optional Tips for FM-2026

Please see the optional tips on P.34.

Optional Tips for FM-2031

Please see the optional tips on P.34.

N_2 Soldering System

HAKKO FX-780
N₂ GENERATOR

N_2 Generator



for LEAD FREE RoHS

- Highest concentration of nitrogen gas: 99.9%
- Compact design reduces footprint.

HAKKO FX-791
N₂ STATION

N_2 Flowmeter



for LEAD FREE RoHS

- Flowmeter for N_2 soldering iron with flow control valve and regulator

HAKKO FX-781 New
N₂ GENERATOR

N_2 Generator

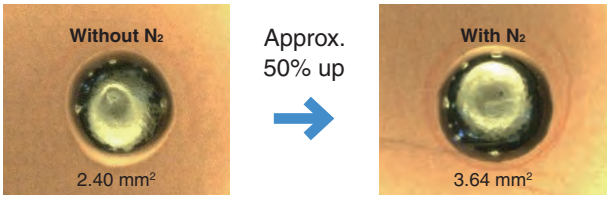


for LEAD FREE RoHS

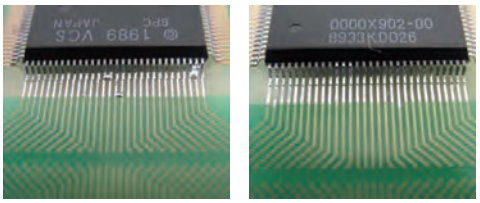
- Large-capacity type accepts 2 soldering irons.

Improved Solderability

- Wettability and spreadability comparisons



- Less bridging occurs even for components susceptible to bridging.



Without N_2 | With N_2

Specifications

Model No.	FX-780	FX-781
Air supply pressure	0.3 to 0.7 MPa	
Concentration of generated N_2	99.9% (max.)	
Amount of generated N_2	1.5 L/min. (When compressed air of 0.5 MPa is supplied at 25°C, the concentration of the generated nitrogen is 98%.)	2.4 L/min. (When compressed air of 0.5 MPa is supplied at 25°C, the concentration of the generated nitrogen is 98%.)
Dimensions*	73 (W) x 282 (H) x 71 (L) mm	73 (W) x 407 (H) x 71 (L) mm
Weight**	1.5 kg	2 kg

* Without sockets and valve
** Without racks

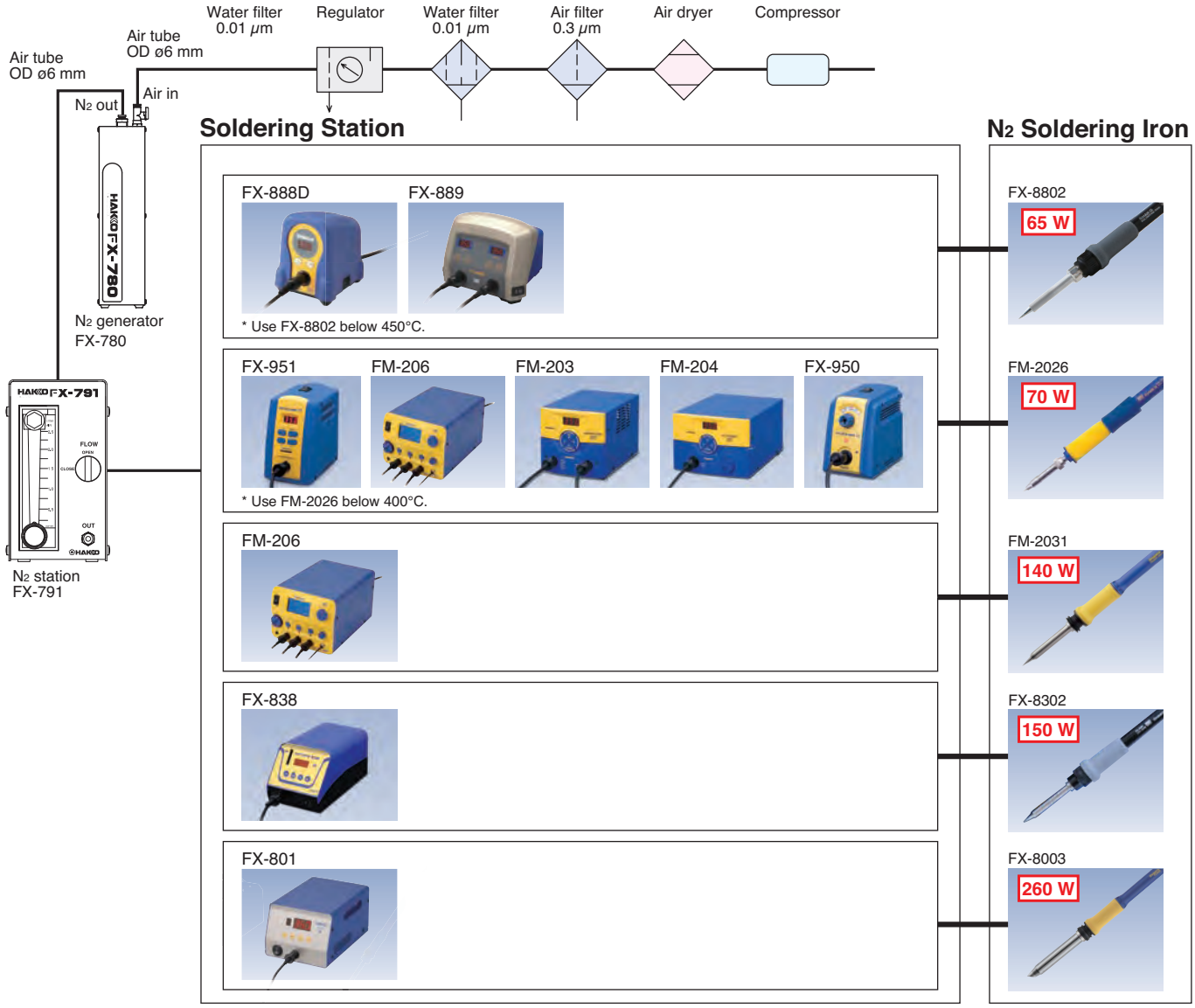
Model No.	FX-791
Pressure of discharged gas	0.2 MPa (2.0 kgf/cm²)
Gas flow	0.25 to 2.5 L/min.
Dimensions	70 (W) × 121 (H) × 134 (D) mm
Weight	600 g

Packing List

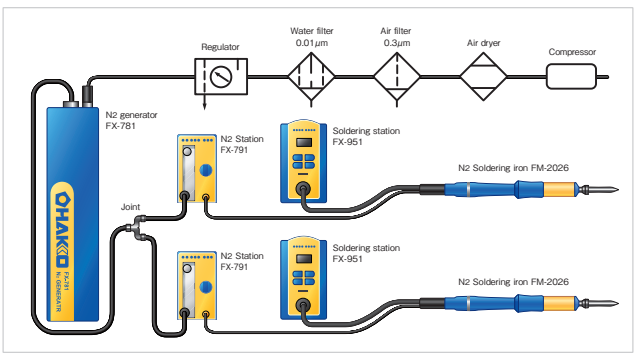
FX-780	Unit, Rack for unit (2 pcs), Instruction manual
FX-791	Unit, Instruction manual

FX-781	Unit, Racks for unit (4 pcs), Instruction manual

Connection Method

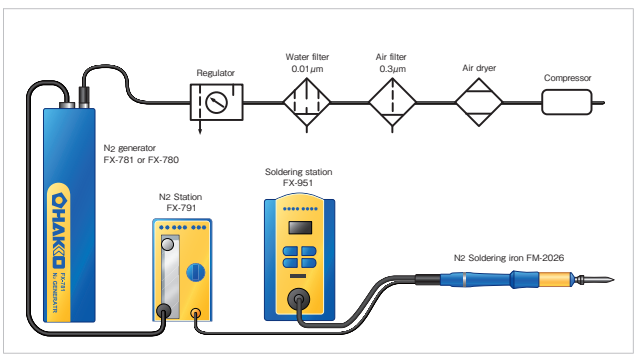


For two soldering irons Large-capacity type：FX-781



＊It is capable to supply high concentration Nitrogen of 97% at the output rate approx. 1L/min.
(at air supply pressure of 0.5MPa)

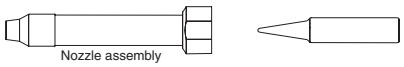
For one soldering iron Small-capacity type：FX-780
Large-capacity type：FX-781

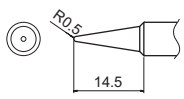
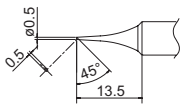
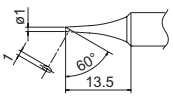
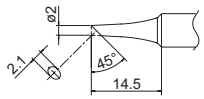
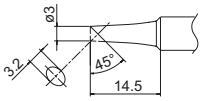
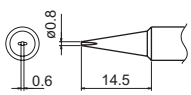
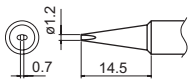
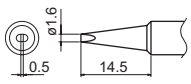
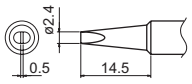
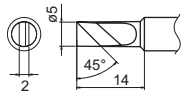
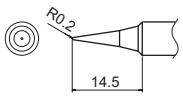


＊It is capable to supply high concentration Nitrogen of 99.9% at the output rate approx. 1L/min.
(at air supply pressure of 0.7MPa)

Replacement Tips and Nozzles Assemblies for FX-8802

Tip and nozzle assembly are supplied separately. Please purchase a compatible nozzle assembly for your tip referring the chart below. Unit: mm

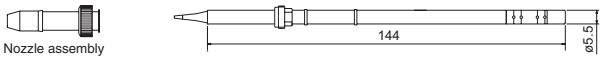


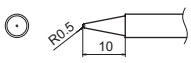
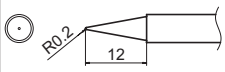
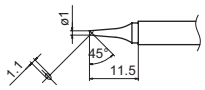
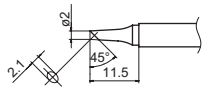
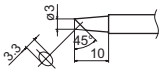
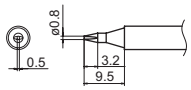
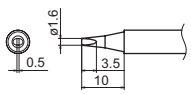
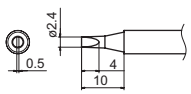
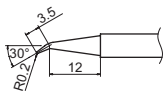
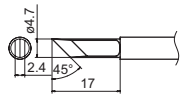
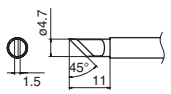
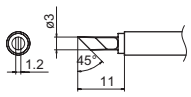
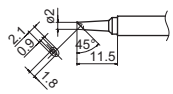
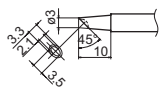
T18-B Shape-B	**T18-C05 Shape-0.5C**	**T18-C1 Shape-1C** **T18-CF1***	**T18-C2 Shape-2C** **T18-CF2***	**T18-C3 Shape-3C** **T18-CF3***	**T18-D08 Shape-0.8D**
					
B3662 **Nozzle assembly A**	**B3664** **Nozzle assembly C**	**B3664** **Nozzle assembly C**	**B3662** **Nozzle assembly A**	**B3663** **Nozzle assembly B**	**B3662** **Nozzle assembly A**
T18-D12 Shape-1.2D	**T18-D16 Shape-1.6D**	**T18-D24 Shape-2.4D**	**T18-K Shape-K**	**T18-I Shape-I**	
					
B3662 **Nozzle assembly A**	**B3663** **Nozzle assembly B**	**B3663** **Nozzle assembly B**	**B3665** **Nozzle assembly D**	**B3664** **Nozzle assembly C**	

* These tips are tinned on the soldering surface only.

Optional Tips and Nozzles Assemblies for FM-2026

Tip and nozzle assembly are supplied separately. Please purchase a compatible nozzle assembly for your tip referring the chart below. Unit: mm

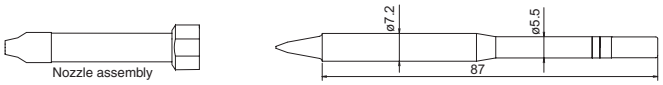


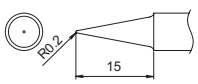
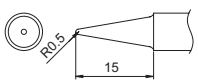
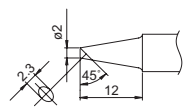
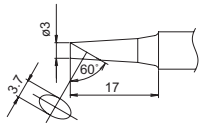
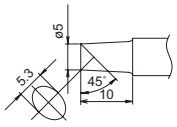
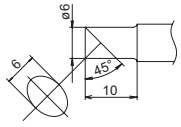
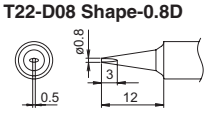
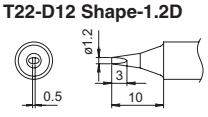
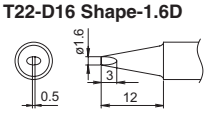
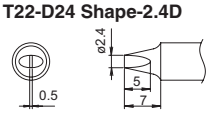
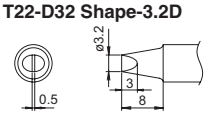
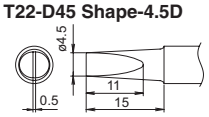
T13-B2 Shape-0.5B	**T13-BL Shape-BL**	**T13-BC1 Shape-1BC** **T13-BCF1***	**T13-BC2 Shape-2BC** **T13-BCF2***	**T13-BC3 Shape-3BC** **T13-BCF3***	**T13-D08 Shape-0.8D**
					
B2708 **Nozzle assembly C**	**B2898** **Nozzle assembly E**	**B2899** **Nozzle assembly F**	**B2706** **Nozzle assembly A**	**B2900** **Nozzle assembly G**	**B2709** **Nozzle assembly D**
T13-D16 Shape-1.6D	**T13-D24 Shape-2.4D**	**T13-J02 Shape-0.2J**	**T13-KF Shape-KF**	**T13-KR Shape-KR**	**T13-KU Shape-KU**
					
B2708 **Nozzle assembly C**	**B2708** **Nozzle assembly C**	**B2707** **Nozzle assembly B**	**B2923** **Nozzle assembly J**	**B2902** **Nozzle assembly I**	**B2901** **Nozzle assembly H**
T13-BCM2 Shape-2BC **Bevel with indent**	**T13-BCM3 Shape-3BC** **Bevel with indent**				
					
B2706 **Nozzle assembly A**	**B2900** **Nozzle assembly G**				

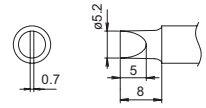
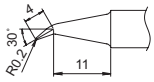
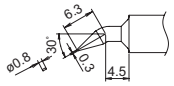
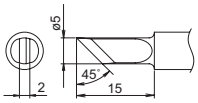
* These tips are tinned on the soldering surface only.

Optional Tips and Nozzles Assemblies for FM-2031

Tip and nozzle assembly are supplied separately. Please purchase a compatible nozzle assembly for your tip referring the chart below. Unit: mm

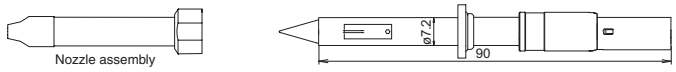


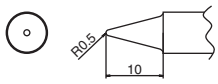
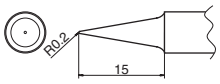
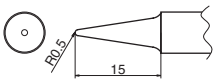
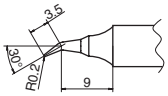
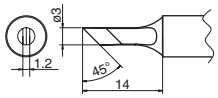
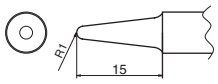
T22-BL Shape-BL	**T22-BL2 Shape-2BL**	**T22-BC2 Shape-2BC**	**T22-C3 Shape-3C**	**T22-C5 Shape-5C**	**T22-C6 Shape-6C**
					
B3121 **Nozzle assembly A**	**B3121** **Nozzle assembly A**	**B3121** **Nozzle assembly A**	**B3121** **Nozzle assembly A**	**B3124** **Nozzle assembly D**	**B3124** **Nozzle assembly D**
T22-D08 Shape-0.8D	**T22-D12 Shape-1.2D**	**T22-D16 Shape-1.6D**	**T22-D24 Shape-2.4D**	**T22-D32 Shape-3.2D**	**T22-D45 Shape-4.5D**
					
B3123 **Nozzle assembly C**	**B3121** **Nozzle assembly A**	**B3123** **Nozzle assembly C**	**B3561** **Nozzle assembly E**	**B3124** **Nozzle assembly D**	**B3124** **Nozzle assembly D**

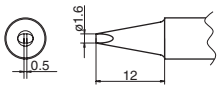
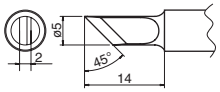
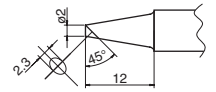
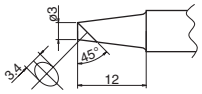
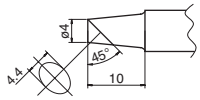
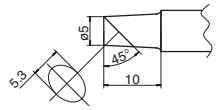
T22-D52 Shape-5.2D	T22-J02 Shape-0.2J	T22-JD08 Shape-0.8JD	T22-K Shape-K
			
B3124 Nozzle assembly D	B3121 Nozzle assembly A	B3561 Nozzle assembly E	B3123 Nozzle assembly C

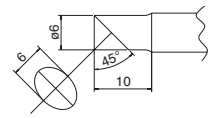
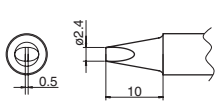
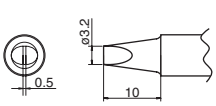
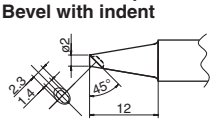
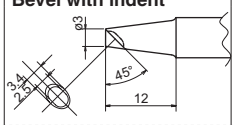
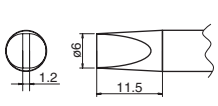
Optional Tips and Nozzles Assemblies for FX-8302

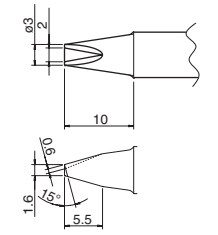
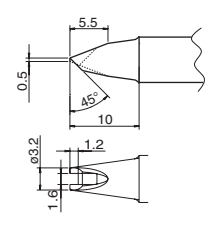
Tip and nozzle assembly are supplied separately. Please purchase a compatible nozzle assembly for your tip referring the chart below. Unit: mm



T20-B2 Shape-0.5B	T20-BL Shape-BL	T20-BL2 Shape-2BL	T20-J02 Shape-0.2J (0.2RSB)	T20-KU Shape-KU	T20-BL3 Shape-3BL
					
B3121 Nozzle assembly A	B3121 Nozzle assembly A	B3121 Nozzle assembly A	B3122 Nozzle assembly B	B3122 Nozzle assembly B	B3123 Nozzle assembly C

T20-D16 Shape-1.6D	T20-K Shape-K	T20-BC2 Shape-2BC T20-BCF2*	T20-BC3 Shape-3BC T20-BCF3*	T20-BC4 Shape-4BC T20-BCF4*	T20-C5 Shape-5C
					
B3123 Nozzle assembly C	B3123 Nozzle assembly C	B3124 Nozzle assembly D	B3124 Nozzle assembly D	B3124 Nozzle assembly D	B3124 Nozzle assembly D

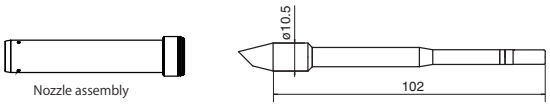
T20-C6 Shape-6C	T20-D24 Shape-2.4D	T20-D32 Shape-3.2D	T20-BCM2 Shape-2BC Bevel with indent	T20-BCM3 Shape-3BC Bevel with indent	T20-D6 Shape-6D
					
B3124 Nozzle assembly D	B3124 Nozzle assembly D	B3124 Nozzle assembly D	B3124 Nozzle assembly D	B3124 Nozzle assembly D	B3561 Nozzle assembly E

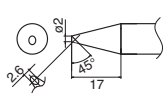
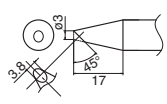
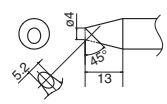
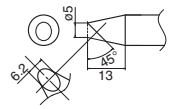
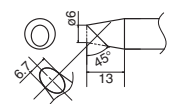
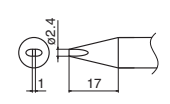
T20-1610	T20-1611
	
B3124 Nozzle assembly D	B3124 Nozzle assembly D

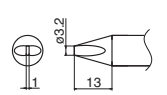
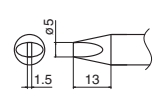
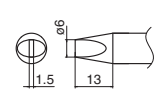
* These tips are tinned on the soldering surface only.

Optional Tips and Nozzles Assemblies for FX-8003

Tip and nozzle assembly are supplied separately. Please purchase a compatible nozzle assembly for your tip referring the chart below. Unit: mm



T33-BC2 Shape 2BC	T33-BC3 Shape 3BC	T33-BC4 Shape 4BC	T33-BC5 Shape 5BC	T33-BC6 Shape 6BC	T33-D24 Shape 2.4D
					
B5070 Nozzle assembly B	B5070 Nozzle assembly B	B5069 Nozzle assembly A	B5069 Nozzle assembly A	B5069 Nozzle assembly A	B5070 Nozzle assembly B

T33-D32 Shape 3.2D	T33-D5 Shape 5D	T33-D6 Shape 6D
		
B5069 Nozzle assembly A	B5069 Nozzle assembly A	B5069 Nozzle assembly A

* These tips are tinned on the soldering surface only.

HAKKO SOLDERING IRON DASH New

Ceramic Heater Soldering Iron

Tip included



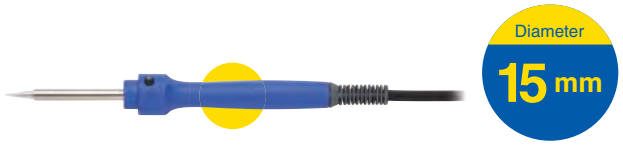
- An entry model of ceramic heater soldering iron
- Ideal for electronic circuit assembly

Packing List

FX-650	Unit

Features

Slim handle improves your work efficiency!



Simple and easy tip replacement



Quick change just loosing a screw

Specifications

Model No.	FX-650
Power consumption	16 W
Heating element	Ceramic heater
Standard tip	Shape-B (No.T34-B)
Total length*	224 mm
Weight*	60 g (with B tip)

* Without cord

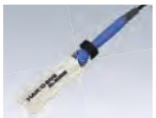
Option

Part No.	Name	Specifications
FH300-81	Iron holder	With cleaning sponge
633-01	Iron holder	With 599B
633-02	Iron holder	With cleaning sponge
605M	Iron cover	–


No.FH300-81


No.633-01


No.633-02

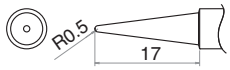

No.605M (with FX-650)

Replacement Tips for DASH

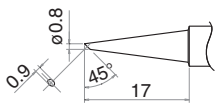
Unit: mm



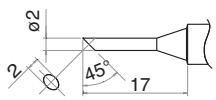
T34-B



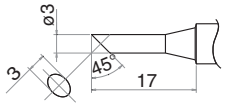
T34-C08



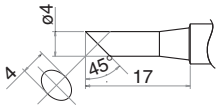
T34-C2



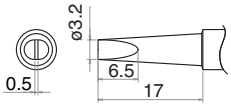
T34-C3



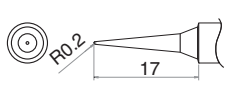
T34-C4



T34-D32



T34-I



HAKKO FX-901

CORDLESS IRON

Battery-Powered Soldering Iron

Tip included



- Easy-to-carry soldering iron powered by AA alkaline batteries
- Cordless design makes this iron very handy and usable virtually anywhere.

Easy Replacement

Easy tip replacement

Turn the nipple 90˚ clockwise.



Easy battery replacement





Packing List

FX-901	Unit, Cap

* Batteries not included

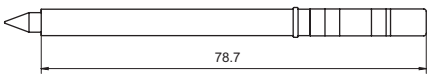
Specifications

Model No.	FX-901
Power supply	AA × 4 pcs
Power consumption	Alkaline batteries: 6 W (6 V) Nickel hydrogen batteries (2150 mAh): 5 W (4.8 V)
Standard tip	Shape-B (No.T11-B)
Battery life*	Alkaline batteries: 60 minutes Nickel hydrogen batteries (2150 mAh): 120 minutes
Total length**	212 mm
Weight***	76 g

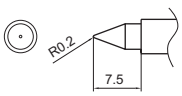
Measurement conditions
· When using new batteries, performance will vary depending on the batteries.
· The operating time was measured from the point that the soldering iron was turned on to the point at which the temperature dropped below 300°C, which is the minimum temperature at which soldering can be performed.
* When using batteries other than those specified above, the performance and the operating time will vary.
** Without cap
*** Without battery

Replacement Tips for FX-901

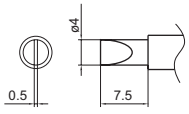
Unit: mm



T11-B Shape-B



T11-D4 Shape-4D



HAKKO FX-301B ESD SAFE

SOLDERING POT

High Performance Soldering Pot Digital



for LEAD FREE RoHS CE

OFFSET

- Digital display ensures reliable temperature control and realizes precise temperature adjustment.
- Soldering pot is coated in a special long-life material, which is best suited for lead-free solder. This is provided as a standard feature.

HAKKO FX-300

SOLDERING POT

High Performance Soldering Pot Analog



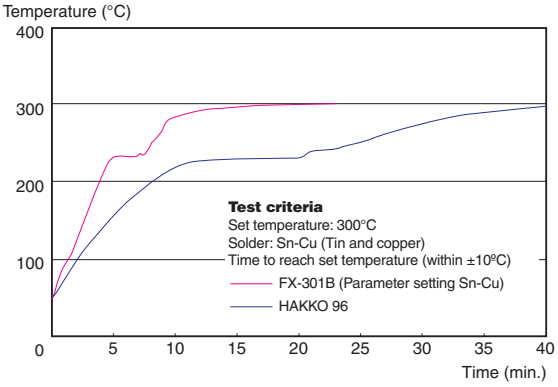
for LEAD FREE RoHS CE

- Temperature can be adjusted just by turning a knob during operation.
- Adding an optional specially coated stainless-steel pot provides compatibility with lead-free solder.

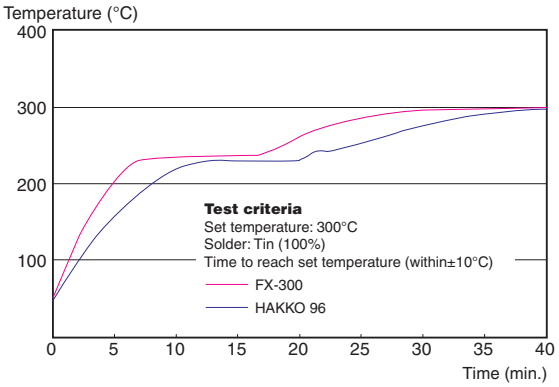
Quick Heat Up

Time comparison to reach set temperature

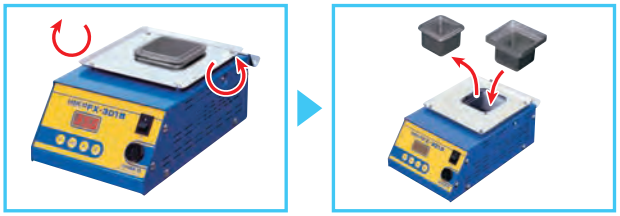
FX-301B vs. HAKKO 96 (conventional model)



FX-300 vs. HAKKO 96 (conventional model)



Easy Pot Replacement



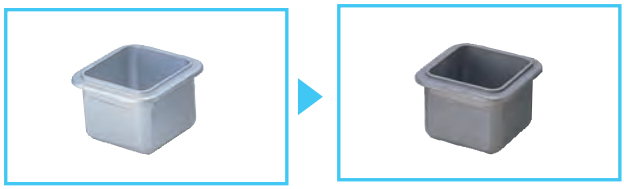
Loosen the screw on both sides.

Change the pot and tighten the screws.

* For your safety, be sure to replace the pot after the solder completely cools.

Specially Coated Solder Pot (Durable type)

The special coating prevents the solder pot from corroding, which ensures that the solder pot has a long service life.



Standard solder pot

Specially coated solder pot

Packing List

FX-301B	Unit (with solder pot, 50 × 50 durable type), Spatula, J-shaped waste collector, Hexagon wrench, Instruction manual
FX-300	Unit (with solder pot, 50 × 50), Spatula, J-shaped waste collector, Hexagon wrench, Instruction manual

Specifications

Model No.	FX-301B
Power consumption	260 W
Dimensions	143 (W) × 100 (H) × 220 (D) mm
Weight*	1.7 kg

Pot

Temperature range	50 × 50 square: 200 to 450°C 75 × 75 square: 200 to 380°C
Dimensions of solder pot	50 × 50 square durable type: 50 (W) × 43.5 (H) × 50 (D) mm 75 × 75 square durable type: 75 (W) × 52.5 (H) × 75 (D) mm
Molten solder capacity**	50 × 50 square: 0.85 kg 75 × 75 square: 1.2 kg

Model No.	FX-300
Power consumption	205 W
Dimensions	143 (W) × 100 (H) × 220 (D) mm
Weight*	1.7 kg

Pot

Temperature range	50 × 50 square: 200 to 450°C 75 × 75 square: 200 to 380°C
Dimensions of solder pot	50 × 50 square standard type: 50 (W) × 43.5 (H) × 50 (D) mm 75 × 75 square standard type: 75 (W) × 52.5 (H) × 75 (D) mm
Molten solder capacity**	50 × 50 square: 0.85 kg 75 × 75 square: 1.2 kg

* Without solder and cord

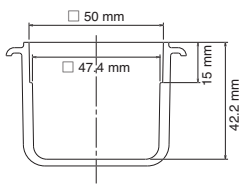
** The 50 × 50 square solder pot is originally installed. The 75 × 75 square solder pot is an optional part.

Option / Replacements

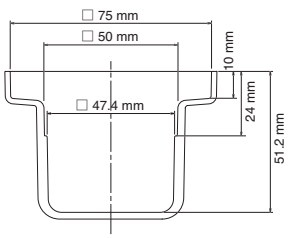
Part No.	Name	Specifications
A1539	Solder pot	50 × 50 durable type
A1540	Solder pot	75 × 75 durable type
A1517	Solder pot	50 × 50
A1518	Solder pot	75 × 75
A1310	Temperature probe	For solder bath and pot

Dimensions of Solder Pot

50 × 50 square



75 × 75 square



HAKKO 96
SOLDERING POT

Soldering Pot

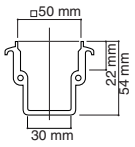


- Temperature can be adjusted just by turning a knob during operation.

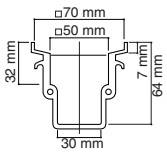
Features

Dimensions of Solder Pot

50 × 50 square



70 × 70 square



Operation



Packing List

96, 96-1	Unit, Spatula, Instruction manual

Specifications

Part No.	96	96-1
Power consumption	200 W	
Dimensions	135 (W) × 105 (H) × 224 (D) mm	135 (W) × 120 (H) × 224 (D) mm
Weight*	1.5 kg	1.6 kg
Temperature range	100 to 450°C	100 to 380°C
Dimensions of solder pot	50 (W) × 54 (H) × 50 (D) mm	70 (W) × 64 (H) × 70 (D) mm
Molten solder capacity	0.85 kg	1.2 kg

* Without cord

HAKKO FT-801 ESD SAFE
THERMAL WIRE STRIPPER

Thermal Wire Stripper

Blade not included

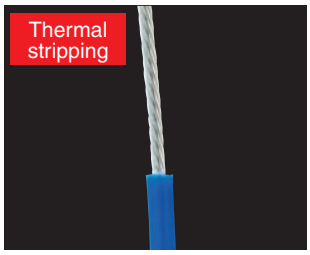


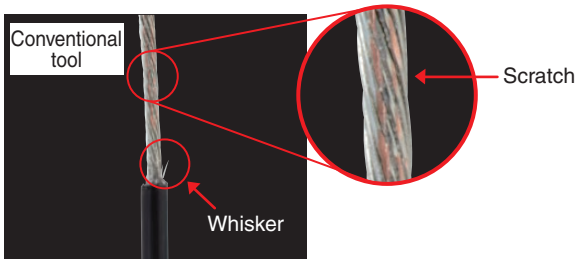
- Thermal wire stripper that ensures clean-cut removal of wire insulation
- High stripping performance ensures clean cut through highly heat-resistant PTFE.

Features

Solves the problem of whiskers and scratches being left by conventional tools

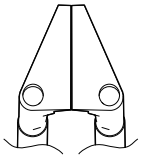




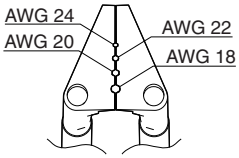


Replacement Blades

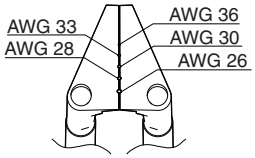
For FT-8002



G2-1601 Wire stripper blade
Straight

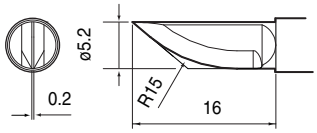


G2-1602 Wire stripper blade
AWG 18 to 24



G2-1603 Wire stripper blade
AWG 26 to 36

For FT-8003 (option)



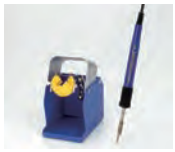
G3-1601 Knife type blade

Packing List

FT-801	Station, Handpiece (FT-8002), Power cord, Handpiece holder, Connecting cable, Lead adjuster, Blade removal tool, Instruction manual

Option

Part No.	Name	Specifications
FT8003-01	FT-8003 conversion kit	Handpiece (FT-8003), Knife blade, Handpiece holder, Instruction manual





Blade included

Specifications

Model No.	FT-801
Power consumption	68 W/ 50 W*
·Station	
Output voltage	AC 24 V
Dimensions	80 (W) × 130 (H) × 131 (D) mm
Weight**	1.2 kg
·Handpiece	
Power consumption	64 W (24 V)
Cord length	1.3 m
Total length***	96 mm
Weight***	48 g

* When connecting with FT-8003
** Without cord
*** Without cord and blade

HAKKO FT-710 ESD SAFE

TIP CLEANER

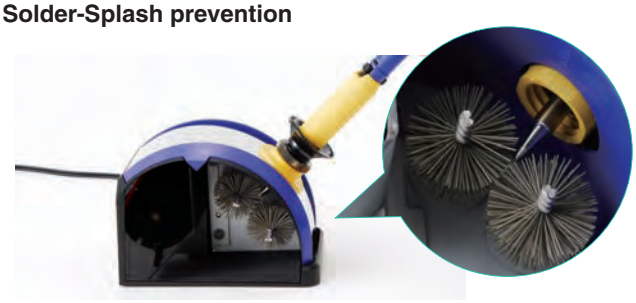
Solder-Splash-Preventing Rotary Tip Cleaner



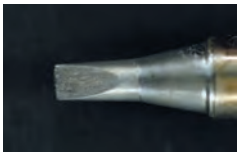
- The solder removal level can be adjusted using two different types of brushes.
- Brushes can be replaced without using any tools, and safe design prevents solder waste from entering the drive part.

Features

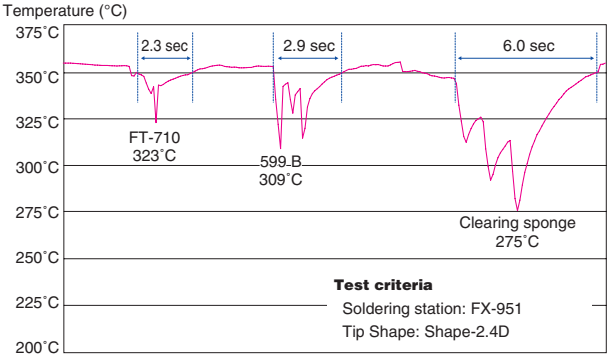
Solder-Splash prevention



Controllable solder removal level

Brush	Cleaning brush A (standard accessory)	Cleaning brush B (optional)
Material	Resin 	Metal 
Image after cleaning	Some solder remains. 	Solder is completely removed. 
Benefit	Prevents tip oxidation and extends the service life of the tip	Suitable for soldering small sections that require control over the amount of solder.

Minimizes decrease in temperature of the tip during cleaning



Packing List

FT-710	Unit, AC adapter, Receptacle A, Receptacle B, Lock nut, Gauge, Instruction manual

Specifications

Model No.	FT-710
Rating	DC 24 V 130 mA
Brush rotational speed	2500 rpm
Standard receptacle	Receptacle A and B
Dimensions	71 (W) × 77 (H) × 107 (D) mm
Weight	450 g

AC adapter

Output voltage	DC 24 V

Compatibility table

Tip	Receptacle A	Receptacle B	Receptacle C
T15, T11	✓		
T18, 900M		✓	
T20, T17, T22			✓

* This cleaner cannot be used with T15-JL02, quad type, tunnel type, and spatula type soldering tips of T15 series.
* It can be used with T19 series, only with the use of a custom-ordered receptacle. In this situation, consult your nearest HAKKO dealer or distributor.
* It cannot be used with FX-8802 and FX-8803 with T18 series.
* There are some tips with dimensions that cannot be adjusted with the standard receptacles. In this situation, consult your nearest HAKKO dealer or distributor.

Option

Part No.	Name	Specifications
A1567	Cleaning brush B	Metal brushes, set of 2
B3519	Receptacle C	–

HAKKO FT-700
TIP POLISHER

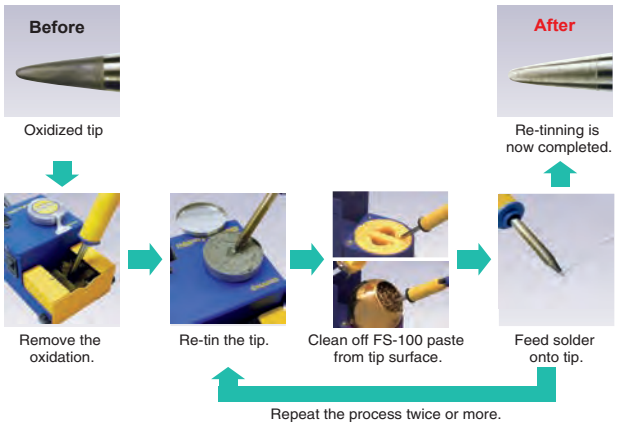
Tip Polisher



- Soldering tip polisher best suited to the removal of oxidation on soldering tips
- Prevents the shortening of the service life of tips caused by oxidation

Usage

Cleaning procedure



* Approximately 350°C is the most suitable temperature for cleaning the tips.



Use the brush to remove tough oxide.

Packing List

FT-700	Unit, Paste, Brush, Instruction manual

Specifications

Model No.	FT-700
Power consumption	4.5 W
Dimensions	70 (W) × 54 (H) × 101 (D) mm
Weight*	0.65 kg

* Without cord

Chemical paste

Amount	10 g
Ingredients	Flux, tin (Sn) 50 wt% (each)

* The flux component of chemical paste consists of alicyclic amine hydrobromate, aliphatic amine hydrobromate, petrolatum, and wax.

HAKKO FS-100
CHEMICAL PASTE

Chemical Paste



- Chemical paste best suited to the removal of oxidation on soldering iron tips
- Also used for retinning of soldering tips

Packing List

FS-100	Paste, Instruction manual

Specifications

Chemical paste

Amount	10 g
Ingredients	Flux, tin (Sn) 50 wt% (each)

* The flux component of chemical paste consists of alicyclic amine hydrobromate, aliphatic amine hydrobromate, petrolatum, and wax.

HAKKO 373 SELF FEEDER ESD SAFE

Self Feeder

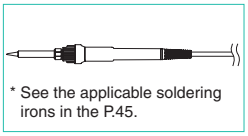


- Automatic solder feeder that enables a user to complete soldering work with just one hand
- The solder feed time and speed can be set.

Set-Up Example

・Soldering for one-handed operation

Soldering irons



* See the applicable soldering irons in the P.45.

\+ HAKKO 373



\+ Solder diameter adjustment ring



\+ Tube unit with switch



or



\+ Guide pipe assembly



or

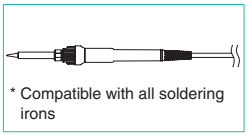


Set-up example



・Soldering with a feeder pen

Soldering irons



* Compatible with all soldering irons

\+ HAKKO 373



\+ Solder diameter adjustment ring



\+ Feeder pen



\+ Switch



Foot switch

or



Feeder switch

Set-up example



Specifications

Model No.	373
Power consumption	6 W
Solder feed time	0 to 7 sec. (auto mode)
Solder feed speed	4.5 to 26 mm/sec.
Solder feed quantity	0 to 182 mm
Solder return quantity	0 to 5 mm (fixed speed)
Mode	Auto and manual
Usable solder diameter*	ø0.6, 0.65, 0.8, 1.0, 1.2, 1.6 mm
Usable solder quantity	1 kg or less
Dimensions	107 (W) × 110 (H) × 215 (D) mm
Weight**	1.5 kg

* ø1.6 mm lead free solder can't be used.
** With cord

Packing List

373	Unit, Instruction manual

The accessories that are required for initial set-up, such as a tube unit, guide pipe assembly, and solder diameter adjustment ring, are not included. They must be ordered separately and adapted to use with the soldering iron and solder wire diameter.

Accessory Selection Guide

■One-handed operation

Applicable soldering iron	Solder feed unit	Solder diameter	Options		
			Solder diameter adjustment ring	Guide pipe assembly	Tube unit
FM-2027 FM-2028 	373	0.6, 0.65 mm	B1626	B3481	B3477
		0.8 mm	B1627	B3482	
		1.0 mm	B1628	B3483	
		1.2 mm	B1629	B3484	B3478
FM-2030 	373	0.6, 0.65 mm	B1626	B3726	B3477
		0.8 mm	B1627	B3727	
		1.0 mm	B1628	B3728	
		1.2 mm	B1629	B3729	B3478
FX-8301 	373	0.6, 0.65 mm	B1626	B3566	B3563
		0.8 mm	B1627	B3567	
		1.0 mm	B1628	B3568	
		1.2 mm	B1629	B3569	B3564
		1.6 mm	B1630	B3570	
FX-8801 	373	0.6, 0.65 mm	B1626	B2146	B2143
		0.8 mm	B1627	B2147	
		1.0 mm	B1628	B2148	
		1.2 mm	B1629	B2149	B2144
		1.6 mm	B1630	B2150	
FX-8805 	373	0.6, 0.65 mm	B1626	B2151	B2143
		0.8 mm	B1627	B2152	
		1.0 mm	B1628	B2153	
		1.2 mm	B1629	B2154	B2144
		1.6 mm	B1630	B2155	

■Feeder pen

Applicable soldering iron	Solder feed unit	Solder diameter	Options		
			Solder diameter adjustment ring	Feeder pen	Switch
Compatible with all soldering irons	373	0.6, 0.65 mm	B1626	C1234	B2124 feeder switch or B1649 foot switch
		0.8 mm	B1627		
		1.0 mm	B1628		
		1.2 mm	B1629	C1235	
		1.6 mm	B1630		

HAKKO 375 SELF FEEDER

V-Groove Maker



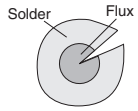
- Cutting a V-groove put on the solder surface reduces the splash of solder and flux.
- The solder feed amount can be controlled by turning the switch on and off.
- Compact, space-saving automatic solder feeder

Features

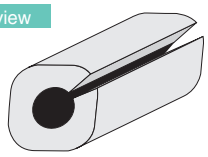
Minimize solder and flux splash

Cutting a V-groove on the solder surface enables the release of gas pressure generated by the flux, thereby suppressing splash. HAKKO 375 can cut a groove in only the solder needed, then helps to reduce the level of defectiveness.

Solder cross-section view



3D view



V-grooved solder

Advantages of V-grooved solder

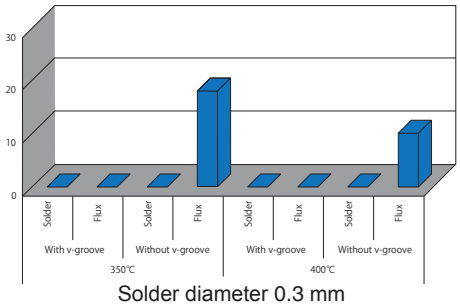
-Examination of solder and flux splash

Test criteria

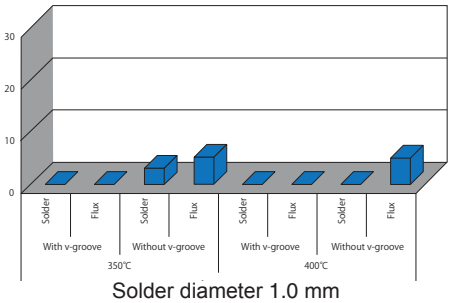
Measurement method	Measure the amount of solder and flux splashing after solder is fed to the soldering iron
Temperature setting for soldering iron	350°C and 400°C
Solder	Lead-free (Sn-3Ag-0.5Cu) Halogen-free flux ø0.3 mm and ø1.0 mm
Solder feed length	50 mm

* The effect of solder and flux splashing prevention may differ under different operation conditions.

■ Amount of flux splashing (quantity of dots)



Solder diameter 0.3 mm



Solder diameter 1.0 mm

Packing List

375	Unit, AC Adapter, Instruction manual

Option

Part No.	Name
B1649	Foot switch
B2763	Hand switch

Specifications

Model No.	375
Rating	DC 24 V 75 mA
Solder feed speed	27 mm/sec.
Usable solder diameter	ø0.3, 0.5, 0.6, 0.8, 1.0 mm
Dimensions	78 (W) × 98 (H) × 56 (D) mm
Weight	0.59 kg

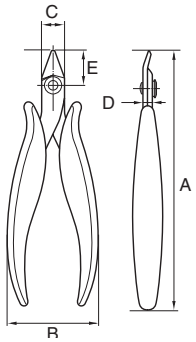
AC Adapter

Output voltage	DC 24 V

HAKKO CUTTING TOOL

Cutting Tool





- Designed for precision assembly of delicate, complex electronic work
- Soft-touch grip enables long tool usage for long periods at a time.
- Recommend for use in cutting copper and soft lead wires

Specifications

Part No.	Name	Max. copper wire cutting capability	A	B	C	D	E
106-01	Cutting tool for flush cut with safety clip	1.3 mm	132	54	13.5	5	20
106-02	Cutting tool for flush cut with angled blade	1.3 mm	129	54	13.5	5	16
106-03	Cutting tool for flush cut with small blade	0.8 mm	130	54	9.5	4	18
106-04	Cutting tool for a front, flush cut	1.0 mm	138	54	14	6	27
106-05	Cutting tool for flush cut	1.3 mm	132	54	13.5	5	20
106-06	Short nose pliers	–	140	54	13	6	29
106-07	Long nose pliers	–	154	54	13	6	40
106-08	Bent nose pliers	–	146	54	13	4	35

(Unit: mm)

HAKKO 611 ESD SAFE SOLDER REEL STAND

Reel Stand





No.611-2

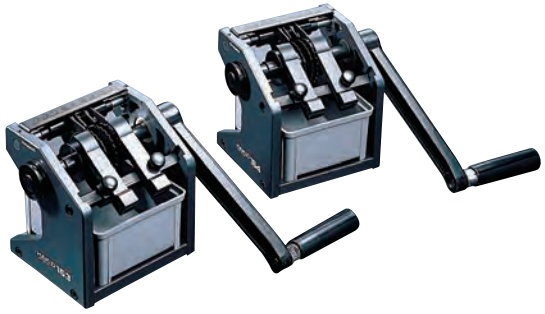
- Solder reel stand for coiled solder with a maximum load of 1 kg
- Smooth action when reeling out solder wire improves work efficiency
- A mounting screw for the grounding wire is attached on the baseplate.

Specifications

Part No.	611-1	611-2
Shaft diameter	ø15 mm	
Usable solder	Roll solder 1 kg (max.) × 1	Roll solder 1 kg (max.) × 2
Dimensions	86 (W) × 78 (H) × 141 (D) mm	87 (W) × 200 (H) × 141 (D) mm
Weight	450 g	750 g

HAKKO 153·154 LEAD FORMER

Lead Cutter and Former



- Lead cutter and former for axial components
- Can be used for forming and cutting, forming only, or cutting only

Cutting and Forming

HAKKO 153	HAKKO 154
Cutting and forming Max. ø5 mm Max. ø0.8 mm Min. 4.2 mm Min. 0.8 mm Min. 5.6 mm Max. 37 mm Max. 14.5 mm	Cutting and forming Max. ø5 mm Max. ø0.5 mm Min. 4.2 mm Min. 0.5 mm Min. 5 mm Max. 37 mm Max. 14.5 mm
Forming Min. 4.2 mm Min. 5.6 mm Max. 37 mm Max. 14.5 mm	Forming Min. 4.2 mm Min. 5 mm Max. 37 mm Max. 14.5 mm
Cutting Max. 50 mm	Cutting Max. 50 mm

Packing List

153, 154	Unit, Parts tray, Clamp, Handle, 2.0 mm Hexagon wrench, 2.5 mm Hexagon wrench, 3.0 mm Hexagon wrench, 4.0 mm Hexagon wrench, Instruction manual

Specifications

Part No.	153-1	154-1
Forming size	5.6 mm pitch	5 mm pitch
Max. diameter of lead wire	ø0.8 mm (max.)	ø0.5 mm (max.)
Lead wire*	For annealed copper lead wire only	
Outer width of tape	85 mm (max.)	
Taping pitch	5 mm	
Dimensions	125 (W) × 130 (H) × 110 (D) mm	
Weight**	2 kg	

* These tools are not suited to work on components with lead frames (square lead).
** Including handle and clamp

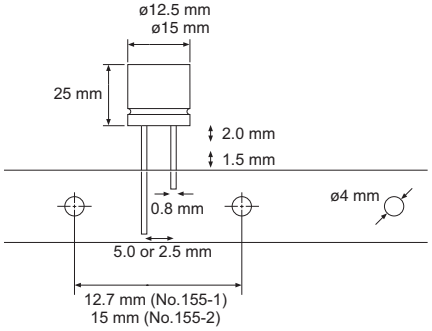
HAKKO 155 LEAD CUTTER

Lead Cutter



- Lead cutter for radial components

Cutting



* Cutting only

Packing List

155	Unit, Parts tray, Clamp, Handle, 2.0 mm Hexagon wrench, 2.5 mm Hexagon wrench, 3.0 mm Hexagon wrench, 4.0 mm Hexagon wrench, Instruction manual

Specifications

Part No.	155-1	155-2
Max. diameter of lead wire	ø0.8 mm (max.)	
Lead wire*	For annealed copper lead wire only	
Max. processing part size	ø12.5 × 25 mm (max.)	ø15 × 25 mm (max.)
Feed hole pitch	12.7 mm	15 mm
Lead pitch**	5.0 mm, 2.5 mm	5.0 mm
Min. processing size	1.5 mm from taping end, 2.0 mm from component end	
Dimensions	110 (W) × 140(H) × 125 (D) mm	
Weight***	1.7 kg	

* These tools are not suited to work on components with lead frames (square lead).
** When shipped, the unit is set for components with a lead pitch of 5.0 mm.
*** Including handle and clamp

HAKKO DIPLINER

LEAD STRAIGHTENER

Lead Straightener





RoHS

- IC lead liner for correcting variable lead pitches
- Simple mechanism enables the adjustments with just one screw.
- Simply insert the IC case into the chute.

Packing List

FT100, FT150, FT200, FT300	Unit, Instruction manual

Specifications

Part No.	FT100	FT150	FT200	FT300
Width of IC	7.5 mm	10 mm	15 mm	19 mm
Number of IC leads	8, 14, 16 18, 20	22	24, 28 40, 42	64

HAKKO 393 VACUUM PICK-UP

Dropper Type



- Portable, easy-to-carry manual dropper-type vacuum pick-up
- Maximum pick-up capacity of 40 gf
- Uses antistatic material

HAKKO 394 VACUUM PICK-UP

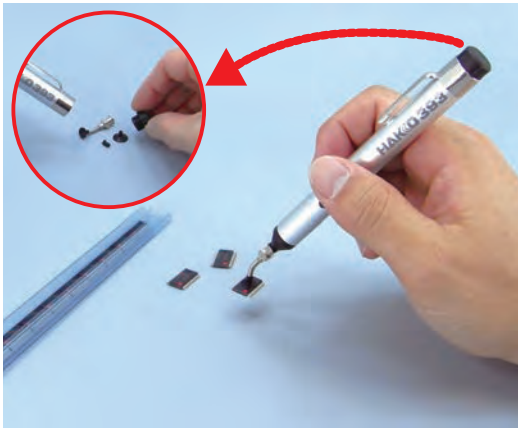
Battery-Powered Type



- Battery-powered suction pick-up tool with built-in vacuum pump
- Maximum pick-up capacity of 120 gf
- Uses antistatic material

Usage Example

HAKKO 393



HAKKO 394



With the bent nozzle accessory, 0603-size components can be picked up.



Replacement Pads and Nozzles

Part No.	Name	Specifications
A1164	Bent nozzle	0.4 mm
A1165	Bent nozzle	1.1 mm with stopper
A1198	Bent nozzle	0.26 mm
A1486	Straight nozzle	1.1 mm with stopper
A1166	Pad	3 mm
A1312	Pad	5 mm
A1167	Pad	7 mm
A1311	Pad	10 mm

Packing List

393	Unit, 1.1 mm diameter Bent nozzle with stopper, 3 mm diameter Pad, 7 mm diameter Pad, 10 mm diameter Pad, Instruction manual
394	Unit, 1.1 mm diameter Bent nozzle with stopper, 5 mm diameter Pad, 10 mm diameter Pad, two AAA Alkaline batteries (for trial), Instruction manual

Specifications

Model No.	393
Pad	Conductive silicone rubber
Dimensions	ø13 mm × 132 mm
Weight*	19 g

* Without nozzle and pad

Model No.	394
Power supply	Two AAA batteries
Pad	Conductive silicone rubber
Battery life	Approx. 30,000 suction cycles (with alkaline batteries)
Suction capacity	120 gf (with a pad diameter of 10 mm)
Dimensions	130 (W) × 29 (H) × 22 (D) mm
Weight*	43 g

* Without batteries, nozzle and pad

HAKKO FS-210 SOLDERING FLUX

New

Brush-tip Type Flux Pen



RoHS

- Pen tip does not split easily.
- You can fill your favorite flux into FS-210.
- Simply push the pen shaft when you need some extra flux.

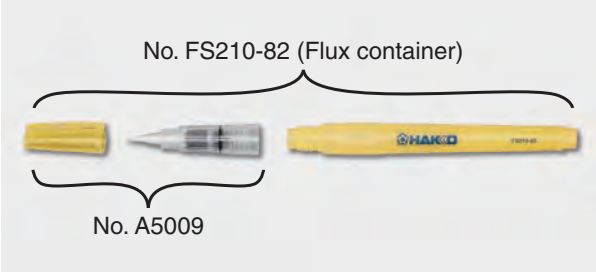
Packing List

FS210-82	Flux container for 4 mL (5 pcs)

* No Flux contained.

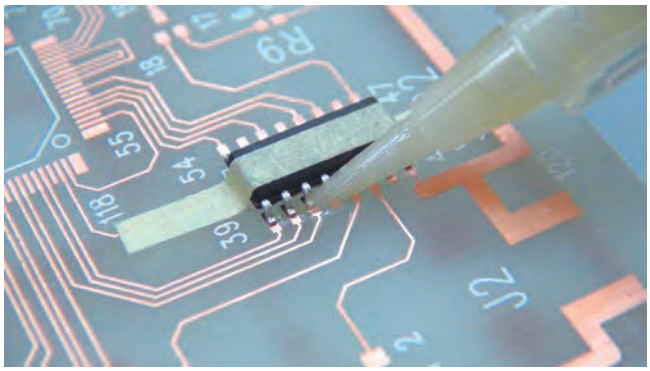
Replacement Parts

A5009	Brush-tip with a cap (5 pcs)



Features

Pen for pinpoint application of optimum amount of flux



Simply push the shaft for a generous coating of flux



HAKKO FR-300

DESOLDERING TOOL

New

Portable Desoldering Tool

Nozzle included



RoHS CE

OFFSET

- Power switch and adjustable temperature control built into the handle
- Ergonomic grip design provides superior operability



FR-300 is supplied in a carrying case with maintenance parts and simple iron holder.

Packing List

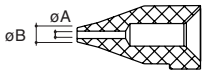
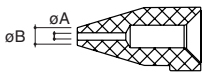
FR-300	Unit, Ceramic paper filter (L; 2 pcs), Nozzle changing tool, Protection cover, Pre-filter, Iron holder, Cleaning pin for 1.0 mm diameter nozzle, Cleaning pin for heating core, Instruction manual

Specifications

Model No.	FR-300
Power consumption	118 W
Temperature range	350 to 500°C
Nozzle to ground resistance	<2 Ω
Nozzle to ground potential	<2 mV
Vacuum generator	Diaphragm pump
Vacuum pressure	81 kPa (610 mmHg)
Suction flow	11 L/min.
Standard nozzle	ø1.0 mm (No. N50-04)
Dimensions	210 (W) × 226 (H) mm
Weight	0.52 kg

Replacement Nozzles

Unit : mm

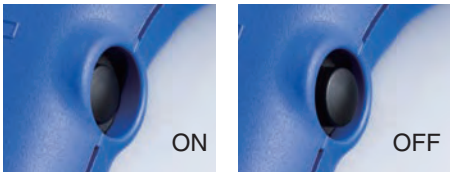
Part No.	Figure	Size A	Size B
N50-01		0.8	2.0
N50-02		1.0	2.0
N50-03		0.8	2.5
N50-04		1.0	2.5
N50-05		1.3	3.0
N50-06		1.6	3.0

Features

Quick-change nozzle replacement with special tools



Power switch at hand



Simplified iron holder as standard



HAKKO FR-400 ESD SAFE

DESOLDERING TOOL

New

Heavy Duty Desoldering Tool Digital

Nozzle included



for LEAD FREE · ESD SAFE · RoHS · CE

Desoldering

Auto off · SLEEP · Low °C · OFFSET

- 300 W heavy duty desoldering tool with built-in vacuum pump
- Secure desoldering with valve function
- Reduction of solder clogging
- Improvement in maintainability

GOOD DESIGN AWARD 2015

Packing List

FR-400	Station, Desoldering tool (FR-4001), Power cord, Iron holder (with cleaning wire), Tool box (Cleaning pin for ø1.0 mm, Cleaning pin for heating element, Cleaning drill for ø1.0 mm, Nozzle wrench, Filter [qty 2], Ceramic paper filter [qty 4]), Instruction manual

Specifications

Model No.	FR-400
Power consumption	320 W
Temperature range	350 to 500°C
Temperature stability	±5°C at idle temperature

Station

Output voltage	AC 29 V
Vacuum generator	Vacuum pump, double cylinder type
Vacuum pressure	Max. 80 kPa (600 mmHg)
Suction flow	15 L/min.
Dimensions	166 (W) × 137 (H) × 264 (D) mm
Weight	5.7 kg

Desoldering Tool

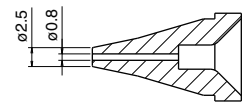
Power consumption	300 W (29 V)
Nozzle to ground resistance	<2 Ω
Nozzle to ground potential	<2 mV
Heating element	Composite heater
Standard nozzle	ø1.0 mm (No. N60-02)
Cord length	1.2 m
Total length*	183 mm (with ø1.0 mm nozzle)
Weight*	245 g (with ø1.0 mm nozzle)

* Without cord and hose

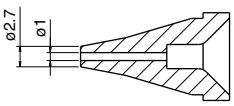
Replacement Nozzles

Unit : mm

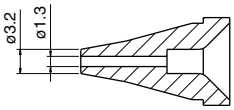
N60-01 Nozzle ø0.8



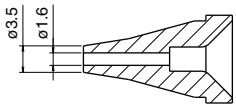
N60-02 Nozzle ø1.0



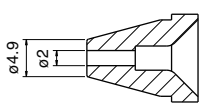
N60-03 Nozzle ø1.3



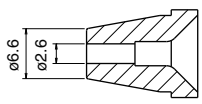
N60-04 Nozzle ø1.6



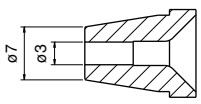
N60-05 Nozzle ø2.0



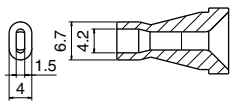
N60-06 Nozzle ø2.6



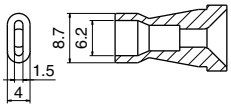
N60-07 Nozzle ø3.0



N60-08 Nozzle 4.2 × 1.5

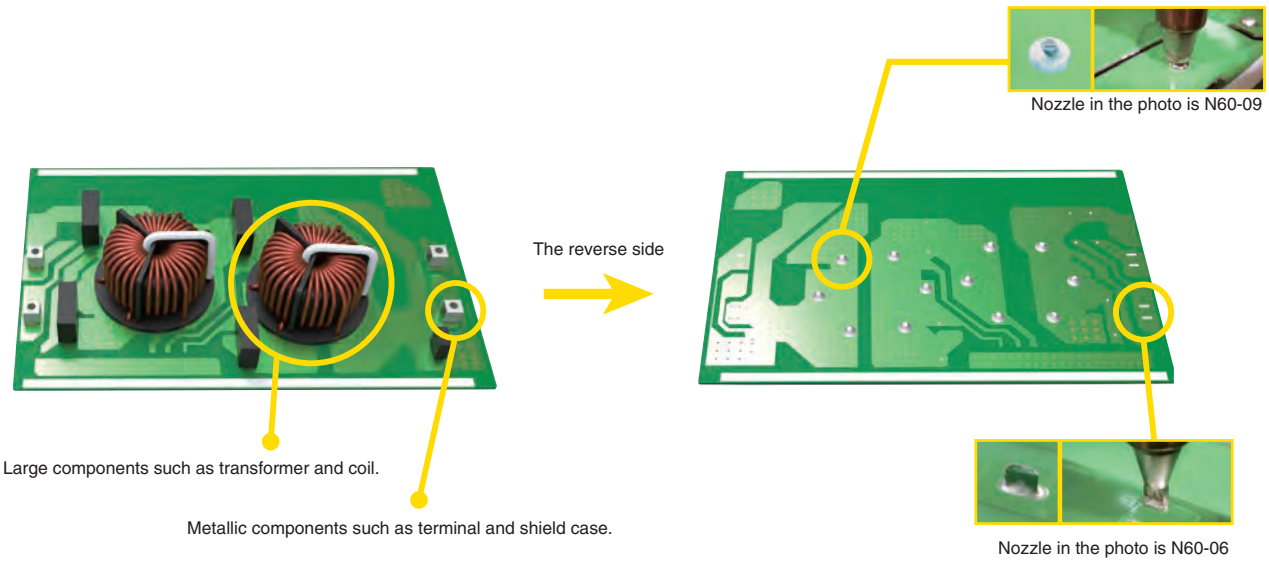


N60-09 Nozzle 6.2 × 1.5

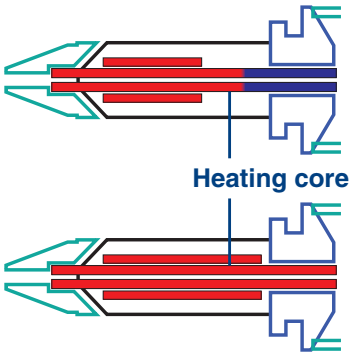


Features

300 W tremendous power makes incredible heating.



Secure desoldering, valve function that suctions with high pressure
Suction starts 0.2 seconds after pulling the trigger for instance and high pressure suction to achieve complete desoldering.



Previous models

FR-400

Reduction of solder clogging

Improvement in heating core
Heating ability for backside of heating core is increased to ensure suctioned solder be carried to filter pipe and avoid solder clogging.

Featuring ACF (Anti Clogging Function)
ACF ensures suctioned solder be carried to filter pipe by keeping pump running for a second after releasing trigger.

Improvement in maintainability

■Easy heater replacement



By removing 3 screws

■New filter pipe



Previous models

FR-400

■Tool box for maintenance kit



HAKKO FR-410 ESD SAFE

DESOLDERING TOOL

New

High-Power Desoldering Tool Digital

Nozzle included



for LEAD FREE · ESD SAFE · RoHS · CE · VDE · GS · VDE EMC

Desoldering

Auto off · SLEEP · Low °C · OFFSET

- 140 W high power enables perfect desoldering for the components on multi-layer PWB.
- A wide selection of nozzles is available for a variety of desoldering works.

Packing List

FR-410	Station, Desoldering Tool (FR-4101), Power cord, Iron Holder (with cleaning wire), Tool box (Cleaning pin for ø1.0 mm, Cleaning pin for heating element, Cleaning drill for ø1.0 mm, Nozzle wrench, Filter [qty 2], Ceramic paper filter [qty 4]), Instruction manual

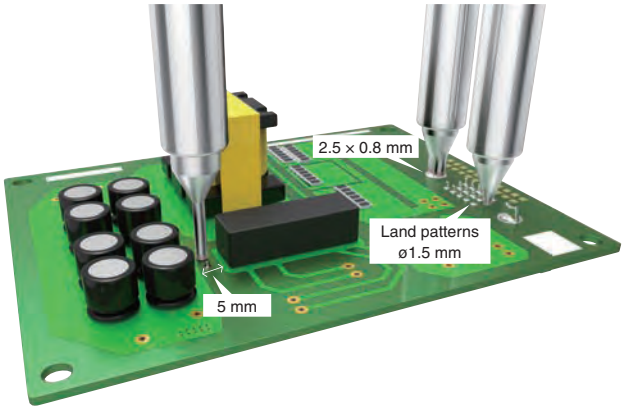
Specifications

Model No.	FR-410
Power consumption	190 W
Temperature range	330 to 450°C
Temperature stability	±5°C at idle temperature
Station	
Output voltage	AC 24 V
Vacuum generator	Vacuum pump, double cylinder type
Vacuum pressure	Max. 80 kPa (600 mmHg)
Suction flow*	15 L/min.
Dimensions	165 (W) × 137 (H) × 244 (D) mm
Weight	4.8 kg
Desoldering Tool	
Power consumption	140 W (24 V)
Nozzle to ground resistance	<2 Ω
Nozzle to ground potential	<2 mV
Heating element	Composite heater
Standard nozzle	ø1.0 mm S type (No. N61-05)
Cord length	1.2 m
Total length**	168 mm (with ø1.0 mm S type nozzle)
Weight**	170 g (with ø1.0 mm S type nozzle)

* The suction flow is measured at the filter case suction port of station.
** Without cord and hose

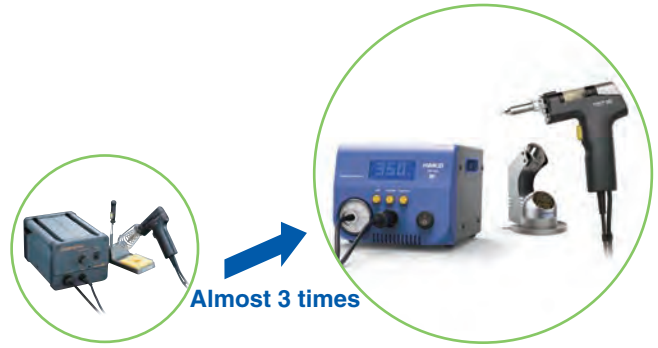
Features

A wide selection of nozzles is available for a variety of desoldering works.



- **Long type nozzles for narrow space**
  Slim and long nozzles reach to target easily in a narrow space.
- **Oval shape nozzles for flat terminals**
  No solder left-over because of the nozzles that much square shape terminals.
- **SS type nozzles for micro land-patterns**
  Close-fitting nozzles on micro land pattern secure desoldering.

High power of 140 W!
3 times more powerful than the previous model



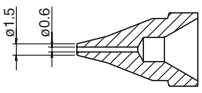
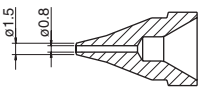
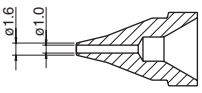
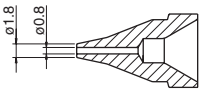
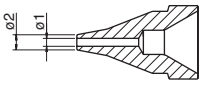
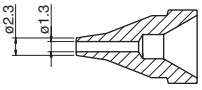
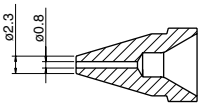
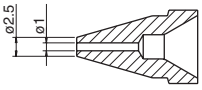
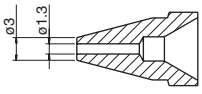
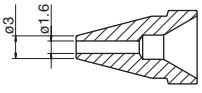
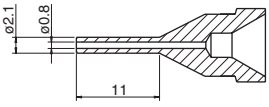
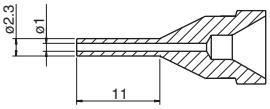
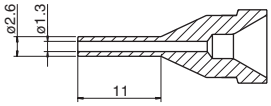
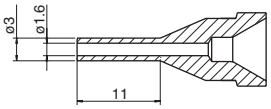
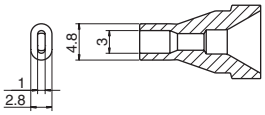
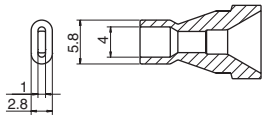
HAKKO 474 (50 W) FR-410 (140 W)

Features comparison with the latest models and the previous model

Features	FR-400	FR-410	HAKKO 474
High pressure suction	○	○	△
Longer heating core	○	○	×
ACF (Anti Clogging Function)	○	○	×
Easy nozzle replacement	○	○	△
Easy heater replacement	○	○	×
Bigger filter pipe	○	○	△
Large LCD display	○	○	×

Replacement Nozzles

Unit : mm

N61-01 	**N61-02** 	**N61-03** 	**N61-04** 
N61-05 	**N61-06** 	**N61-07** 	**N61-08** 
N61-09 	**N61-10** 	**N61-11** 	**N61-12** 
N61-13 	**N61-14** 	**N61-15** 	**N61-16** 

HAKKO FM-204 ESD SAFE

DESOLDERING TOOL

Composite-type Desoldering Tool Digital

Nozzle not included



for LEAD FREE · ESD SAFE · RoHS · CE · VDE · GS · VDE EMC

Soldering (Option) · Soldering (Option) · Desoldering

Auto off · SLEEP · Low °C · OFFSET

- Vacuum pump built-in type desoldering tool
- Digital display ensures easy and reliable temperature control.
- Sleep function that works with iron holder prevents nozzle oxidation.

Packing List

FM-204	Station, Iron holder, Ceramic paper filter (10 pcs), Cleaning drill for heating element, Filter pipe assembly (1 pc), Control card, Power cord, Connecting cable, Nozzle remover, Desoldering tool (FM-2024), Handle for gun configuration, Instruction manual

Option

Part No.	Name	Specifications
FM2027-03	FM-2027 conversion kit	70 W (24 V)
FM2026-06	FM-2026 conversion kit	70 W (24 V)

Specifications

Model No.	FM-204
Power consumption	120 W
Temperature range	FM-2024: 350 to 450°C FM-2026/2027: 200 to 450°C
Temperature stability	±5°C at idle temperature

Station

Output voltage	AC 24 V
Vacuum generator	Vacuum pump, double cylinder type
Vacuum pressure	Max. 80 kPa (600 mmHg)
Suction flow*	15 L/min.
Dimensions	160 (W) × 120 (H) × 225 (D) mm
Weight	3.7 kg

Desoldering Tool

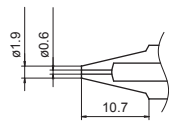
Power consumption	70 W (24 V)
Nozzle to ground resistance	<2 Ω
Nozzle to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length**	180 mm (with ø1.0 mm nozzle)
Weight**	65 g (with ø1.0 mm nozzle)

* Measured at the filter case suction port of the station.
** Without cord and hose

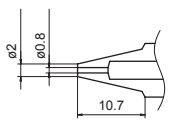
Optional Nozzles

Unit : mm

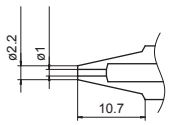
N3-06 Nozzle ø0.6



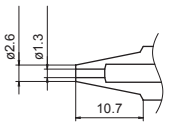
N3-08 Nozzle ø0.8



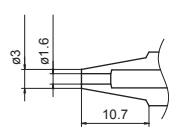
N3-10 Nozzle ø1.0



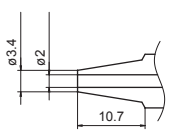
N3-13 Nozzle ø1.3



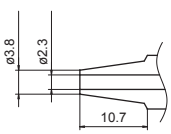
N3-16 Nozzle ø1.6



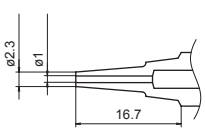
N3-20 Nozzle ø2.0



N3-23 Nozzle ø2.3

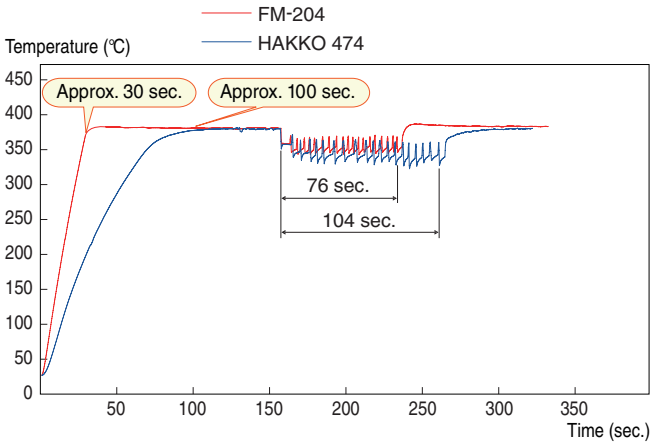


N3-L10 Nozzle ø1.0 Long



Features

Excellent thermal recovery



Test criteria

Measurement method	The time until the soldered portion reaches 200°C is measured for 20 points.
Nozzle used	ø1.0 mm
Solder	Lead-free solder

Two way use of grip part

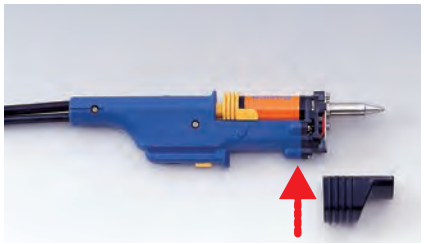


Gun configuration



Straight configuration

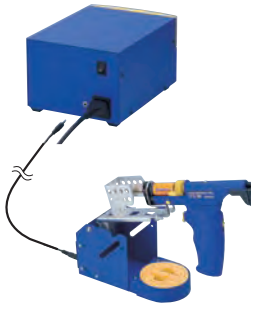
Simple and safe nozzle replacement by the nozzle remover







Sleep function and Auto Power Shut-off function



Connect FM-204 station and FH-200 iron holder using a connecting cable.

Replacing the handpiece enables soldering.

■Soldering



FM-2027

■N_2 System (P.32 & P.33)



Set-up example

FM-204
FM-2026
FX-780
FX-791

HAKKO FR-810B ESD SAFE New

SMD REWORK STATION

Hot-Air SMD Rework Station Digital

Nozzle included



for LEAD FREE · ESD SAFE · RoHS · CE

Hot Air Rework

Auto off · SLEEP · OFFSET · PRE℃

- High volume airflow and high output for a various kinds of rework
- Full digital control of temperature, airflow, and time
- Simple nozzle removal and easy maintenance
- The vacuum pick-up function with an indicator ensures safety for the components and PWB's.

HAKKO FR-811 ESD SAFE New

SMD REWORK STATION

Hot-Air SMD Rework Station Digital

Nozzle not included



for LEAD FREE · ESD SAFE · RoHS · CE

Hot Air Rework

Auto off · SLEEP · OFFSET · PRE℃

- Possible to make full-scale thermal profiles with 6-zone hot air and a bottom heater
- Possible to measure and record temperature of components and PWB with type K thermocouple
- The dedicated software to link a station and a computer for easy and quick settings
- Easy data transfer through an USB cable

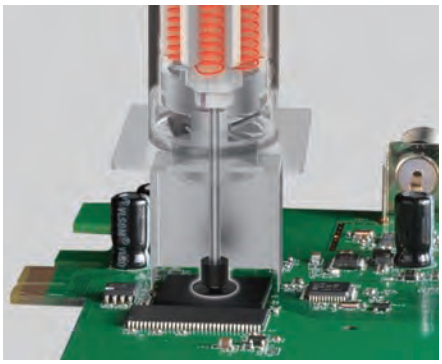
Common Features of FR-810B and FR-811

New user friendly functions for SMD rework

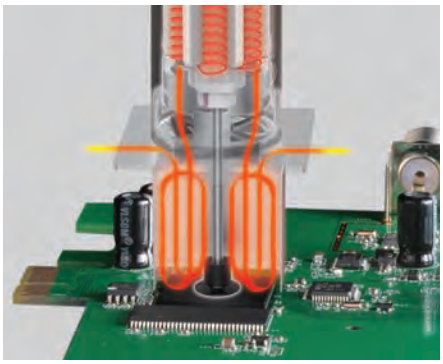
Pickup indicator
The indication comes up and the moment of picking up will be visible.



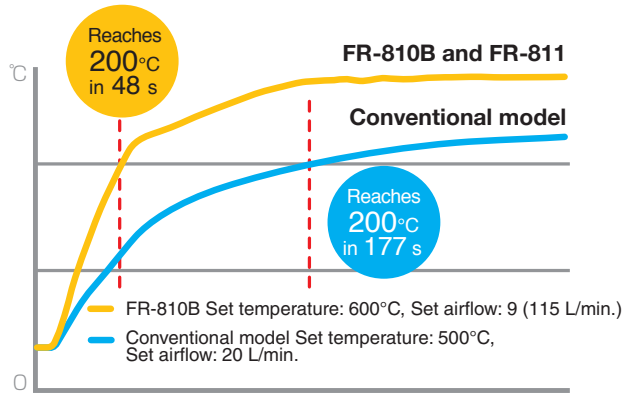
Vacuum pickup function
This can avoid an error to peel off the land by removing components with excessive force.



New type of nozzles
The new nozzles improve work efficiency with uniform heating (Only with BGA nozzles).

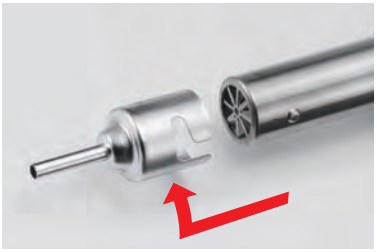


Efficiency improvement
The high volume airflow and high output of FR-810B and FR-811 make it possible to perform the same work in only one-third of the time required when using a conventional model. This reduces the thermal impact on boards and components.



* Examination of time taken for connector sections soldered onto a ceramic board to be heated to 200°C with maximum temperature and airflow settings selected. Single nozzles with an approximately 4 mm diameter were used.

Quick-change N51 nozzles



Simple heater replacement



Packing List

FR-810B	Station with handpiece, Nozzle (ø4 mm), Handpiece holder, Vacuum pipe control knob L (with screw), Pads (qty 2 each. of ø3 mm, ø5 mm, ø7.6 mm), Heat resistant pad, Power Cord, Temperature distribution chart, Instruction manual
FR-811	Station with handpiece, Grip stand assembly, Vacuum pipe control knob L (with screw), Pads (qty 2 each. of ø3 mm, ø5 mm, ø7.6 mm), USB cable, Software (CD-ROM), Thermocouple, Heat resistant pad, Power Cord, Temperature distribution chart, Instruction manual

Option

Part No.	Name	Specifications
C5027	Boad holder	–
C5028	Grip fixture M	With hexagon wrench, o-ring and tray
C5029	Grip fixture L	With hexagon wrench and o-ring
B5098	Boad clip	–
B5136	Boad support unit	–
C5013	Bottom heater	For FR-811

Specifications

Port No.	FR-810B	FR-811
Power consumption	1200 W	
Temperature range	50 to 600°c	
Station		
Power consumption	30 W	
Air flow*	1 to 9 (5 to 115 L/min.)	001 to 100% (5 to 115 L/min.)
Dimensions	160 (W) × 145 (H) × 220 (D) mm	
Weight	1.5 kg	
Handpiece		
Power consumption	1170 W	
Standard nozzle	ø4 mm (No. N51-02)	–
Total length**	250 mm	
Weight**	180 g	

* Air flow capacity is rated as free flowing. Restrictions created by various nozzles may reduce the maximum airflow capacity.
** Without cord

Common Features of FR-810B and FR-811

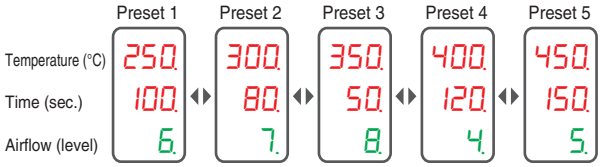
Auto sleep and auto shutoff features

To ensure safety and conserve power, when the handpiece is placed in the handpiece holder, the auto sleep function is activated and it starts cooling automatically.
If the handpiece has not been removed from the handpiece holder (Example: Using it in a rework fixture) and after it has been idle for 30 minutes, auto shutoff function is activated. It is automatically powered off.
Access to settings can be restricted via the password function for easy management.



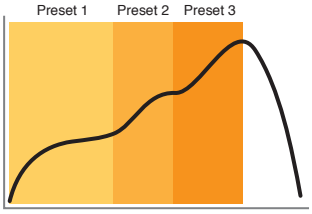
Handpiece holder No.B5048 in the picture can be attached to FR-811 as well (option).

Preset mode



Chain presets function for making a simple thermal profile

The chain presets function is to make a simple thermal profile by combining several preset conditions (Up to 5 steps).



	Temperature (°C)	Time (s)	Airflow
Preset 1	250	100	6
Preset 2	300	40	6
Preset 3	350	50	6
Preset 4	100	000	6
Preset 5	100	000	6

* Presets 4 and 5 have been set to "000", so they are skipped.

Features of FR-811

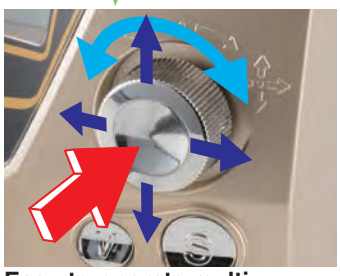
Interface designed for intuitive operation. Possible to link to a PC.







Easy-to-read LCD



Easy-to-operate multi-direction control knob



A USB device terminal for easy data transfer

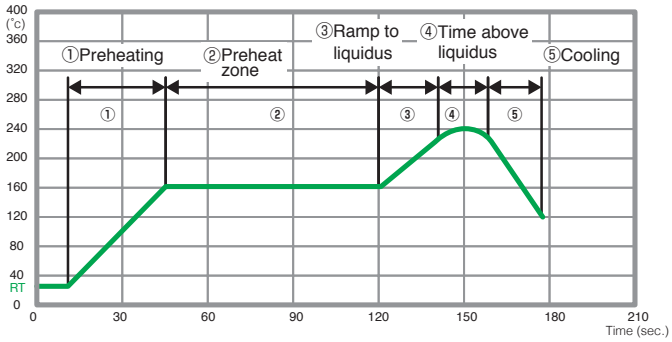


Link to a PC (A USB I/F terminal available)

The functions needed for SMD rework are in a compact body.

Possible to make full-scale thermal profiles with 6-zone hot air and a bottom heater

A basic thermal profile is composed of the 5 parts shown below. FR-811 can provide 6 zones in which temperature, time, and air flow are controlled. Therefore FR-811 can make a full-scale thermal profile which is close to reflow profiles made by a reflow oven.



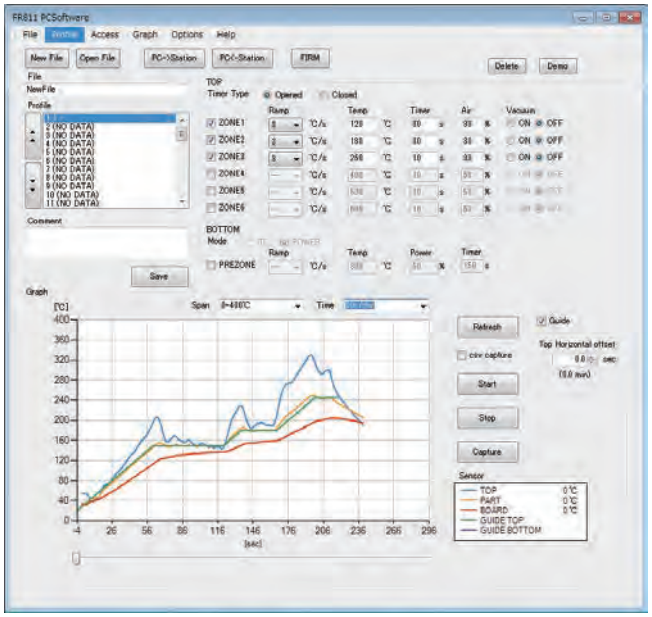
Record thermal data

By connecting a thermocouple included with FR-811, the temperature of the component or circuit board can be measured and recorded. In addition, if “TC LINK” is set, the heater output can be automatically controlled so that the temperature of the thermocouple attached to the component or circuit board follows the set profile.



Operation on a PC for various settings

By connecting FR-811 and a computer with a USB cable and using the dedicated software which comes as standard, a set thermal profile and actual temperature change can be shown in a graph in real time. The set values and graph can be saved in csv format.



Linked operation with the bottom heater

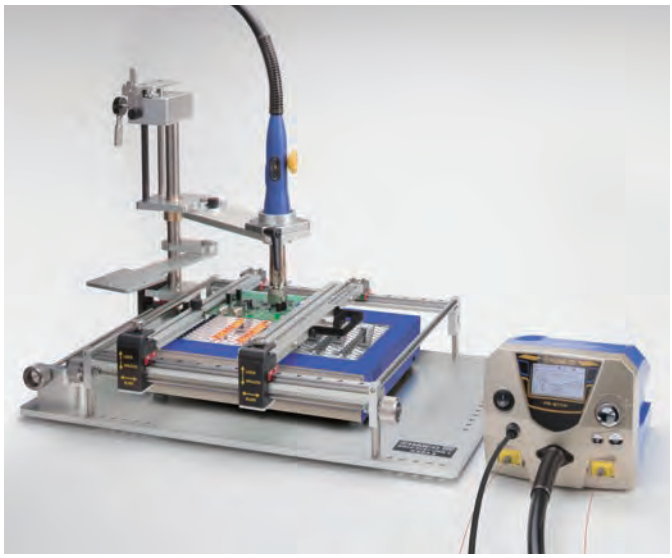
FR-811 can control on/off timing and output of the bottom heater which is available optionally.

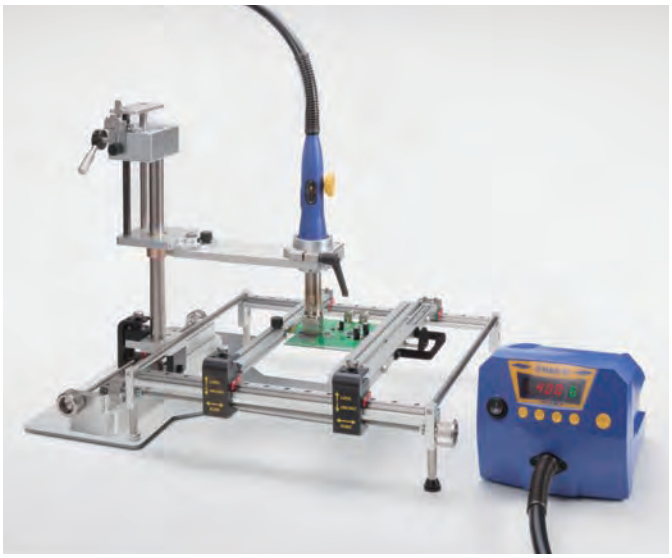


Common Features of FR-810B and FR-811

Assembly of a low-cost SMD rework system

A low cost rework system can be assembled with a bottom heater, a grip fixture, and a board holder.
* The following pictures are set-up examples.





Option

Grip Fixture L



A board holder can be easily attached to the large baseplate.

Grip Fixture M



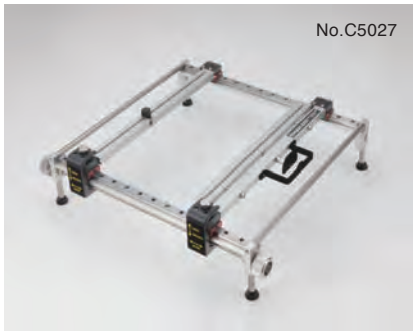
Recommended if a bottom heater is not required or in case of use of a bottom heater other than the dedicated model for FR-811.

The dedicated bottom heater for FR-811



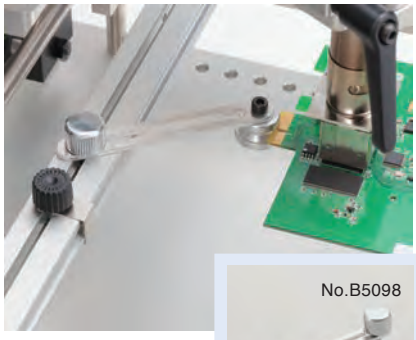
Equipped with carbon heaters.
Heating area is divided into 2 sections.

Board Holder



Makes it easy to set and remove a PWB and to make fine adjustments after setting.

Board Clip

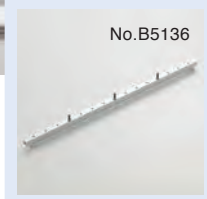




Accepts even irregular-shaped PWB.

Board Support Unit





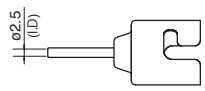
Supports PWB from underneath to minimize its warping.

Optional Nozzles (Quick-change type) for FR-810B, FR-811 and FR-702

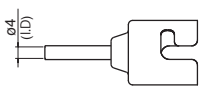
Unit: mm

Single

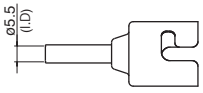
N51-01* Single 2.5



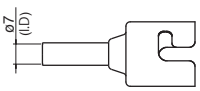
N51-02 Single 4



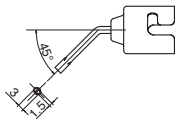
N51-03 Single 5.5



N51-04 Single 7

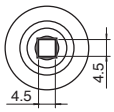


N51-05* Bent Single 1.5 × 3

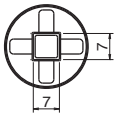


BGA

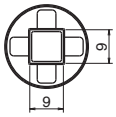
N51-10 BGA 4 × 4



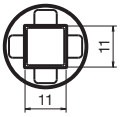
N51-11 BGA 6 × 6



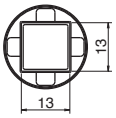
N51-12 BGA 8 × 8



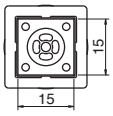
N51-13 BGA 10 × 10



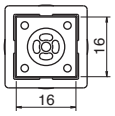
N51-14 BGA 12 × 12



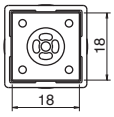
N51-15 BGA 14 × 14



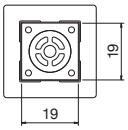
N51-16 BGA 15 × 15



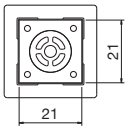
N51-17 BGA 17 × 17



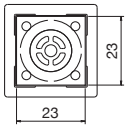
N51-18 BGA 18 × 18



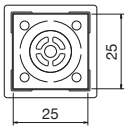
N51-19 BGA 20 × 20



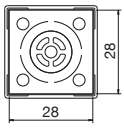
N51-20 BGA 22 × 22



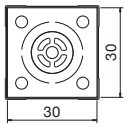
N51-21 BGA 24 × 24



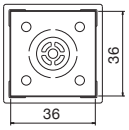
N51-22 BGA 27 × 27



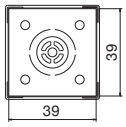
N51-23 BGA 29 × 29



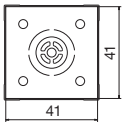
N51-24 BGA 35 × 35



N51-25 BGA 38 × 38



N51-26 BGA 40 × 40



* The vacuum function does not operate with these nozzles.

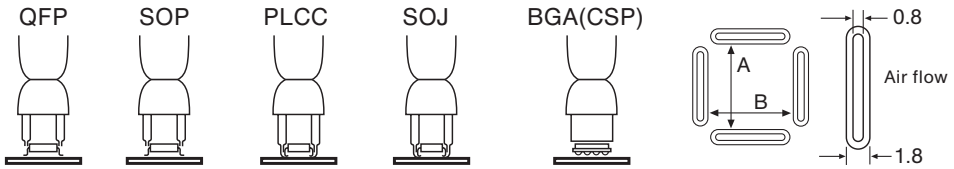
Single nozzle set (N51-01, N51-03, N51-04, and N51-05) is also available.
* N51-02 included with FR-810B

No. N51-50



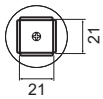
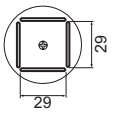
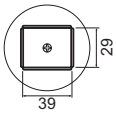
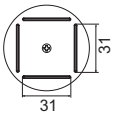
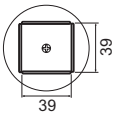
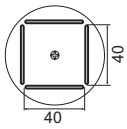
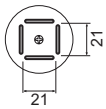
Optional Nozzles (Conventional type) for FR-810B, FR-811 and FR-702

Unit: mm

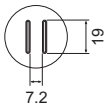
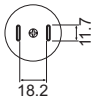
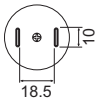


The size in each description indicates the size of the package.

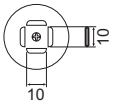
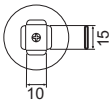
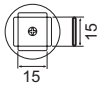
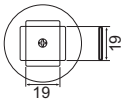
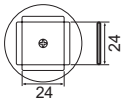
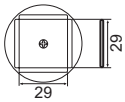
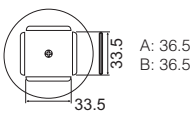
QFP and BQFP

A1125B QFP 10 × 10  A: 10.2 B: 10.2	**A1262B QFP 12 × 12**  A: 12.2 B: 12.2	**A1126B QFP 14 × 14**  A: 15.2 B: 15.2	**A1128B QFP 14 × 20**  A: 15.2 B: 21.2	**A1127B QFP 17.5 × 17.5**  A: 19.2 B: 19.2
A1261B QFP 20 × 20  A: 20.2 B: 20.2	**A1129B QFP 28 × 28**  A: 29.7 B: 29.7	**A1263B QFP 28 × 40**  A: 27.7 B: 39.7	**A1265B QFP 32 × 32**  A: 32.2 B: 32.2	**A1203B QFP 35 × 35**  A: 35.2 B: 35.2
A1264B QFP 40 × 40  A: 40.2 B: 40.2	**A1215B QFP 42.5 × 42.5**  A: 42.5 B: 42.5	**A1180B BQFP 17 × 17**  A: 18.2 B: 18.2	**A1181B BQFP 19 × 19**  A: 19.2 B: 19.2	**A1182B BQFP 24 × 24**  A: 24.2 B: 24.2

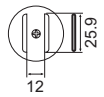
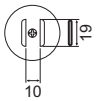
SOP and TSOL

A1131* SOP 4.4 × 10 	**A1132* SOP 5.6 × 13** 	**A1133* SOP 7.5 × 15** 	**A1134* SOP 7.5 × 18** 	**A1258B SOP 7.6 × 12.7** 
A1260B SOP 8.6 × 18 	**A1257B SOP 11 × 21** 	**A1259B SOP 13 × 28** 	**A1185B TSOL 13 × 10** 	**A1186B TSOL 18 × 10** 
A1187B TSOL 18.5 × 8 				

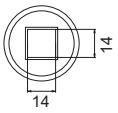
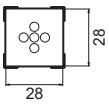
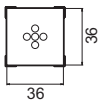
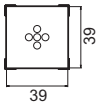
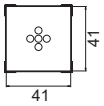
PLCC

A1188B PLCC 9 × 9 (20 pins)  A: 11 B: 11	**A1140B PLCC 11.5 × 11.5 (28 pins)**  A: 13 B: 13	**A1141B PLCC 11.5 × 14 (32 pins)**  A: 15 B: 13	**A1139B PLCC 12.5 × 7.3 (18 pins)**  A: 9 B: 14	**A1135B PLCC 17.5 × 17.5 (44 pins)**  A: 18.5 B: 18.5
A1136B PLCC 20 × 20 (52 pins)  A: 21 B: 21	**A1137B PLCC 25 × 25 (68 pins)**  A: 26 B: 26	**A1138B PLCC 30 × 30 (84 pins)**  A: 31 B: 31	**A1189B PLCC 34 × 34 (100 pins)**  A: 36.5 B: 36.5	

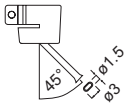
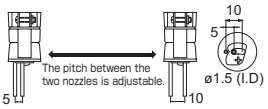
SOJ

A1214B SOJ 10 × 26	A1183* SOJ 15 × 8	A1184B SOJ 18 × 8
		

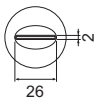
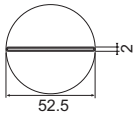
BGA

A1470 BGA 8 × 8	A1471 BGA 12 × 12	A1472 BGA 13 × 13	A1473 BGA 15 × 15	A1474 BGA 18 × 18
				
A1475 BGA 27 × 27	**A1476 BGA 35 × 35**	**A1477 BGA 38 × 38**	**A1478 BGA 40 × 40**	
				

Single

A1124B* Single 2.5	A1130* Single 4.4	A1142B* Bent single 1.5 × 3	A1190* Dual single 2.5 × 9.5	A1325* Dual single ø1.5 × 5 to 10 Adjustable pitch
				

SIP

A1191* SIP 25L	A1192* SIP 50L
	

* The vacuum function does not operate with these nozzles.

HAKKO FR-701 ESD SAFE

Repair System Digital



for LEAD FREE · ESD SAFE · RoHS · CE

Soldering · Soldering (Option) · Soldering (Option) · Desoldering · Rework (Option)

Auto off · SLEEP · Low ℃ · OFFSET · PRE ℃

- **All-in-one repair system that enables both soldering and desoldering**

Features

For information on features of soldering iron, see P. 13.
For information on features of desoldering tool, see P. 57.
NOTE: Auto Shutoff Function and Auto Sleep Function are available for desoldering tool only.

Packing List

FR-701	Station, Soldering iron (FX-8801), Desoldering tool (FR-4101), Iron holder for soldering iron (with cleaning sponge and wire), Iron holder for desoldering tool (with cleaning wire), Tool box (Cleaning pin for ø1.0 mm, Cleaning pin for heating element, Cleaning drill for ø1.0 mm, Nozzle wrench, Filter [qty 2], Ceramic paper filter L [qty 4]), Power cord, Instruction manual

Replacement Tips and Nozzles

For information on optional irons and replacement tips, see P. 15 to 17.
For information on replacement nozzles for desoldering tool, see P. 57.

Specifications

Part No.	FR-701
Power consumption	260 W
Station (Soldering iron)	
Output voltage	AC 26 V
Temperature range	50 to 480℃
Temperature stability	±1℃ at idle temperature (when set to 200 to 480℃)
Station (Desoldering tool)	
Output voltage	AC 24 V
Vacuum generator	Vacuum pump, double cylinder type
Vacuum pressure	Max. 80 kPa (600 mmHg)
Suction flow	15 L/min.
Temperature range	330 to 450℃
Temperature stability	±5℃ at idle temperature
Station	
Dimensions	190 (W) × 140 (H) × 220 (D) mm
Weight	6.2 kg
Soldering Iron	
Power consumption	65 W (26 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Ceramic heater
Standard tip	Shape-B (No. T18-B)
Cord length	1.2 m
Total length*	217 mm (with B tip)
Weight*	46 g (with B tip)
Desoldering tool	
Power consumption	140 W (24 V)
Nozzle to fround resistance	<2 Ω
Nozzle to ground potential	<2 mV
Heating element	Composite heater
Standard nozzle	ø1.0 mm S type (No. N61-05)
Cord length	1.2 m
Total length**	168 mm (with ø1.0 mm S type nozzle)
Weight**	170 g (with ø1.0 mm S type nozzle)

* Without cord
** Without cord and hose

HAKKO REWORK SYSTEM FR-702 ESD SAFE

Rework System Digital



for LEAD FREE · ESD SAFE · RoHS · CE

Soldering · Soldering (Option) · Soldering (Option) · Desoldering · Rework (Option) · Rework

Auto off · SLEEP · Low °C · OFFSET · PRE °C

- **Multi-station that enables soldering, desoldering, and SMD rework all with a single unit**

Features

For information on features of soldering iron, see P. 13.
For information on features of desoldering tool, see P. 57.
For information on features of hot air, see P. 61 to 62 (Common features).
NOTE: Auto Shutoff Function and Auto Sleep Function are available for desoldering tool and hot air only.
Low Temperature Error Alert is available for soldering iron and desoldering tool only.

Packing List

FR-702	Station with hot air handpiece, Nozzle (ø4 mm) for hot air, Handpiece holder for hot air, Vacuum pipe control knob L (with screw), Pads (qty 2 each of ø3 mm, ø5 mm, ø7.6 mm), Soldering iron (FX-8801), Desoldering tool (FR-4101), Iron holder for soldering iron (with cleaning sponge and wire), Iron holder for desoldering tool (with cleaning wire), Tool box (Cleaning pin for ø1.0 mm, Cleaning pin for heating element, Cleaning drill for ø1.0 mm, Nozzle wrench, Filter [qty 2], Ceramic paper filter L [qty 4]), Heat resistant pad, Color band (qty 2), Power cord, Instruction manual

Replacement Tips and Nozzles

For information on optional irons and replacement tips, see P. 15 to 17.
For information on replacement nozzles for desoldering tool, see P. 57.
For information on replacement nozzles for hot air, see P. 65 to 67.

Specifications

Part No.	FR-702
Power consumption	1530 W

Station (Soldering iron)

Output voltage	AC 26 V
Temperature range	50 to 480℃
Temperature stability	±1℃ at idle temperature (when set to 200 to 480℃)

Station (Desoldering tool)

Output voltage	AC 24 V
Vacuum generator	Vacuum pump, double cylinder type
Vacuum pressure	Max. 80 kPa (600 mmHg)
Suction flow	15 L/min.
Temperature range	330 to 450℃
Temperature stability	±5℃ at idle temperature

Station (SMD rework station)

Power consumption	30 W
Air flow*	1 to 9 (5 to 115 L/min.)
Temperature range	50 to 600℃

Station

Dimensions	370 (W) × 150 (H) × 220 (D) mm
Weight	9 kg

Soldering Iron

Power consumption	65 W (26 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Ceramic heater
Standard tip	Shape-B (Part No. T18-B)
Cord length	1.2 m
Total length**	217 mm (with B tip)
Weight**	46 g (with B tip)

Desoldering tool

Power consumption	140 W (24 V)
Nozzle to ground resistance	<2 Ω
Nozzle to ground potential	<2 mV
Heating element	Composite heater
Standard nozzle	ø1.0 mm S type (No. N61-05)
Cord length	1.2 m
Total length***	168 mm (with ø1.0 mm S type nozzle)
Weight***	170 g (with ø1.0 mm S type nozzle)

Handpiece (Hot air)

Power consumption	1170 W (230 V)
Standard nozzle	ø4 mm (No. N51-02)
Total length**	250 mm
Weight**	180 g

* Air flow capacity is rated as free flowing. Restrictions created by various nozzles may reduce the maximum airflow capacity.
** Without cord.
*** Without cord and hose.

HAKKO FR-830 ESD SAFE

PREHEATER

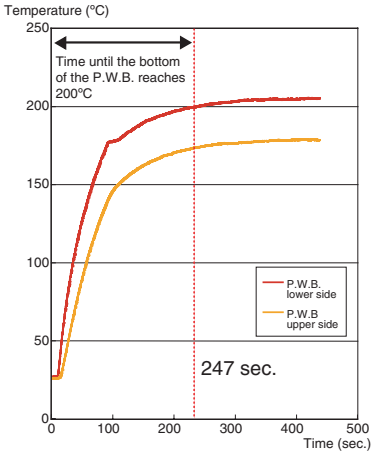
Preheater Analog



- Compact pre-heater best suited for heat processing on localized areas
- Featuring quick heatup and less variations in temperature

Features

Preheating in a short time



Test criteria

Measurement method	Temperature measured using sensors mounted on both the top and bottom surfaces of the P.W.B.
Distance between air outlet and P.W.B.	10 mm
Temperature setting	300°C

Packing List

FR-830	Unit, Power cord, Instruction manual

Specifications

Model No.	FR-830
Power consumption	250 W
Air flow	0.15 m³/min. (fan capability)
Temperature range	150 to 300°C (above the hot air outlet)
Dimensions*	140 (W) × 75 (H) × 185 (D) mm
Weight	0.75 kg

* The height (H) is the distance from the bottom of the feet to the top of the exhaust outlet.

Option

Part No.	Name	Specifications
B3263	Extension pipe	with lid
B2763	Hand switch	–
B1649	Foot switch	–

HAKKO SPPON DESOLDERING TOOL

Desoldering Tool

Nozzle included

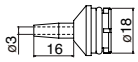
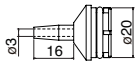
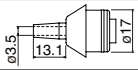




- Light-weight and simplified desoldering tool with high suction power
- Use a cleaning shaft that enables the nozzle to be cleaned after each use
- Nozzles can be easily replaced.

Replacement Nozzles

Unit : mm

Part No.	Figure	Adaptation products
18-N		No.18, 18G
20-N		No.20, 20G
DS01-N		No.DS01P

Specifications

Part No.	Absorption capacity
18	12 cm^3 (12 cc)
18G	12 cm^3 (12 cc) with guard
20	20 cm^3 (20 cc)
20G	20 cm^3 (20 cc) with guard
DS01P	28 cm^3 (28 cc)

HAKKO WICK DESOLDERING WIRE

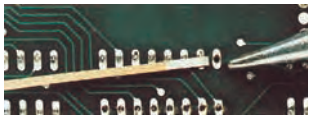
Desoldering Wire

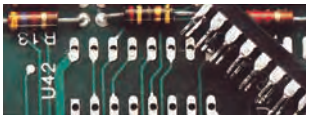


- Economical and easy-to-use desoldering wire

Features

Through-hole solder removal





Bridging solder removal





Specifications

Regular type (Flux)

Part No.	Description
FR100-00	1.5 m × 0.6 mm
FR100-01	1.5 m × 0.9 mm
FR100-02	1.5 m × 1.4 mm
FR100-03	1.5 m × 1.9 mm
FR100-04	1.5 m × 2.5 mm
FR100-05	1.5 m × 3.3 mm

Unflux type (Unflux)

Part No.	Description
FR110-00	1.5 m × 0.6 mm
FR110-02	1.5 m × 1.4 mm
FR110-03	1.5 m × 1.9 mm
FR110-04	1.5 m × 2.5 mm
FR110-05	1.5 m × 3.3 mm

No clean type (Low residue flux) ESD SAFE package

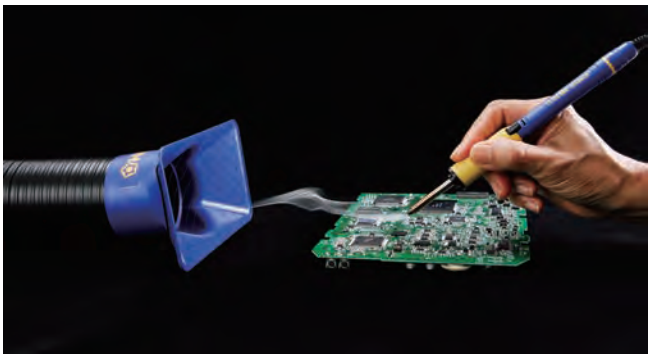
Part No.	Description
FR120-00	1.5 m × 0.6 mm
FR120-01	1.5 m × 0.9 mm
FR120-02	1.5 m × 1.4 mm
FR120-03	1.5 m × 1.9 mm
FR120-04	1.5 m × 2.5 mm
FR120-05	1.5 m × 3.3 mm

HAKKO FA-430 ESD SAFE

Air-Purifying Smoke Absorber



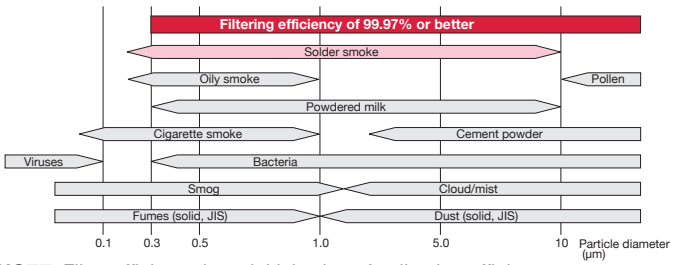
- HEPA filter (High Efficiency Particulate Air Filter)
- Filters out 99.97% of particles greater than 0.3 µm
- Recommended for quiet laboratory and office



Features of FA-430

Filter efficiency is 99.97% of particles greater than 0.3 µm (HEPA filter).

Aerosol particle diameter range



NOTE: Filter efficiency is an initial value of collection efficiency based on counting method for airborne dust collected by a single plate of filter (unfolded).

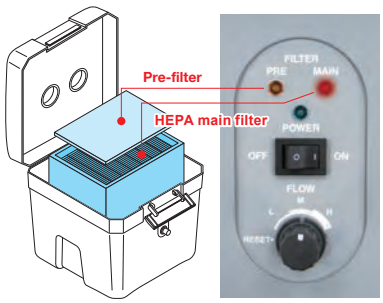
Filter replacement notification function

Pre-filter

When the pre-filter is 80% clogged or has been used for 200 hours, the orange indicator flashes on and off.

HEPA main filter

When the 10th pre-filter needs replacing, the orange and red lamps flash on and off.



Packing List

FA-430	Main unit, Power cord, Cap, Main filter, Pre-filter (qty 10), Instruction manual

* Ducts are optional parts.

Specifications

Model No.		FA-430
Power consumption		110 W
Noise level*		50 dB (A) (MEDIUM mode)
Suction capacity**	HIGH	4.7 m³/min.
	MEDIUM	3.7 m³/min.
	LOW	2.8 m³/min.
Filtering efficiency	HIGH	99.96% (0.3 µm)***
	MEDIUM	99.97% (0.3 µm)***
	LOW	
Static pressure		1500 Pa
Duct set (sold separately)****		ø55 mm × 1.2 m (ESD SAFE)
Dimensions		330 (W) × 366 (H) × 343 (D) mm
Weight		7.5 kg

* Measured at a distance of 1 meter from the face of the unit in an anechoic chamber.
** When using two ducts
*** It is an initial value of collection efficiency based on counting method for airborne dust collected by a single plate of filter (unfolded).
**** Nets in duct sets are not protected against electrostatic discharge.

HAKKO FUME EXTRACTION FA-431 ESD SAFE New

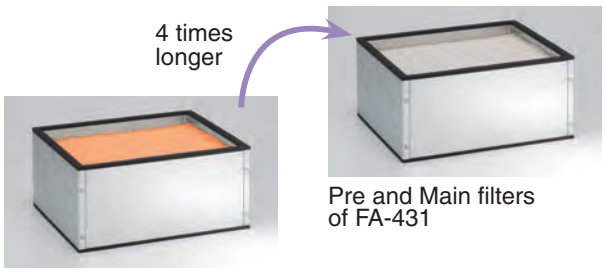
Air-Purifying Smoke Absorber



- **Excellent cost performance filter**
- **Filters out 97% of particles greater than 0.3 µm**
- **Optional sub-filters extend the life of Pre and Main filters**
- **Ideal for factories with a lot of soldering work**

Features of FA-431

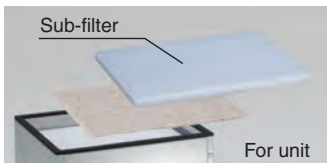
The life of pre-filter and main filter will be approximately 4 times* longer.

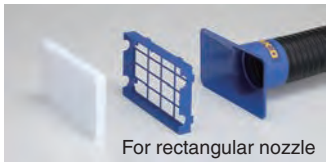


Pre and Main filters of FA-431

Pre and Main filters of FA-430

With the use of sub-filter, it will be approximately 10 times* longer.





Remote control equipped Very easy to switch ON/OFF



* The filter life will be differ depending on the work environments and work conditions.

Packing List

FA-431	Main unit, Power cord, Remote control, Cap, Main filter, Pre-filter (qty 10), Instruction manual

* Ducts are optional parts.

Specifications

Model No.		FA-431
Power consumption		110 W
Noise level*		50 dB (A) (MEDIUM mode)
Suction capacity**	HIGH	4.7 m³/min.
	MEDIUM	3.7 m³/min.
	LOW	2.8 m³/min.
Filtering efficiency	HIGH	97% (≥0.3 µm)
	MEDIUM	
	LOW	
Static pressure		1500 Pa
Duct set (sold separately)***		ø55 mm × 1.2 m (ESD SAFE)
Dimensions		330 (W) × 366 (H) × 343 (D) mm
Weight		7.2 kg

* Measured at a distance of 1 meter from the face of the unit in an anechoic chamber.
** When using two ducts
*** Nets in duct sets are not protected against electrostatic discharge.

Common Features of FA-430 and FA-431

Quiet operation and powerful suction

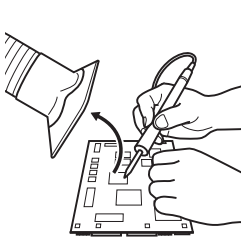
	FA-430/431		Previous model (HAKKO 421)	
	Noise level dB (A)	Air volume m^3/min.	Noise level dB (A)	Air volume m^3/min.
HIGH	53	4.7	60*	3.2*
MEDIUM	50	3.7		
LOW	44	2.8		

*Values measured when the unit was used with a 60 Hz power supply.

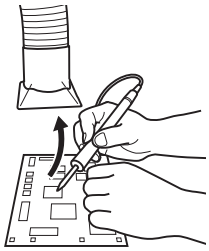
Flexible ducts and compact body for perfect placement



Movement of smoke is affected by the surrounding environment

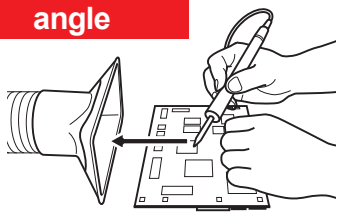


If the duct is mounted at an angle above the workpiece, it is affected by air conditioning.



If the duct is mounted directly above, it can be difficult to see the workpiece.

Recommended angle



Duct is mounted on the worktable to provide excellent suction performance.

Freestanding ducts



Perfect placement provides suction where you need it.

Option

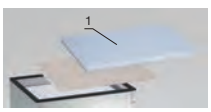
Part No.	Name	Specifications
C1571	Duct Set	With rectangular nozzle
C1572	Duct Set	With round nozzle
A5035	Sub-filter	For FA-431, set of 5
A5036	Sub-filter for rectangular nozzle	For FA-431, set of 20
A5037	Sub-filter for round nozzle	For FA-431, set of 20
B5146	Filter case for rectangular nozzle	For FA-431
B5147	Filter case for round nozzle	For FA-431



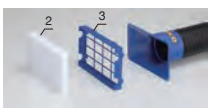
No.C1571



No.C1572



1: No.A5035



2: No.A5036
3: No.B5146



4: No.A5037
5: No.B5147

HAKKO FA-400 ESD SAFE

SMOKE ABSORBER

Desktop Type Smoke Absorber



- Desktop solder smoke absorber that can be mounted horizontally or vertically
- An optional arm stand makes a third mounting position available.

2 Way Plus Placement

Vertically mounted:



Horizontally mounted:



Using a stand:



Packing List

FA-400	Unit, Filter, Instruction manual

Specifications

Model No.	FA-400
Power consumption	50 Hz: 22 W 60 Hz: 18 W
Noise level*	50 Hz: 48 dB 60 Hz: 51 dB
Suction capacity**	Vertically: 1.0 m^3/min. (50 Hz), 1.1 m^3/min. (60 Hz) (max.) Horizontally: 0.4 m^3/min. (50 Hz), 0.5 m^3/min. (60 Hz) (max.)
Air velocity	Vertically: 1.0 m/sec. (50 Hz), 1.1 m/sec. (60 Hz) Horizontally: 2.6 m/sec. (50 Hz), 2.9 m/sec. (60 Hz)
Filter size	130 (W) × 130 (H) × 10 (D) mm
Dimensions	166 (W) × 212 (H) × 113 (D) mm
Weight***	0.91 kg

* Measured at a distance of 1 m from the face of the unit
** Measured with a filter present
*** Without cord

Option

Part No.	Name	Specifications
C1568	Arm stand	With knobs

HAKKO 490 SMOKE CLEANER

External Air Compressor Type Smoke Absorber



RoHS

- External air compressor type soldering smoke absorber
- Three inner filters attached on different levels absorb soldering smoke.
- Up to 2 soldering irons can be connected to one unit.

Compatible Soldering Station for HAKKO 490



FX-888D



FX-951



FX-950



FX-838



FM-203



FM-206

Specifications

Model No.	490
Noise level	39 dB
Working pressure	392 to 686 kPa (4 to 7 kgf/cm²)
Air consumption	40 L/min. (490 kPa)
Suction flow	23 L/min. (490 kPa)
Dimensions	ø120 × 200 (H) mm
Weight*	1.5 kg

* Unit only
** Use compressed air; no power supply is necessary.

Packing List

490	Unit, Absorption pipe set, Instruction manual

* A second soldering iron can be attached to HAKKO 490 by purchasing an additional absorption pipe set.

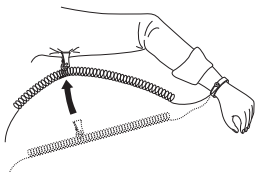
HAKKO 442B WRIST STRAP

Wrist Strap



- This antistatic wrist strap prevents the human body from becoming charged with static electricity.
- The stretchable band is easy to adjust.
- A conductive thread is used for the band lining.

Cord Helper



1.Insert the grounding wire into the ring of the cord helper.
2.Clip the cord helper to clothing as shown here.

Packing List

442B	Wrist band, Grounding wire, Cord helper, Instruction manual

Specifications

Part No.	442B-01	442B-02	442B-04	442B-05	442B-06	442B-07
Color	Blue		Light green		Gray	
Grounding wire	1.5 m	2.5 m	1.5 m	2.5 m	1.5 m	2.5 m

HAKKO 498 SYSTEM TESTER

Wrist Strap Tester



- Easy-to-use, quick-response tester for wrist straps

Features

Can be used anywhere to quickly and easily check a variety of grounding systems.



Packing List

498	Unit, 006P 9 V Manganese dry battery (for trial), Grounding wire, Instruction manual

Specifications

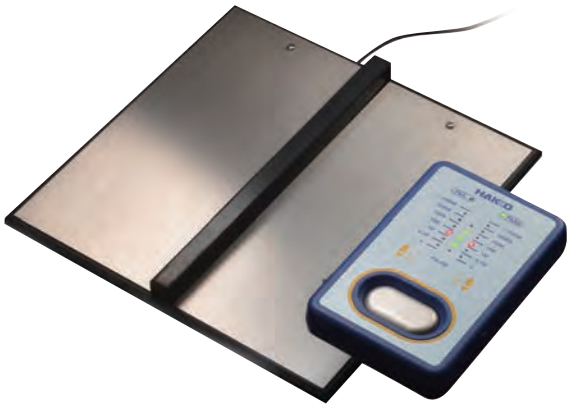
Model No.	498
Power supply	006P 9 V dry battery
Indication: LOW	R < 800 kΩ
Indication: GOOD	800 kΩ ≤ R ≤ 9 MΩ
Indication: HIGH	R > 9 MΩ
Battery life	Approx. 50,000 times
Grounding wire	2.5 m
Operating environment	0 to 40°C, 20 to 90%RH (without condensation)
Dimensions	80 (W) × 40 (H) × 117 (D) mm
Weight*	110 g

* Without battery

HAKKO FG-460 New

FOOTWEAR TESTER

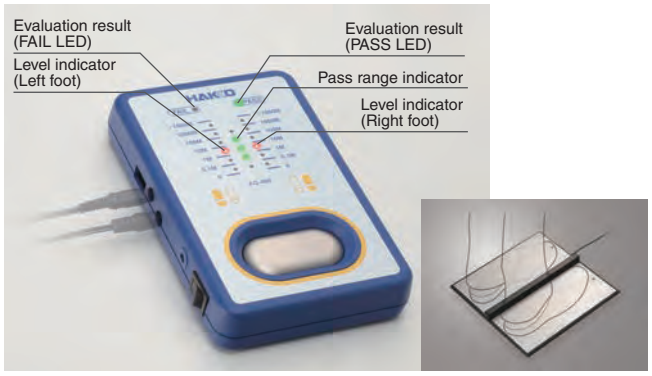
Footwear Tester



- Very easy-to-use footwear tester
- Information of measurement and evaluation of electrical resistance at a glance
- Meet the criteria of standards such as JIS T 8103:2010 and ANSI/ESD S20.20

Features

Individual measurement
Measure the anti-static performance of shoes individually.
Prevents faulty measurement with the divider on test plate.



Evaluation external output

Side view



External output terminal

Example of interlock



Optional Stand (C5032)



Packing List

FG-460	Unit, Mounting base, AC adapter*, Test plate, Mounting screw (qty 2)**, Pan head screw (qty 2), Wood screw (qty 2), Instruction manual

* AC adapter may not be included depending on the specifications.
** Delivered as they are screwed onto the unit.
NOTE: Stand (C5032) is sold separately.

Specifications

Model No.		FG-460
Rating		DC 24 V 33 mA
Measurement voltage		DC 20 V
Measurement range	Upper evaluation limit	1000 MΩ (1×10^9 Ω)
		100 MΩ (1×10^8 Ω)
		10 MΩ (1×10^7 Ω)
	Lower evaluation limit	1 MΩ (1×10^6 Ω)
		0.1 MΩ (1×10^5 Ω)
		R < 0.1 MΩ (1×10^5 Ω)
	Conductivity evaluation	R < 0.1 MΩ (1×10^5 Ω)
Evaluation level accuracy	R < 0.1 MΩ	± 5%
	1 MΩ ≤ R ≤ 100 MΩ	± 10%
	100 MΩ < R	± 8%
Operating environment		Ambient temperature / humidity range 0 to 40°C, 20 to 90%RH (without condensation)
Environment conditon		Applicable rated pollution degree 2 (According to IEC / UL61010-1)
Dimensions		120 (W) × 30 (H) × 185 (D) mm
Weight*		0.55 kg

Test plate

Cord length	1.6 m
Dimensions**	300 (W) × 30 (H) × 300 (D) mm
Weight**	1.9 kg

AC adapter

Outoput voltage	DC 24 V

* Including mounting base
** Without cord

Option

Part No.	Name
C5032	Stand

HAKKO THERMOMETER FG-102 New

Soldering Iron Thermometer with Traceability Management System



- Free of errors in temperature measurement
- Free of transcription errors for measured temperature
- Standardization of temperature measurement
- Secure management of tip temperature records

Packing List

FG-102	Unit, Battery (6 pcs, for trial), Barcode reader, USB cable, Software (CD-ROM), Sensor (10 pcs), Barcode sticker for soldering iron ID (30 pcs), Barcode sticker for operator ID (30 pcs), Instruction manual

Option / Replacements

Part No.	Name	Specifications
A1310	Temperature probe	for soldering bath & pot
C1541	Temperature probe	for hot air
A1556	Sensor A	–
A1557	Sensor B	–
C5009	Bar code reader	–
191-212	Sensor	lead-free, set of 10

Specifications

Model No.	FG-102
Power supply	AA sized (LR6) battery × 6 (alkaline cell recommended)
Temperature resolution	1°C
Temperature measurement range	0 to 700°C
Temperature precision	±3°C (300 to 600°C) ±5°C (other than above)
Temperature sensor*	K (CA) type thermocouple
Display	LCD
Operating environment	0 to 40°C, 20 to 90%RH (without condensation)
Environmental conditions	Applicable rated pollution degree 2 (according to IEC/UL 61010-1)
Dimensions**	193 (W) × 90 (H) × 219 (D) mm
Weight***	0.93 kg

* Temperature sensor (No.191-212 or No.191-212C) can only be used if measure temperatures below 500°C. To measure higher temperatures, use an applicable temperature probe.
** Without barcode reader
*** Without battery and barcode reader
**** Traceability management function can only be used for soldering irons.

Features

An Innovation in Tip Temperature Control

Flow chart of management



1. Scan the unit and the measurer's ID by a barcode reader.
2. Measure the temperature.
3. Press the REC button to save the data on the unit main body.
4. Transfer and save the data on the PC.

Free of errors in temperature measurement by standardization of temperature measurement

The unit has a function to notify the end of measurement. When measurement is finished, "H" icon stops blinking. The unit can find measurement errors and prompt an operator to repeat measurement. The display shows "Fail" if tip loses appropriate contact with sensor before completion of measurement.

Pass/Fail judgment on measured temperature

Pass/Fail judgment on measured temperature can be automatically made if an acceptable temperature range is registered in advance (The display shows "OK" or "Fail".).





Make it easy to manage tip temperature records by transferring the data to computer



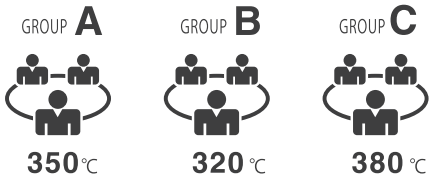
Free of transcription errors for measured temperature

No	InstID	Gr No	MeasID	Temp	Set Temp	Month	day	hour	min	OK/NG
1	10023	0	10005	375	0	10	21	14	47	—
2	10024	0	10005	372	0	10	22	14	48	—
3	10025	0	10005	372	0	10	23	14	49	—
4	10026	0	10005	373	0	10	24	14	50	—
5	10027	0	10005	375	0	10	25	14	51	—
6	10028	0	10005	375	0	10	26	14	52	—
7	10029	0	10005	373	0	10	27	14	53	—
8	10030	0	10005	376	0	10	28	14	54	—
9	10001	1	10005	371	380	10	29	14	55	OK
10	10002	1	10005	371	380	10	30	14	55	OK
11	10003	1	10005	372	380	10	31	14	56	OK
12	10004	1	10005	382	380	10	32	14	57	OK
13	10005	5	10005	382	380	10	33	15	3	NG
14	10006	5	10005	380	380	10	34	15	4	NG

More Features

Group control

Groups can be created based on different set temperatures for different operations. Pass/Fail judgment on measured temperatures can be automatically made for different acceptable temperature ranges.



Automatic counting of the number of measurements

Notification of the calibration date

HAKKO FG-100
THERMOMETER

Soldering Iron Thermometer



- Tip thermometer that provides reliable temperature control of soldering iron tips
- Compact design minimizes your workspace and enables you to easily carry it around.
- Incorporating an extremely fine sensor that has high temperature reactivity.

HAKKO FG-101
SOLDERING TESTER

Soldering Iron Tester

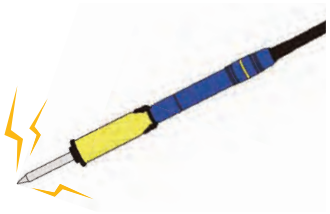


- Tip temperature, leak voltage, and tip-to-ground resistance can be easily measured with high accuracy.
- Soldering iron tester useful for daily maintenance of station-type soldering irons

What is leak voltage and tip-to-ground resistance?

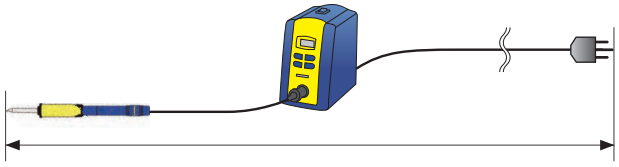
Leak voltage

Leak current is the current that leaks from the tip to a board or device. Leak voltage is a specific measurement of the level of this current. The leakage can adversely affect delicate devices, so it is necessary to check leak voltage on a daily basis.



Tip-to-ground resistance

Most leak current flows from the tip via the ground wire to the outlet ground terminal, and is prevented from affecting the device. Because of this, tip-to-ground resistance is another important issue that must be checked daily.



Common Features of FG-100 and FG-101

Dimensional measurement



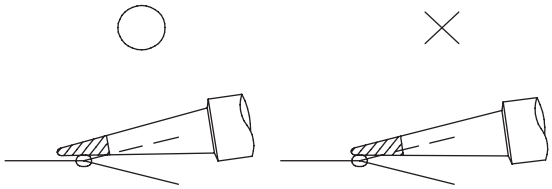
*Design image only

MAX HOLD function

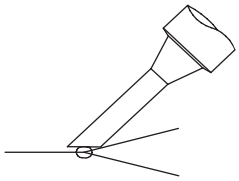
When the “MAX HOLD” button is pressed, “MAX HOLD” is displayed and the highest tip temperature is held on the display.



Procedure for Measuring the Soldering Tip Temperature



- Typical measuring point for Shape B, I and D (Measure at the center of the tin coated area)



- Typical measuring point for Shape BC and C which are tinned flat only.

Option / Replacements

Part No.	Name	Specifications
A1310	Temperature probe	For solder bath and pot
C1541	Temperature probe	For hot air
A1556	Sensor A	–
A1557	Sensor B	–
191-212	Sensor/10 pcs	–

Packing List

FG-100	Unit, 006P 9 V Manganese dry battery (for trial), Instruction manual, Sensor (10 pcs)
FG-101	Unit, Fuse, Conduction wire, Sensor (10 pcs), Multi-adapter, European adapter, Ground clip, Power cord, Instruction manual

Specifications

Model No.	FG-100
Power supply	006P 9 V dry battery (alkaline cell recommended)
Temperature resolution	1°C
Temperature measurement range	0 to 700°C
Temperature precision	±3°C (300 to 600°C) ±5°C (other than above)
Temperature sensor*	K (CA) type thermocouple
Display	LCD: 3 1/2 digits
Operating environment	0 to 40°C, 20 to 90%RH (without condensation)
Environmental conditions	Applicable rated pollution degree 2 (according to IEC/UL 61010-1)
Dimensions**	68 (W) × 140 (H) × 38 (D) mm
Weight***	115 g

* The temperature sensor (No.191-212 or No.191-212C) can only be used to measure temperatures below 500°C. To measure higher temperatures, use an applicable temperature probe.
** Excluding protrusions
*** Without battery

Model No.	FG-101
Power consumption	2.8 W
Temperature resolution	1°C
Temperature measurement range	0 to 700°C
Temperature precision	±3°C (300 to 600°C) ±5°C (other than above)
Temperature sensor*	K (CA) type thermocouple
Voltage resolution	0.1 mV
Voltage measurement range	0 to 40 mV (AC)
Voltage precision	± (5% of reading + 1 digit)
Resistance resolution	0.1 Ω
Resistance measurement range	0 to 40 Ω
Resistance precision	± (5% of reading + 1 digit)
Display	LCD: 3 1/2 digits
Operating environment	0 to 40°C, 20 to 90%RH (without condensation)
Environmental conditions	Applicable rated pollution degree 2 (according to IEC/UL 61010-1)
Dimensions	200 (W) × 50 (H) × 120 (D) mm
Weight	1 kg

* The temperature sensor (No.191-212 or No.191-212C) can only be used to measure emperatures below 500°C. To measure higher temperatures, use an applicable temperature probe.

Memo

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