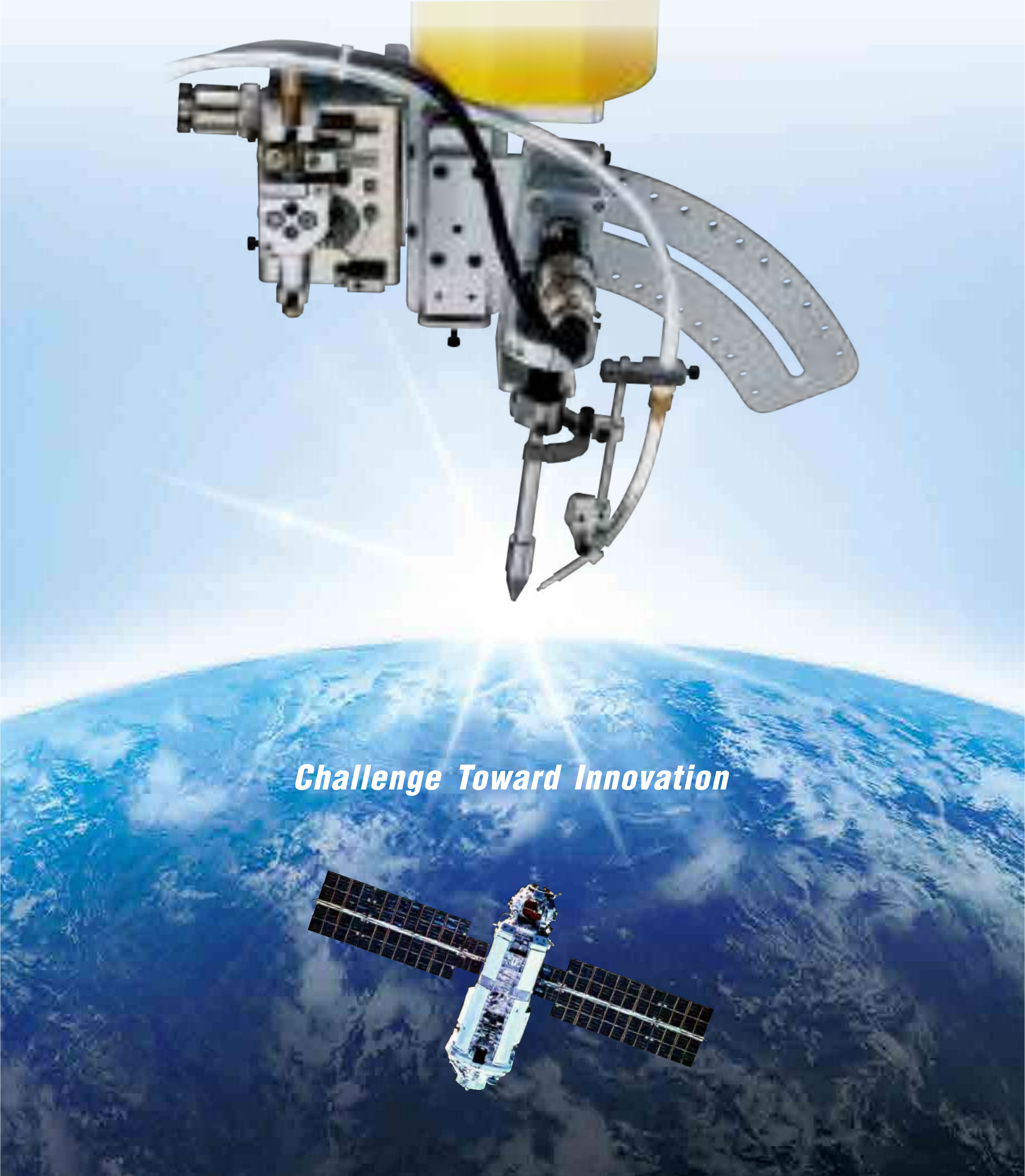
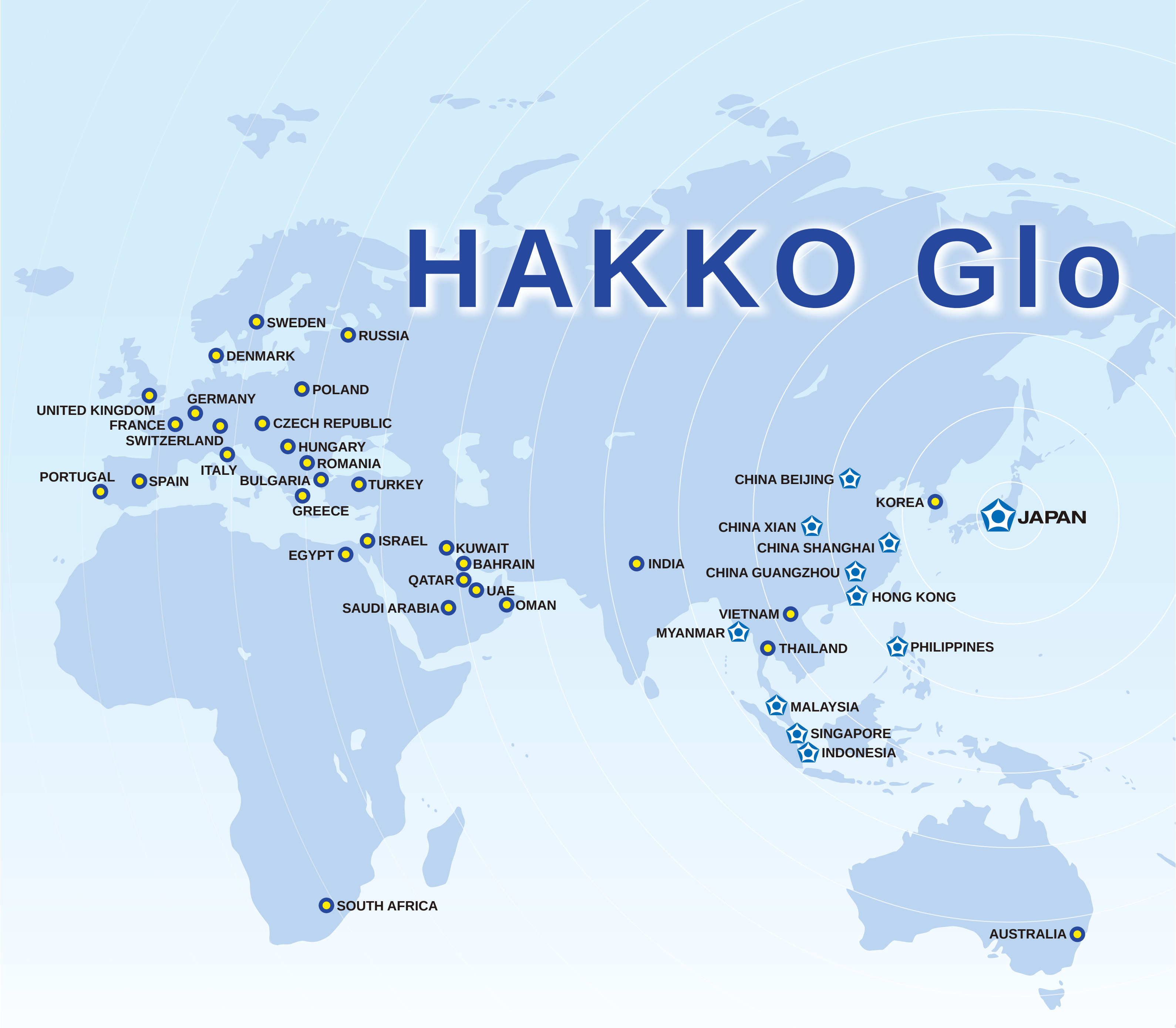
HAKKO

Quality Tools For The Electronics Industry



HAKKO Glo



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®

https://www.hakko.com

HAKKO is registered in countries and regions including the following.
Japan, USA, South Korea, Singapore, China, the member of CTM.

bal Network

USA
MEXICO
BRAZIL
NEW ZEALAND

As of Mar. 2021

WORLDWIDE NETWORK

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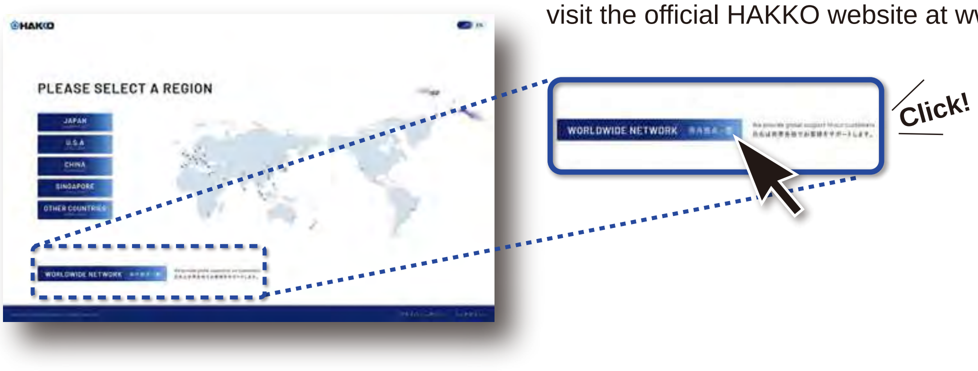


HAKKO products pioneer

1

AUTO-
SOLDERING

2

POWER
SOLDERING™

the next generation

3

MICRO
SOLDERING

4

WIRE
HARNESS
ASSEMBLY

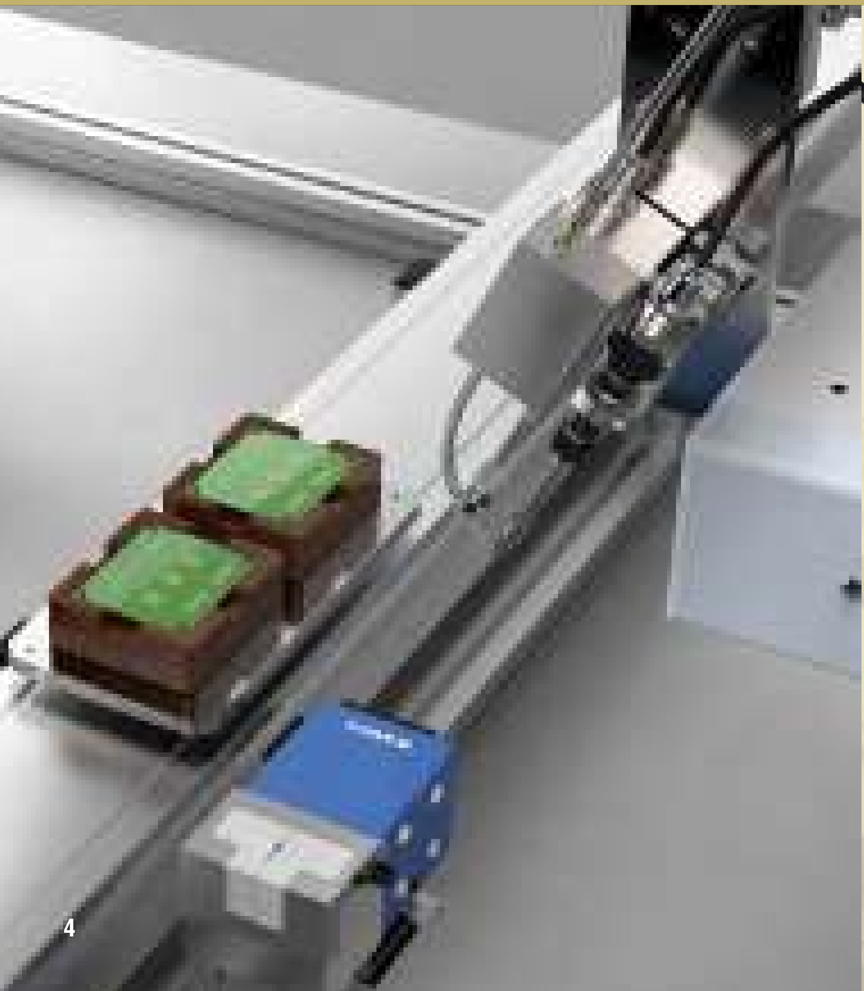
Challenge Toward Innovation

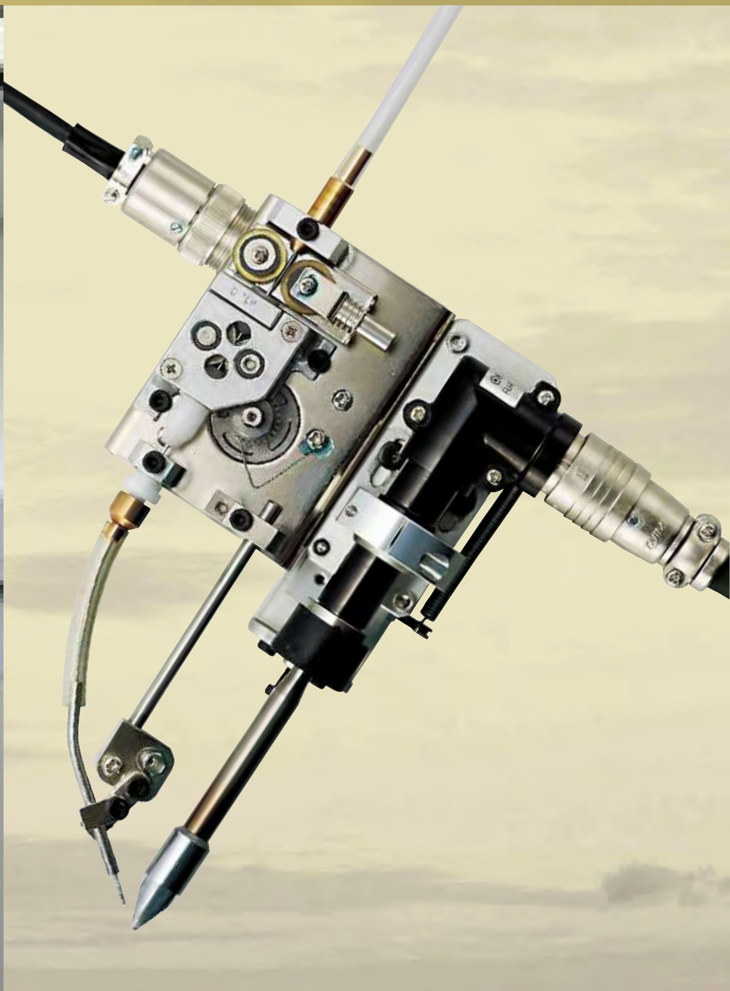
A Smart Way to build an
Auto-Soldering System

Auto-Soldering System

FU-500 ESD SAFE » P.14
FU-601 ESD SAFE » P.14

AUTO-SOLDERING





Best suited for soldering P.W.B. with high heat capacity and high heat dissipation property
Make the impossible possible with Super Power of 300 W Heater

Heavy Duty Soldering Station

FX-801 ESD SAFE » P.36

POWER SOLDERING™

300 W heavy duty desoldering tool with built-in vacuum pump
Secure desoldering with valve function

Heavy Duty Desoldering Tool

FR-400 ESD SAFE » P.84

Ideal for Micro Soldering applications
under a microscope

Micro Soldering Iron

FX-1002 ESD SAFE » P.23

MICRO SOLDERING

Ideal for Micro Soldering applications
under a microscope

Micro Soldering Iron

FM-2032 ESD SAFE

FX-951 ESD SAFE
» P.24

FM-203 ESD SAFE
» P.28

FM-206 ESD SAFE
» P.28

Thermal wire stripper that ensures clean-cut removal of wire insulation

Thermal Wire Stripper

FT-802 ESD SAFE » P.110

WIRE HARNESS
ASSEMBLY

Stepless control on temperature and airflow for optimal settings

Heating Gun

FV-310 » P.116

Quality Tools for the

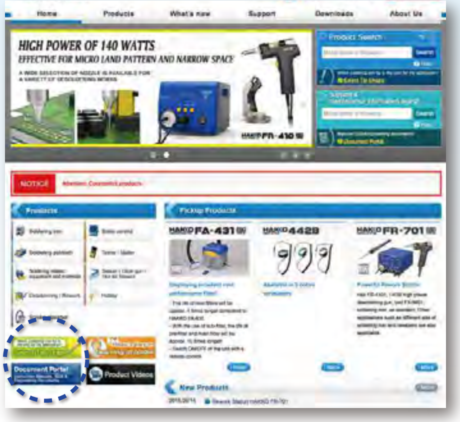
ISO 9001
CERTIFICATE OF REGISTRATION
Hakko Corporation
Production Div.
JIS Q 9001:2015, ISO 9001:2015
JSA Solutions Co.,Ltd.

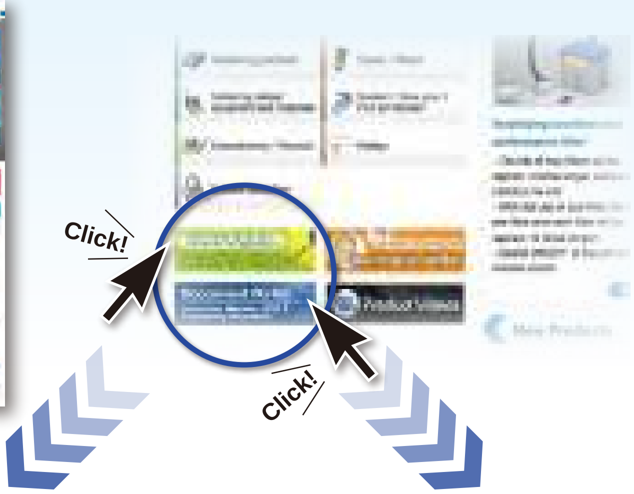
ISO14001
CERTIFICATE OF REGISTRATION
Hakko Corporation
JIS Q 14001:2015, ISO 14001:2015
JSA Solutions Co.,Ltd.

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





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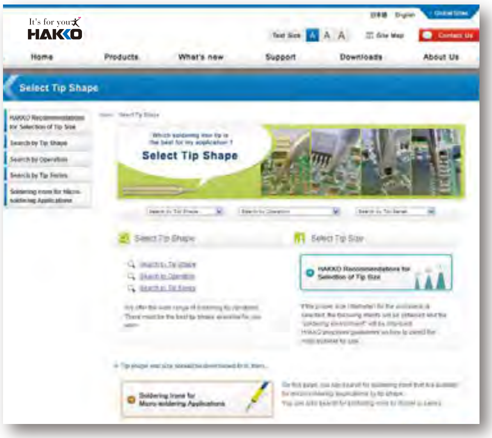

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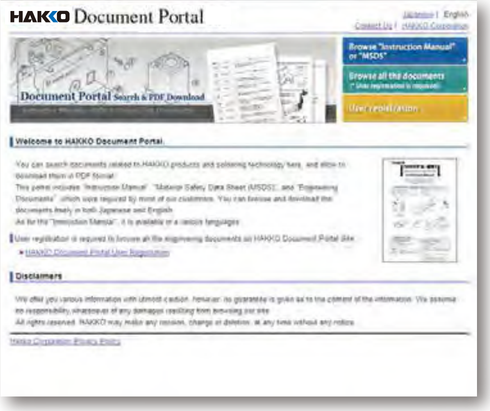
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Electronics Industry

New Products

FN-1010 ESD SAFE

IoT Capable Soldering Station

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FG-101B

Soldering Iron Tester with
Auto-measurement Function

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373 ESD SAFE

Self Feeder and the New Tube Unit

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FT-720 ESD SAFE

Tip Cleaner

Page 70

FG-465

Footwear Tester

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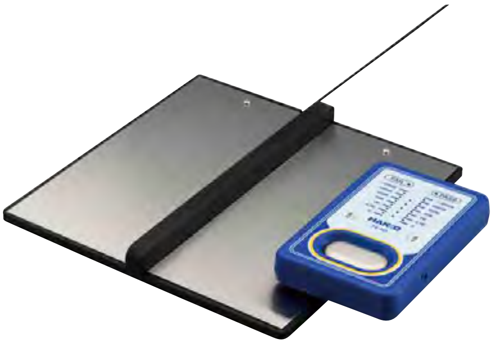

FG-470

Wrist Strap Tester

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Auto-Soldering System

Auto-Soldering unit

FU-500
Solder Feed Unit

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FU-601
Soldering Iron Unit

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FU-6001
Soldering Iron

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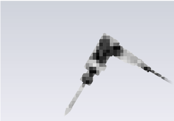
FU-6002
Soldering Iron

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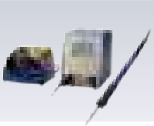
Soldering Iron

IoT Capable Type

FN-1010
100 W

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Station Type & Accessories

FX-100
IH

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FX-1002
Micro Soldering Iron

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FX-951
70 W

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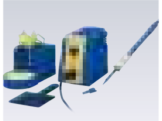
FX-950
70 W

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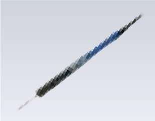
FM-2032
Micro Soldering Iron (48 W)

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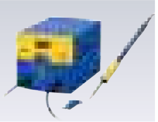
FM-203
2-Port Type

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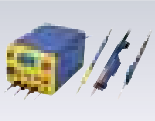
FM-206
3-Port Type

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FM-2027
Soldering Iron (70 W)

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FM-2032
Micro Soldering Iron (48 W)

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FM-2022
SMD Hot Tweezers (140 W)

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FM-2023
Mini SMD Hot Tweezers (140 W)

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FM-2024
Desoldering Tool (70 W)

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FM-2029
Hot Air Pencil (140 W)

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FM-2030
Heavy Duty Soldering Iron (140 W)

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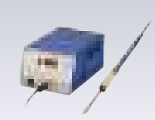
FX-801
300 W

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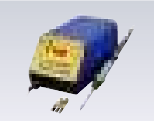
FX-838
150 W

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FX-888D
65 W

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FX-889
2-Port Type

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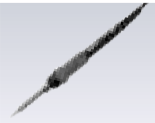
FX-8801
Soldering Iron M type (65 W)

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FX-8803
Soldering Gun (65 W)

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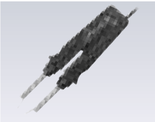
FX-8804
SMD Hot Tweezers (65 W)

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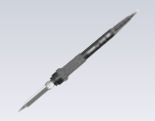
FX-8805
Soldering Iron L type (65 W)

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N_2 System

FX-780
N_2 Generator

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FX-781
N_2 Generator

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FX-791
N_2 Flowmeter

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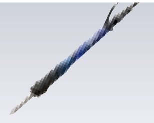
FN-1102
N_2 Soldering Iron (95 W)

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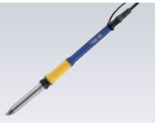
FX-8003
N_2 Soldering Iron (260 W)

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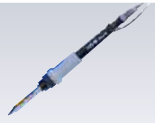
FX-8302
N_2 Soldering Iron (150 W)

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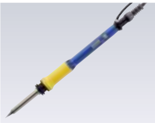
FM-2031
N_2 Soldering Iron (140 W)

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FM-2032
N_2 Micro Soldering Iron (48 W)

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FM-2026
N_2 Soldering Iron (70 W)

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FX-8802
N_2 Soldering Iron (65 W)

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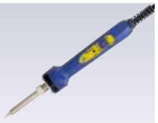
Ceramic Heater Type

FX-600
For Electronics Parts Soldering

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FX-601
For Heavy Duty Soldering

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DASH

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PRESTO

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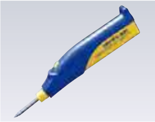
FX-901
Battery-Powered Soldering Iron

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Nichrome Heater Type

RED

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MG
Solder Feed Soldering iron

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Iron Holder & Reel Stand

Iron holder

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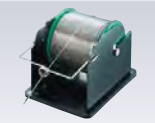
611

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Flux Pen

FS-210

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Solder Feeder

Solder Feed System

373
Self Feeder

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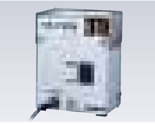
375
V-Groove Maker

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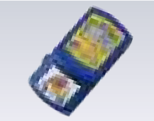
Thermometer & Soldering Tester

Thermometer

FG-100B

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FG-102

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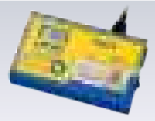
Soldering Tester

FG-101B

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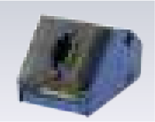
Tip Cleaner

Tip Cleaner

FT-720

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FT-710

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Maintenance Kit

FT-700 & FS-100

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Fume Extractor

Air-Purifying Type

FA-430
HEPA Filter

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FA-431
Cost Performance Filter

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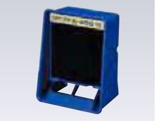
Desktop Type

FA-400



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Line Production System

494

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Soldering Pot

Soldering Pot

FX-301B
High Performance Type

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FX-300
High Performance Type

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Flow Soldering System

485

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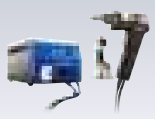
Desoldering & Rework

Desoldering Tool

FR-400
300 W



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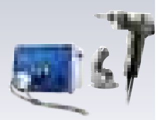
FR-410
140 W



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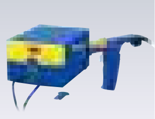
FM-204
70 W



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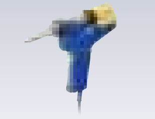
FR-301
Portable Type



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SPPON

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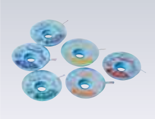
Desoldering Wire

WICK



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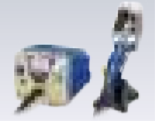
Hot-Air SMD Rework Station

FR-810B

P.90

FR-811



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851

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Preheater

FR-870B
IR Type (M-Size)

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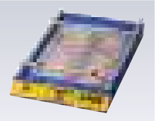
FR-872
IR Type (L-Size)



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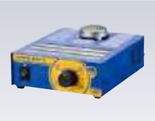
FR-830
Hot Air Type



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Rework Station

Repair System

FR-701
2-Port Type

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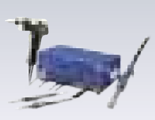
Rework System

FR-702
4-Port Type



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Static Control

Static Eliminator

FE-510

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Static Level Meter

FG-450

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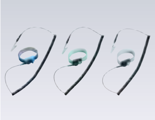
Wrist Strap

442B



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Wrist Strap Tester

FG-470

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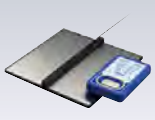
Footwear Tester

FG-465



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Vacuum Pick-Up Tool

Vacuum Pick-Up Tool

392
Outlet-Powered Type

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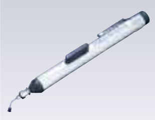
393
Dropper Type



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Battery-Powered Type

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Tool for Lead & Wire

Thermal Wire Stripper

FT-802
Thermal Wire Stripper

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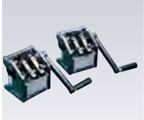
Lead Forming Tool

153 & 154
Lead Cutter And Former



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Lead Cutter

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152B
Motor Drive

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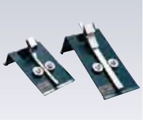
DIPLINER
Lead Straightener



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Hand Tool

HAND TOOLS

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106
Cutting Tool

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Heating Gun

Heating Gun

FV-310

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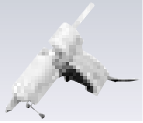
Glue Gun

Glue Gun

804



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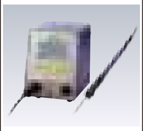
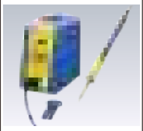
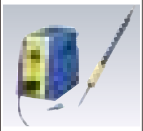
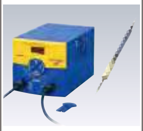
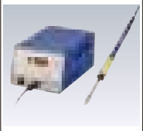
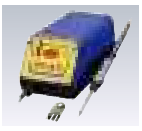
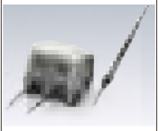
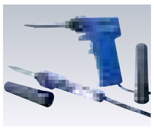
HAKKO Soldering Iron Lineup

		FN-1010	FX-100	FX-951	FX-950	FM-203	FM-206	FX-801	FX-838
									
Types		IoT Capable	IH	High Performance				Heavy Duty	
Specifications	Power consumption	100 W	25 W (85 W)	75 W	75 W	140 W	410 W (max.)	300 W	158 W
	Power consumption of Handpiece	95 W	—	70 W	70 W	70 W × 2 port	70 W × 3 port	260 W	150 W
	Temperature Range	50 to 450°C	350°C/400°C/450°C	200 to 450°C	200 to 450°C	200 to 500°C	200 to 500°C	50 to 500°C	200 to 500°C
	Soldering Tip	T36 series	T31 series	T12 series	T12 series	T12 series	T12 series	T33 series （Regular / Slim）	T20 series
Applicable Standard	Lead Free Suggestible	●	●	●	●	●	●	●	●
	ESD Safe	●	●	●	●	●	●	●	●
	RoHS Suggestible	●	●	●	●	●	●	●	●
Accessories	Micro Soldering Iron connectable		●	●		●	●		
	N_2 Micro Soldering Iron connectable			●		●	●		
	N_2 Soldering Iron connectable	●		●	●	●	●		●
	N_2 Heavy Duty Soldering Iron connectable						●	●	●
	Self Feeder connectable	●	●	●	●	●	●	●	●
	SMD Hot Tweezers connectable					●	●		
	Desoldering Iron connectable					●	●		
	Hot Air Handpiece connectable						●		
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	●	●	●	● Option	●	●	●	●
	Lock Function: Lockable by password, control card or lock key.	Password	Password	Control card	Lock key	Control card	Password	Password	Control card
	Lower Temperature Error Alert: When the temperature drops below a set limit, an error is displayed and the buzzer sounds. Low ℃	●		●		●		●	●
	Offset Temperature Function: Temperature offsettable by analog, digital or adjustment mode. OFFSET	Digital		Digital	Manual	Digital	Digital	Digital	Digital
	Preset Temperature Function: The function allows to input several frequently-used temperatures and recall with one push of a button. PRE℃	●					●	●	●

FX-888D	FX-889	FX-600	FX-601	DASH	PRESTO	FX-901	RED	MG
								
All-Round		Ceramic Heater				Battery-Powered	Nichrome Heater	
70 W	135 W	50 W	47 W	15 to 16 W	20 W/130 W	6 W/5 W	20 W/30 W 40 W/60 W	30 W/40 W 60 W/80 W 100 W/150 W
65 W	65 W x 2 port	—	—	—	—	—	—	—
50 to 480°C	50 to 480°C	200 to 500°C	240 to 540°C	—	—	—	—	—
T18 series	T18 series	T18 series	T19 series	T34 series	980-T series	T11 series	BB series	582-T-4 585-T-6 587-T-8 592-T-10
●	●	●	●					
●	●							
●	●	●	●	●	●	●	●	●
●	●							
●	●							
●	●							
Password	Password	Lock key	Lock key					
Adjustment mode	Adjustment mode	Manual	Manual					
●	●							

FU-500 ESD SAFE FU-601 ESD SAFE

Auto-Soldering Unit

Tip not included

for LEAD FREE ESD SAFE RoHS

Soldering

Soldering (Option)

FU-500 ESD SAFE

- Accurate solder feeding
- Supports solder diameters of 0.3 mm and up to 1.6 mm
- Solder feed error detection
- Equipped with countermeasures against solder ball splash as standard

FU-601 ESD SAFE

- Easy tip replacement
- High performance composite tip
- Six presets tip-temperature function
- 300 W of ultra-high power

Packing List

FU-500	Main unit, Feeder unit (L or Straight type), Solder reel stand, Feeder cable, Tube units, Power cord, Instruction manual
FU-601	Station, Handpiece (FU-6001 or FU-6002), Iron unit fixing assembly, Tip adjustment jig units, Iron cable, Heat resistant pad, Connecting cable, Flux protector, Feeder unit attachment screw, Instruction manual

Specifications

Model No.	FU-500
Power consumption	35 W
Compatible solder diameters	0.3 mm, 0.5 mm, 0.6(0.65) mm, 0.8 mm, 1 mm, 1.2 mm, 1.6 mm
Dimensions	145 mm (W) × 100 mm (H) × 230 mm (D)
Weight	2.3 kg

Model No.	FU-601
Power consumption	140 W/300 W
Temperature range	50 to 500°C
Preset temperature	6 settings
Dimensions	145 mm (W) x 107 mm (H) x 211 mm (D)
Weight	4 kg

Soldering Iron

Model No.	FU-6001	FU-6002
Total length	186 mm with 2.4XD tip for TX1 194 mm with 4XD tip for TX2	160 mm with 2.4XD tip for TX1 168 mm with 4XD tip for TX2
Weight*	163 g with 2.4XD tip for TX1 171 g with 4XD tip for TX2	165 g with 2.4XD tip for TX1 173 g with 4XD tip for TX2

* With iron unit fixing assembly

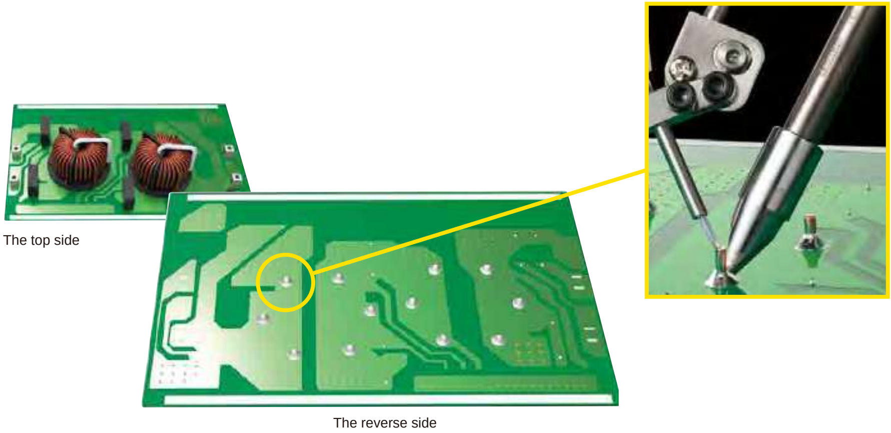
Optional Parts

* The accessories are required for initial set-up, such as a solder feed pulley unit, solder-feed guide set and teflon tube are not included. They must be ordered separately and adapted to use with the soldering iron and solder wire diameter.

Part No.	Name	Remarks
BX1000	Solder feed pulley unit/0.3 mm	
BX1001	Solder feed pulley unit/0.5 mm	
BX1002	Solder feed pulley unit/0.6 mm	
BX1003	Solder feed pulley unit/0.8 mm	
BX1004	Solder feed pulley unit/1 mm	
BX1005	Solder feed pulley unit/1.2 mm	
BX1006	Solder feed pulley unit/1.6 mm	
BX1007	Solder feed guide set/0.3 mm	
BX1008	Solder feed guide set/0.5 to 1 mm	
BX1009	Solder feed guide set/1.2 to 1.6 mm	
BX1010	Fluoroplastic tube/0.3 mm (qty 10)	
BX1011	Fluoroplastic tube/0.5 to 0.6 mm (qty 10)	
BX1012	Fluoroplastic tube/0.8 mm (qty 10)	
BX1013	Fluoroplastic tube/1 mm (qty 10)	
BX1014	Fluoroplastic tube/1.2 mm (qty 10)	
BX1015	Fluoroplastic tube/1.6 mm (qty 10)	
BX1023	Adapter assembly for TX1	
BX1029	Adapter assembly A for TX2	
BX1024	Nozzle assembly <A> for TX1	
BX1025	Nozzle assembly <B> for TX1	
BX1026	Nozzle assembly <C> for TX1	
BX1030	Nozzle assembly <D> for TX2	
BX1031	Nozzle assembly <E> for TX2	
CX1000	Slide unit	
CX1001	Slide unit for drag soldering	
CX1002	Temperature probe	
CX1003	Cleaner	

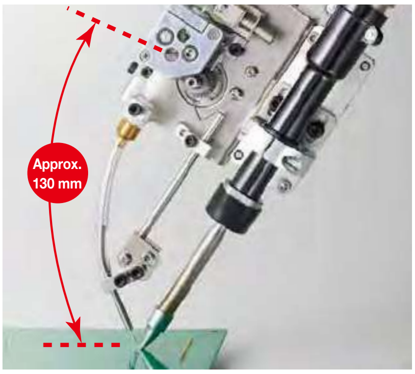
Features

300 W of ultra-high power FU-601 is added to Auto-Soldering System.



Accurate solder feeding

The solder feed unit is closer to the iron.



Easy tip replacement

The position of the tip end can be easily adjusted using the tip adjustment jig unit included with FU-601.

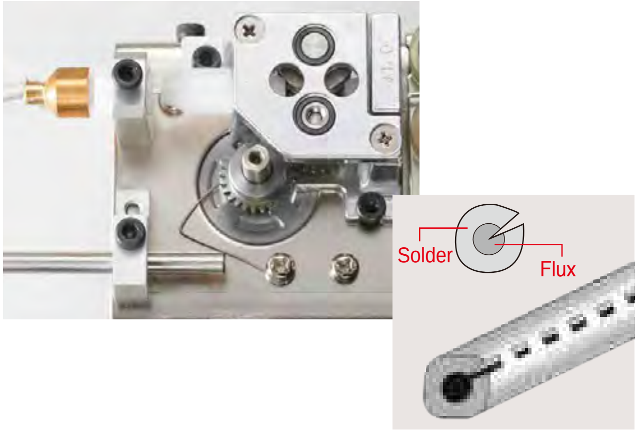
Two types of soldering irons

Straight iron FU-6001

L-shaped iron FU-6002

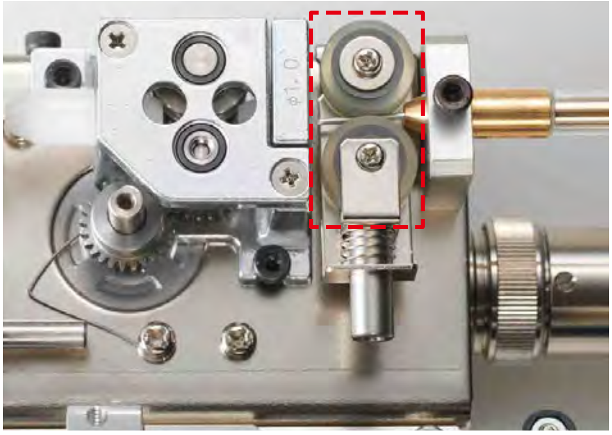
Countermeasures against solder ball splash

Equipped with a mechanism that perforates into the solder wire as standard.



Solder feed error detection

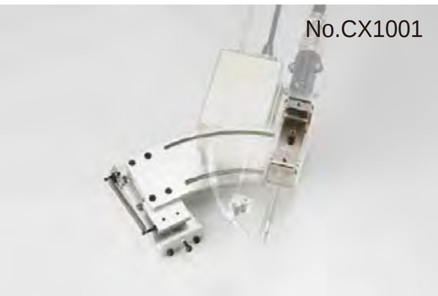
With an optical sensor for solder movement, FU-500 can detect solder clogging, slipping and the end of the roll.



Optional Parts and Accessories

Slide unit
This unit allows the soldering unit vertical movement with external air.

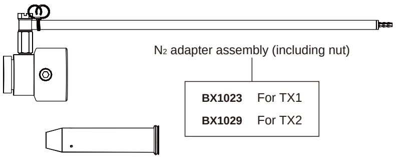
Slide unit (for drag soldering)
This unit absorbs height variation.



Tip cleaner
The brush removes excess solder and flux carbides.

Temperature probe
The probe makes tip temperature measurement easy.

N_2 adapter assembly
Simply attach the optional N_2 adapter to the iron and install a nozzle assembly that matches the tip to perform N_2 soldering.



N_2 adapter assembly (including nut)

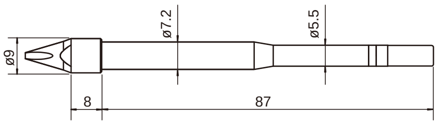
BX1023	For TX1
BX1029	For TX2

Nozzle assembly

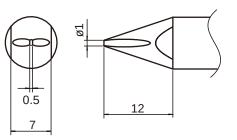
For TX1	**BX1024**	Nozzle assembly A For Shape-2.4XD, 3XD, 2XBC, 3XBC
	BX1025	Nozzle assembly B For Shape-XD, 0.8XD, 1.6XD
	BX1026	Nozzle assembly C For Shape-XK, 4XBC
For TX2	**BX1030**	Nozzle assembly D For Shape-4XD, 6XD, 4XBC, 6XBC, XK
	BX1031	Nozzle assembly E For Shape-0.8XD, 1.2XD, 1.6XD, 2.4XD, 3XD, 3.2XD, XD, 1.6XBC, 2.4XBC, 3XBC, 3.2XBC, 1.6XNC, 2.4XNC, 3.2XNC
	BX1065	Nozzle assembly F For Shape-4XNC, 6XNC, 10XNC

Optional Tips for 140 W

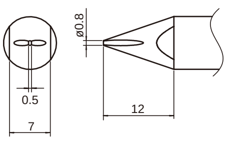
Unit: mm



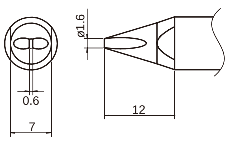
TX1-XD Shape-XD



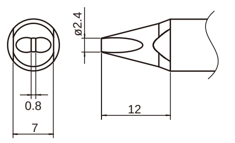
TX1-XD08 Shape-0.8XD



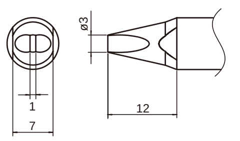
TX1-XD16 Shape-1.6XD



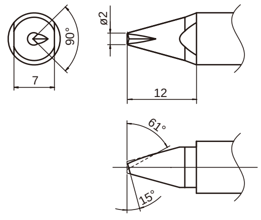
TX1-XD24 Shape-2.4XD



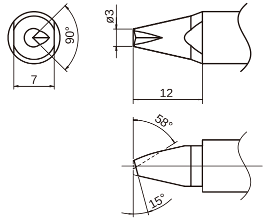
TX1-XD3 Shape-3XD



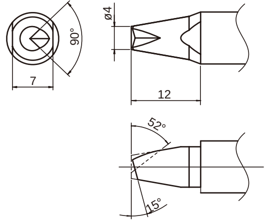
TX1-XBCR2 Shape-2XBC
with V-groove



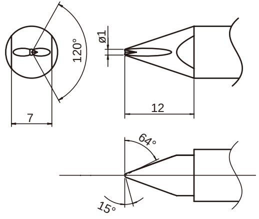
TX1-XBCR3 Shape-3XBC
with V-groove



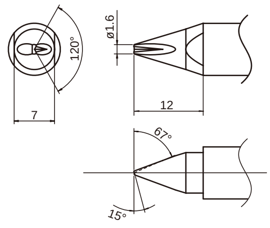
TX1-XBCR4 Shape-4XBC
with V-groove



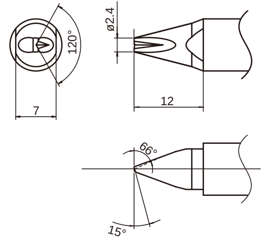
TX1-XDR Shape-XD
with V-groove



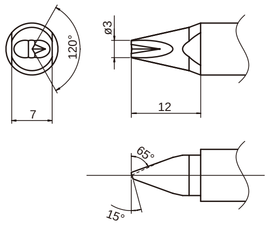
TX1-XDR16 Shape-1.6XD
with V-groove



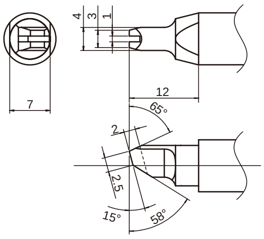
TX1-XDR24 Shape-2.4XD
with V-groove



TX1-XDR3 Shape-3XD
with V-groove

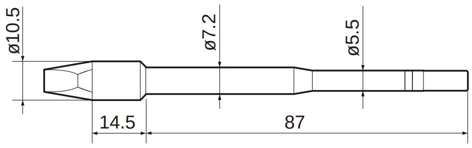


TX1-XRK Shape-XK
with concave

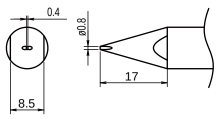


Optional Tips for 300 W

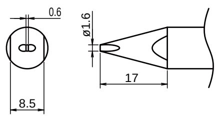
Unit: mm



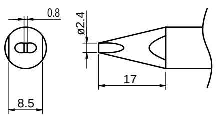
TX2-XD08 Shape-0.8XD
TX2-XDF08*



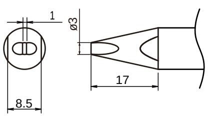
TX2-XD16 Shape-1.6XD
TX2-XDF16*



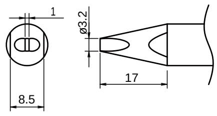
TX2-XD24 Shape-2.4XD
TX2-XDF24*



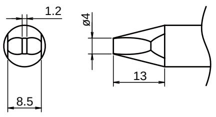
TX2-XD3 Shape-3XD



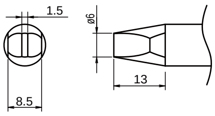
TX2-XD32 Shape-3.2XD
TX2-XDF32*



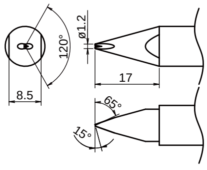
TX2-XD4 Shape-4XD
TX2-XDF4*



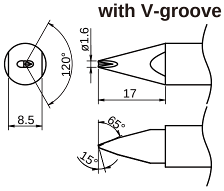
TX2-XD6 Shape-6XD
TX2-XDF6*



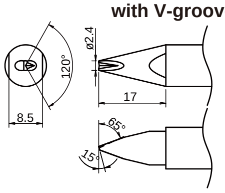
TX2-XDRF12* Shape-1.2XD with V-groove



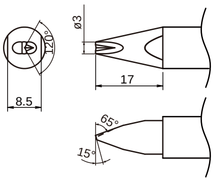
TX2-XDRF16* Shape-1.6XD with V-groove



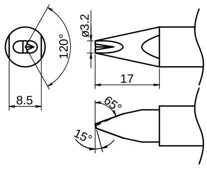
TX2-XDRF24* Shape-2.4XD with V-groove



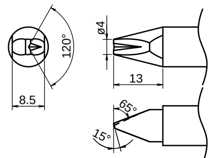
TX2-XDR3 Shape-3XD with V-groove



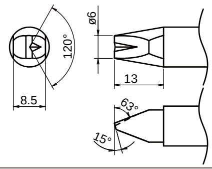
TX2-XDRF32* Shape-3.2XD with V-groove



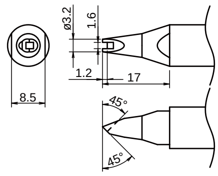
TX2-XDR4 Shape-4XD
TX2-XDRF4* with V-groove



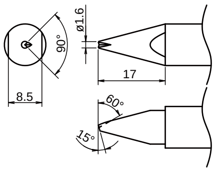
TX2-XDR6 Shape-6XD
TX2-XDRF6* with V-groove



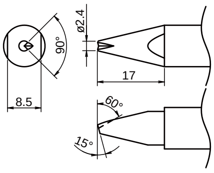
TX2-XDR1632 Shape-XD with concave



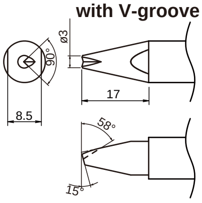
TX2-XBCR16 Shape-1.6XBC with V-groove



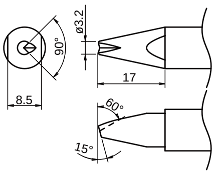
TX2-XBCR24 Shape-2.4XBC with V-groove



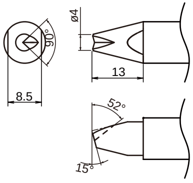
TX2-XBCR3 Shape-3XBC with V-groove



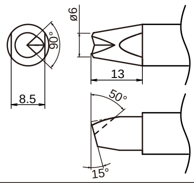
TX2-XBCR32 Shape-3.2XBC with V-groove



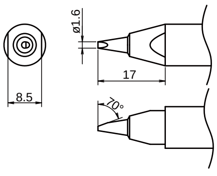
TX2-XBCR4 Shape-4XBC with V-groove



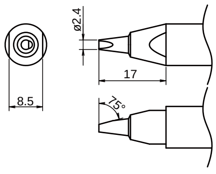
TX2-XBCR6 Shape-6XBC with V-groove



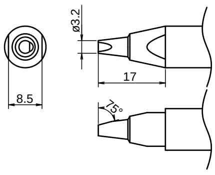
TX2-XNC16 Shape-1.6XNC



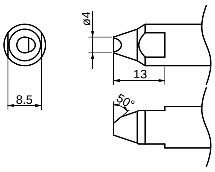
TX2-XNC24 Shape-2.4XNC



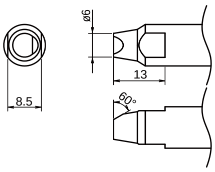
TX2-XNC32 Shape-3.2XNC



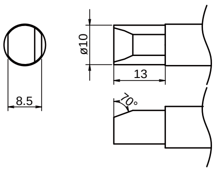
TX2-XNC40 Shape-4XNC



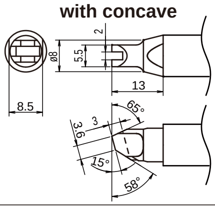
TX2-XNC60 Shape-6XNC



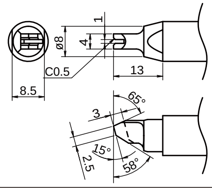
TX2-XNC100 Shape-10XNC



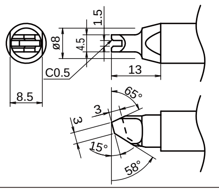
TX2-XRK Shape-XK with concave



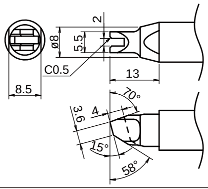
TX2-XRK1040 Shape-XK with concave



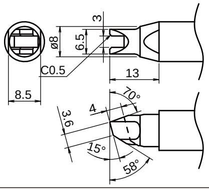
TX2-XRK1545 Shape-XK with concave



TX2-XRK2055 Shape-XK with concave



TX2-XRK3065 Shape-XK with concave



* Pretinning on one side only.

FN-1010 ESD SAFE

IoT Capable Soldering Station **Digital**

Tip not included

for LEAD FREE ESD SAFE RoHS

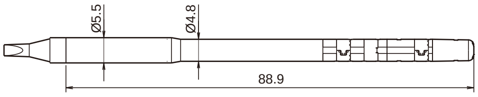
Soldering
Soldering (Option)

Auto off SLEEP Low ℃ OFFSET PRE℃

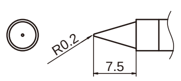
- Enables human error-free temperature control and traceability of manual soldering process

Optional Tips for FN-1101

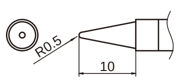
Unit: mm



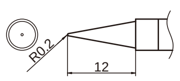
T36-B Shape-0.2B



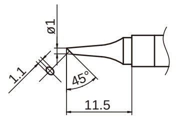
T36-B2 Shape-0.5B



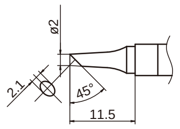
T36-BL Shape-BL



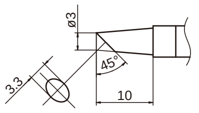
T36-BC1 Shape-1BC



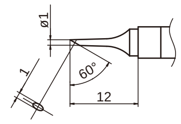
T36-BC2 Shape-2BC



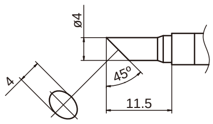
T36-BC3 Shape-3BC



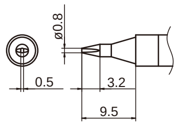
T36-C1 Shape-1C



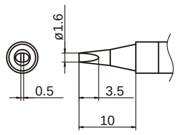
T36-C4 Shape-4C



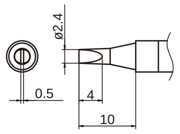
T36-D08 Shape-0.8D



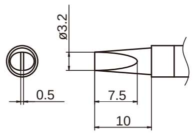
T36-D16 Shape-1.6D



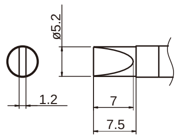
T36-D24 Shape-2.4D



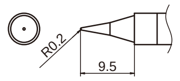
T36-DL32 Shape-3.2DL



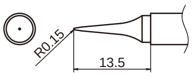
T36-D52 Shape-5.2D



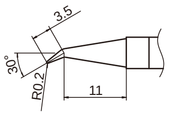
T36-I Shape-I



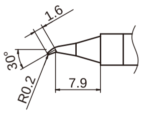
T36-ILS Shape-ILS



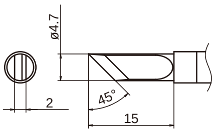
T36-J02 Shape-0.2J



T36-JS02 Shape-0.2JS

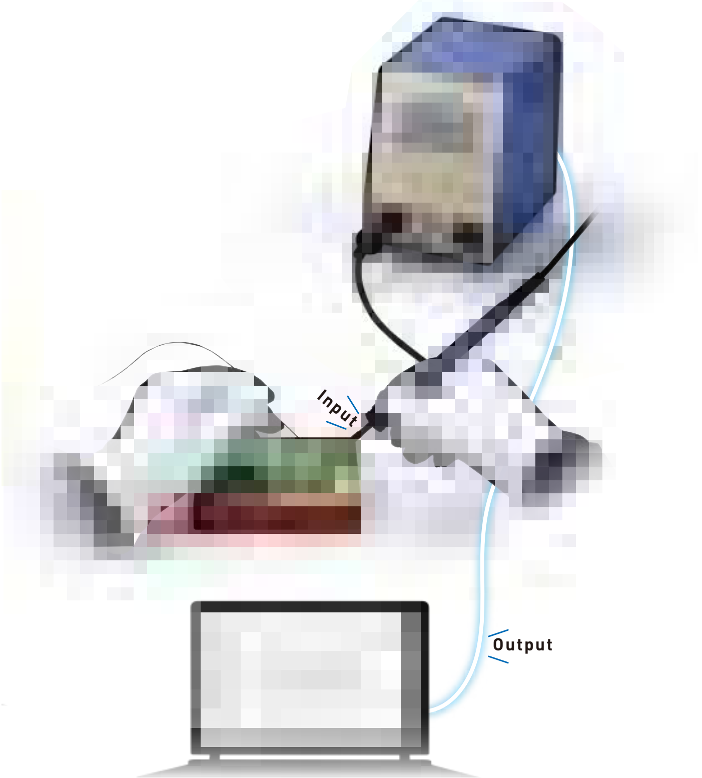


T36-K Shape-K



Features

“Process control” and “Traceability” can be established through daily manual soldering operation.



Information to be collected by T36 series tip

The following information can be collected by memory chip in T36 series tip and saved in a computer through a soldering station.

- Tip shape
- Serial number
- Number of loads
- Total time of power supplied
- Load Sensitivity
- Type of solder alloy (Lead-Free / Lead)
- Count alarm

Optimization of soldering conditions is now possible based on a variety of information in daily soldering process collected by FN-1010.

Connectable with N_2 soldering iron

To improve solder wettability and spreadability

FN-1102 ESD SAFE

N_2 Soldering Iron

Tip not included Please see the optional tips on P.48.

for LEAD FREE ESD SAFE RoHS

For further details, see the N_2 system (P.46 & P.47).

Packing List

FN-1010	Station, Handpiece (FN-1101), Tip cleaner (FT-401, with cleaning wire), Power cord, Iron holder, Instruction manual
FN-1102	Handpiece, Instruction manual

Specifications

Model No.	FN-1010
Power consumption	100 W
Temperature range	50 to 450ºC
Temperature stability	±3ºC at idle temperature
Station	
Output voltage	AC 21 V
Dimensions	104 (W) × 138 (H) × 152 (D) mm
Weight	1.9 kg
Soldering Iron	
Power consumption	95 W (21 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	180 mm (with 2.4D tip)
Weight*	32 g (with 2.4D tip)

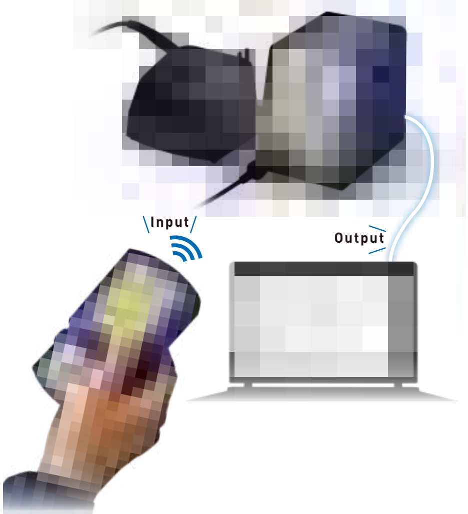
* Without cord

Model No.	FN-1102
Power consumption	95 W (21 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	Composite heater
Cord length	1.2 m
Total length*	180 mm (with 2.4D tip)
Weight*	50 g (with 2.4D tip and nozzle assembly A)

* Without cord and tube

More Features

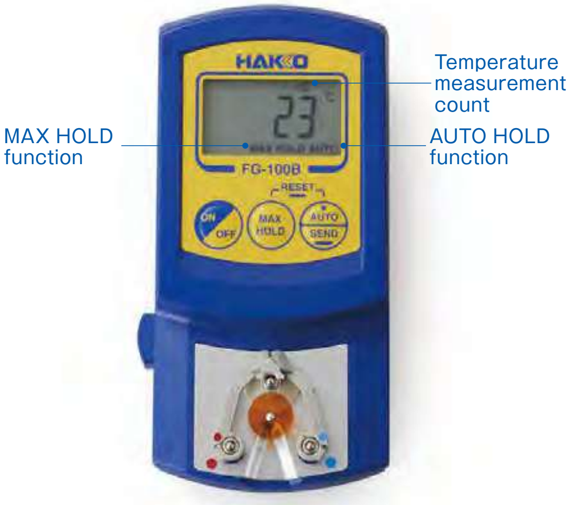
Automatic calibration/off-set can be completed once measurement result is sent through infrared.



Human error-free “tip temperature calibration” and “off-set” can be established through daily manual soldering process. Results of measurement/calibration/off-set can be recorded automatically.

Eliminate human error in manual recording of measurement result by using FG-100B

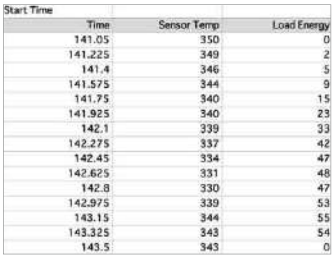
Human errors in manual recording process and time for recording can be eliminated by sending measurement result from FG-100B to FN-1010.



For further information of FG-100B, see P. 65.

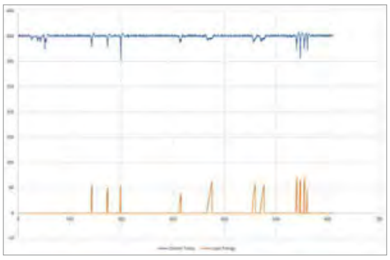
Visualize energy supplied during soldering

It is now possible to visualize invisible energy supplied from T36 series tip during soldering. And that makes it possible to control factors of soldering, which were impossible before.

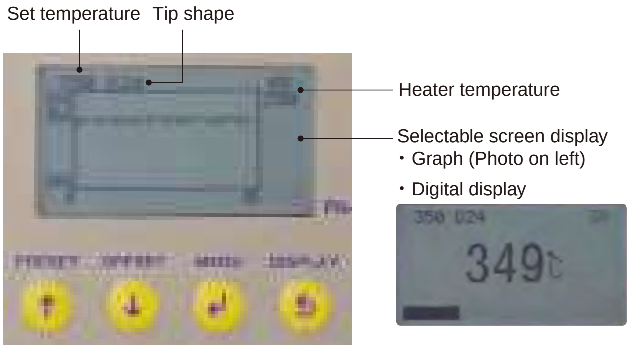


Start Time

Time	Sensor Temp	Load Energy
141.05	350	0
141.225	349	2
141.4	346	5
141.575	344	9
141.75	340	15
141.925	340	23
142.1	339	33
142.275	337	42
142.45	334	47
142.625	331	48
142.8	330	47
142.975	339	53
143.15	344	55
143.325	343	54
143.5	343	0



Real-time work status on the LCD screen



Improved button operation

Quick access to “Preset temperatures” and “Off-set mode” with one push.
It takes few button operation to access to most frequently used functions.

Notification of alarm with sound and vibration

Alarm can be notified with vibration in a noisy environment.

Free fall detection function

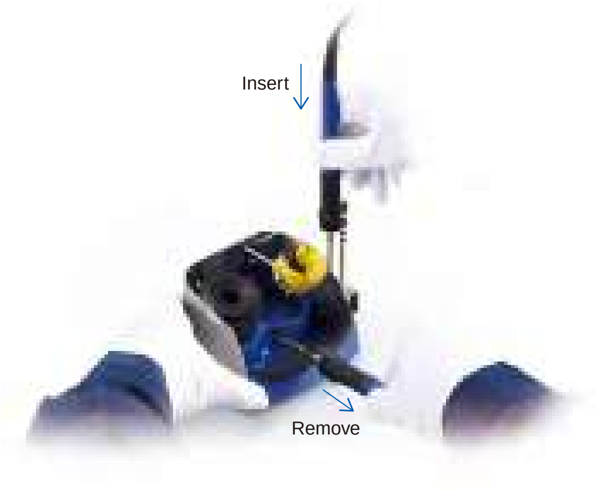
Built-in motion sensor detects free fall and cuts the power.
It can prevent burning floor, a fire and other accident with the heat.

Tip cleaner with solder ball preventive design

Solder ball during tip cleaning can be reduced by 99% with devised cleaner designs such as smaller aperture, and set angle as well as position.

* In-house comparison

Tip replacement without heat resistant pad



Option for IoT communication

Please choose the options according to the numbers of units and the connection port of PC and server.

Type	Specifications and Part No.		Connectable numbers	Compatibility with PC	Sequence control	Example of connection
Interface Card for FN-1010		USB type with cable No. B5210	One unit per one PC	○	×	
		RS232C type with cable No. B5211	One unit per one PC	△*	○	
		LAN type No. B5212	Multiple units per one PC	○	×	

* RS232C cannot be connected with some PCs. Please check.

FX-100 ESD SAFE

GOOD DESIGN

IH Soldering Station Digital

Tip not included

for LEAD FREE ESD SAFE RoHS

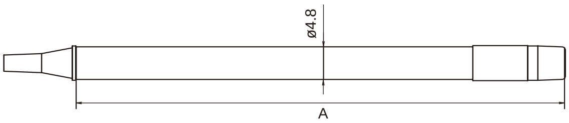
Soldering Micro Soldering

Auto off SLEEP

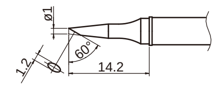
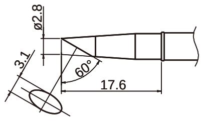
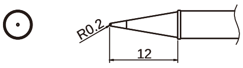
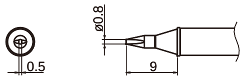
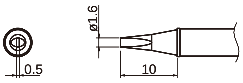
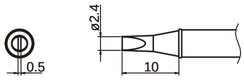
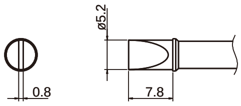
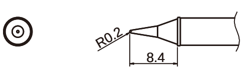
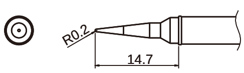
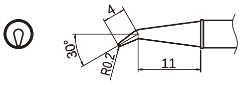
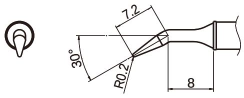
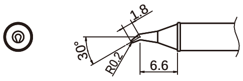
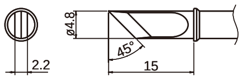
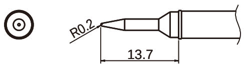
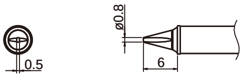
- Provides the heat to the tip effectively by an ‘Induction heater’
- Unique “Power assist” feature that assists the thermal recovery performance of the soldering iron tip
- No calibration is required.
- Wide variety of tips available
- Meets or exceeds IPC J-STD-001 and ANSI ESD S20.20.

Optional Tips for FX-1001

Unit: mm

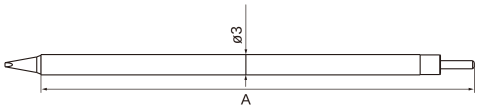


T31-XXBC1
"01" for 450°C (A: 71.5)
"02" for 400°C (A: 68.5)
"03" for 350°C (A: 68.5)

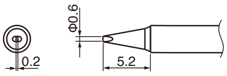
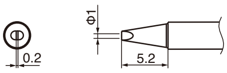
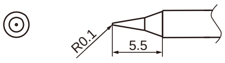
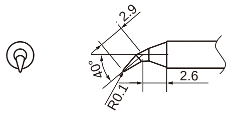
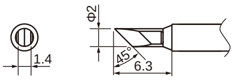
T31-01BC1 Shape-1BC **T31-02BC1** **T31-03BC1** 	**T31-01BC28 Shape-2.8BC** **T31-02BC28** **T31-03BC28** 	**T31-01BL Shape-BL** **T31-02BL** **T31-03BL** 	**T31-01D08 Shape-0.8D** **T31-02D08** **T31-03D08** 	**T31-01D16 Shape-1.6D** **T31-02D16** **T31-03D16** 
T31-01D24 Shape-2.4D **T31-02D24** **T31-03D24** 	**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** 

Optional Tips for FX-1002

Unit: mm



T35-XXD06
"02" for 400°C (A: 64)
"03" for 350°C (A: 64)

T35-02D06 Shape-0.6D **T35-03D06** 	**T35-02D1 Shape-1D** **T35-03D1** 	**T35-02I Shape-I** **T35-03I** 	**T35-02J Shape-J** **T35-03J** 	**T35-02KU Shape-KU** **T35-03KU** 

Features

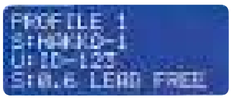
IH (induction heater) for excellent thermal efficiency. Ideal for the most challenging soldering jobs.

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.
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



PROFILE 1
S:HAKKO-1
U:ID-123
S:0.6 LEAD FREE

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

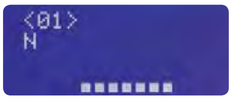
TIP LOAD

The soldering count is displayed.

TIP TIME

The cumulative running time on the iron tip is displayed.

TIP TYPE and NORMAL MODE/BOOST MODE



<01>
N

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

Connectable with micro soldering iron
For micro soldering applications under a microscope

FX-1002 ESD SAFE

Micro Soldering Iron

Tip not included

Packing List

FX-100	Station, Handpiece (FX-1001), Heat resistant pad, Power cord, Sleeve (green), Sleeve (gray), Cleaning wire, Iron holder, Instruction manual
FX-1002 (Conversion kit)	Handpiece, Sleeve (green), Heat resistant pad, 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 T31-02D24 or T31-03D24 tip 193 mm with T31-01D24 tip
Weight*	31 g (with T31-02D24 tip)

* Without cord

Model No.	FX-1002
Temperature range	T35-02 Series: 400°C, T35-03 Series: 350°C
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Heating element	IH (Induction heating)
Cord length	1.3 m
Total length*	166 mm (with T35-02D1 tip)
Weight*	21 g (with T35-02D1 tip)

* Without cord

FX-951 ESD SAFE

High Performance Soldering Station **Digital**

Tip not included

for LEAD FREE ESD SAFE RoHS

Soldering | Micro Soldering | Soldering (Option)

Auto off | SLEEP | Low ℃ | OFFSET

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

FX-950 ESD SAFE

High Performance Soldering Station **Analog**

Tip not included

for LEAD FREE ESD SAFE RoHS

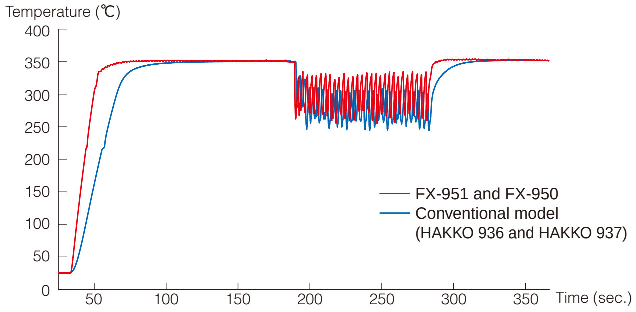
Soldering | Soldering (Option)

SLEEP | OFFSET

- Analog type high-power thermally-controlled 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 × 5 mm

Connectable with micro soldering iron

For micro soldering applications under a microscope

FM-2032 ESD SAFE

Micro Soldering Iron

Tip not included Please see the optional tips on P.51.

for LEAD FREE ESD SAFE RoHS

N_2 Soldering is available with optional parts (P.47 & P.51).

Connectable with N_2 soldering iron

To improve solder wettability and spreadability

FM-2026 ESD SAFE

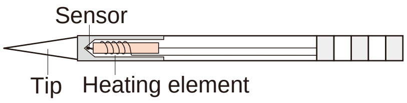
N_2 Soldering Iron

Tip not included Please see the optional tips on P.51.

for LEAD FREE ESD SAFE RoHS

For further details, see the N_2 system (P.46 & P.47).

Composite tip



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

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

Model No.	FM-2032	FM-2026
Power consumption	48 W (24 V)	70 W (24 V)
Temperature range	200 to 450°C	
Tip to ground resistance	<2 Ω	
Tip to ground potential	<2 mV	
Heating element	Composite heater	
Cord length	1.3 m	1.2 m
Total length	170 mm* (with 1D tip)	205 mm** (with 2.4D tip)
Weight	14 g* (with 1D tip)	45 g** (with 2.4D tip and nozzle assembly C)

* Without cord ** Without cord and tube *** Use FM-2026 below 400°C.

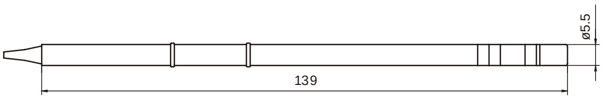
Packing List

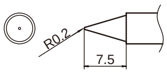
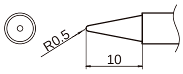
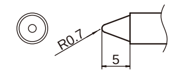
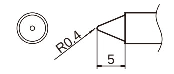
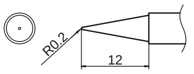
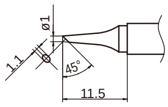
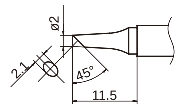
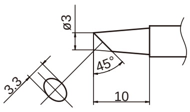
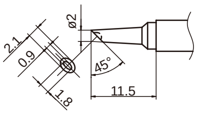
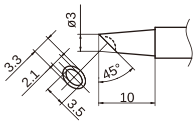
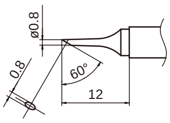
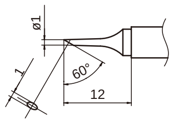
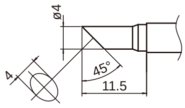
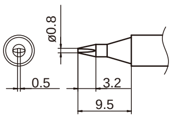
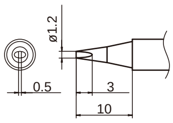
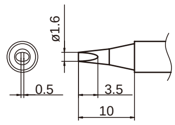
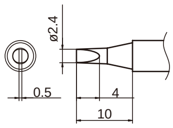
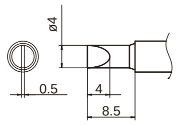
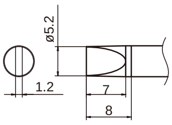
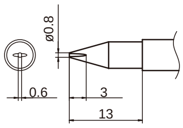
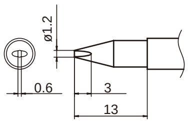
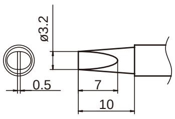
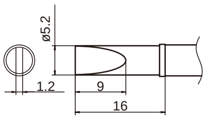
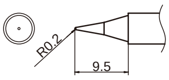
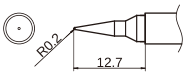
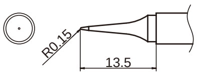
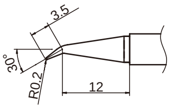
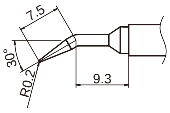
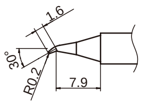
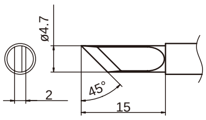
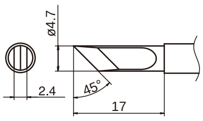
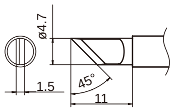
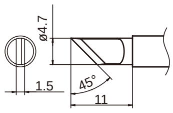
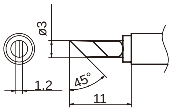
FX-951	Station, Handpiece (FM-2028), Control card, Power cord, Connecting cable, Heat resistant pad, Iron holder, Instruction manual
FX-950	Station, Handpiece (FM-2028), Lock key, Heat resistant pad, Iron holder, Instruction manual
FM-2032 (Conversion kit)	Handpiece, Heat resistant pad, Iron holder, Connecting cable, Instruction manual
FM-2026 (Conversion kit)	Handpiece, Sleeve cover, Sleeve assembly (yellow), Heat resistant pad, Iron holder, Connecting cable, Instruction manual

Optional Tips for FM-2028

Unit: mm

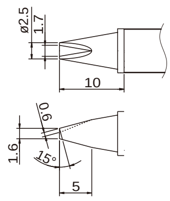
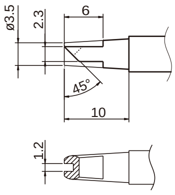
Standard type



B	**T12-B Shape-B** 	**T12-B2 Shape-0.5B** 	**T12-B3 Shape-0.7B** 	**T12-B4 Shape-0.4B** 	**T12-BL Shape-BL** 
BC	**T12-BC1 Shape-1BC** **T12-BCF1*** 	**T12-BC2 Shape-2BC** **T12-BCF2*** 	**T12-BC3 Shape-3BC** **T12-BCF3*** 	**T12-BCM2 Shape-2BC with indent** 	**T12-BCM3 Shape-3BC with indent** 
C	**T12-C08 Shape-0.8C** 	**T12-C1 Shape-1C** 	**T12-C4 Shape-4C** **T12-CF4*** 		
D	**T12-D08 Shape-0.8D** 	**T12-D12 Shape-1.2D** 	**T12-D16 Shape-1.6D** 	**T12-D24 Shape-2.4D** 	**T12-D4 Shape-4D** 
	T12-D52 Shape-5.2D 	**T12-DL08 Shape-0.8DL** 	**T12-DL12 Shape-1.2DL** 	**T12-DL32 Shape-3.2DL** 	**T12-DL52 Shape-5.2DL** 
I	**T12-I Shape-I** 	**T12-IL Shape-IL** 	**T12-ILS Shape-ILS** 		
J	**T12-J02 Shape-0.2J** 	**T12-JL02 Shape-0.2JL** 	**T12-JS02 Shape-0.2JS** 		
K	**T12-K Shape-K** 	**T12-KF Shape-KF** 	**T12-KL Shape-KL** 	**T12-KR Shape-KR** 	**T12-KU Shape-KU** 

* These tips are tinned on the soldering surface only.

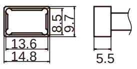
Concave type

T12-1610	T12-1612
	

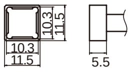
SMD type

Quad

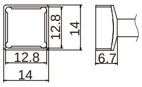
T12-1201 Quad 13.6 x 8.5



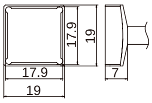
T12-1202 Quad 10.3 x 10.3



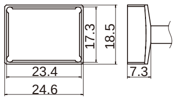
T12-1203 Quad 12.8 x 12.8



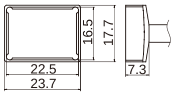
T12-1204 Quad 17.9 x 17.9



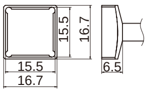
T12-1205 Quad 23.4 x 17.3



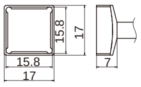
T12-1206 Quad 22.5 x 16.5



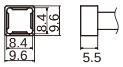
T12-1207 Quad 15.5 x 15.5



T12-1208 Quad 15.8 x 15.8

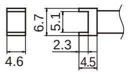


T12-1209 Quad 8.4 x 8.4

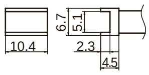


Tunnel

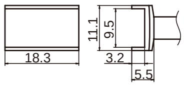
T12-1001 Tunnel 5.1 x 4.6



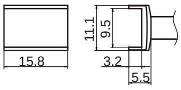
T12-1002 Tunnel 5.1 x 10.4



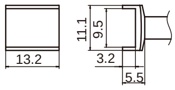
T12-1003 Tunnel 9.5 x 18.3



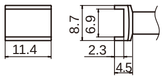
T12-1004 Tunnel 9.5 x 15.8



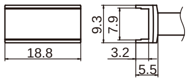
T12-1005 Tunnel 9.5 x 13.2



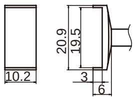
T12-1006 Tunnel 6.9 x 11.4



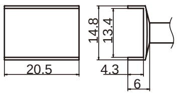
T12-1007 Tunnel 7.9 x 18.8



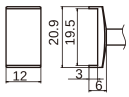
T12-1008 Tunnel 19.5 x 10.2



T12-1009 Tunnel 13.4 x 20.5

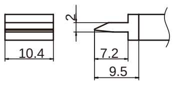


T12-1010 Tunnel 19.5 x 12

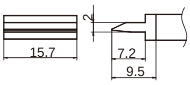


Spatula

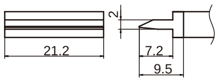
T12-1401 Spatula 10.4



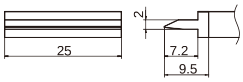
T12-1402 Spatula 15.7



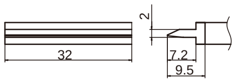
T12-1403 Spatula 21.2



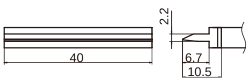
T12-1404 Spatula 25



T12-1405 Spatula 32

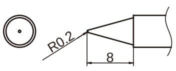


T12-1406 Spatula 40

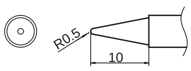


Long life type

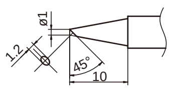
T12-BZ Shape-B (Z)



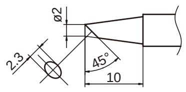
T12-B2Z Shape-0.5B (Z)



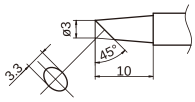
T12-BC1Z Shape-1BC (Z)
T12-BCF1Z*



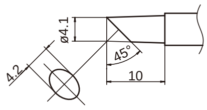
T12-BC2Z Shape-2BC (Z)
T12-BCF2Z*



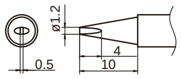
T12-BC3Z Shape-3BC (Z)
T12-BCF3Z*



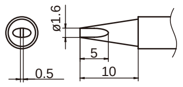
T12-C4Z Shape-4C (Z)
T12-CF4Z*



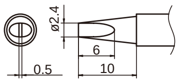
T12-D12Z Shape-1.2D (Z)



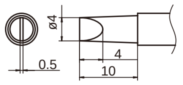
T12-D16Z Shape-1.6D (Z)



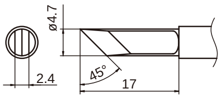
T12-D24Z Shape-2.4D (Z)



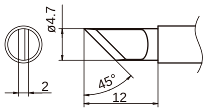
T12-D4Z Shape-4D (Z)



T12-KFZ Shape-KF (Z)

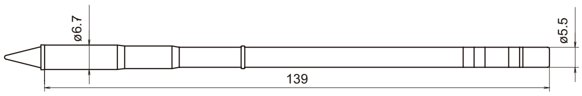


T12-KRZ Shape-KR (Z)

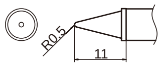


* These tips are tinned on the soldering surface only.

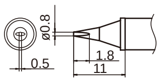
Heavy duty type



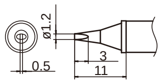
T12-WB2 Shape-0.5WB



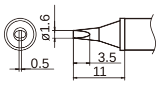
T12-WD08 Shape-0.8WD



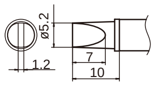
T12-WD12 Shape-1.2WD



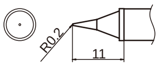
T12-WD16 Shape-1.6WD



T12-WD52 Shape-5.2WD



T12-WI Shape-WI



FM-203 ESD SAFE

2-Port High Performance Rework Station Digital

Tip not included

for LEAD FREE
ESD SAFE
RoHS

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

Auto off
SLEEP
Low ℃
OFFSET

- 2 handpieces can be connected at the same time.

FM-206 ESD SAFE

3-Port High Performance Rework Station Digital

Tip not included
Nozzle not included

for LEAD FREE
ESD SAFE
RoHS

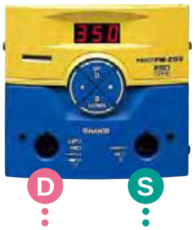
Soldering
Micro Soldering
Heavy duty
Soldering (Option)
Desoldering
Rework (Option)
Rework

Auto off
SLEEP
Low ℃
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

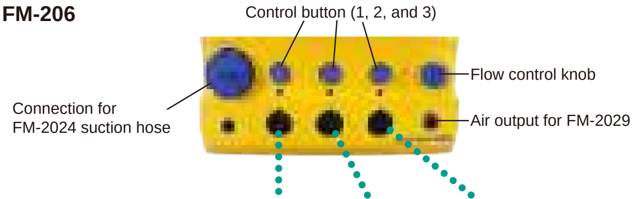
FM-203



Handpiece	Channel D connector	Channel S connector
FM-2027	○	○
FM-2022 *1	○	×
FM-2023 *1	○	×
FM-2024 *2	○	○
FM-2026 *3	○	○
FM-2030 *1	○	×
FM-2031 *1 & *3	○	×
FM-2032	○	○

*1 When FM-2022, FM-2023, FM-2030 or FM-2031 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-2031 and FM-2026, each handpiece needs an N_2 generator (FX-780), flowmeter (FX-791), compressor, regulator, etc. For further details, see N_2 system (P.46 & P.47).

FM-206


Control button (1, 2, and 3)
Flow control knob
Connection for FM-2024 suction hose
Air output for FM-2029

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), flowmeter (FX-791), compressor, regulator, etc. For further details, see N_2 system (P.46 & P.47).
NOTE: FM-2024 and FM-2029 can't be used at the same time.

Accessories

FM-2027 ESD SAFE

Soldering Iron

Tip not included

for LEAD FREE ESD SAFE RoHS

FM-2026 ESD SAFE

N_2 Soldering Iron

Tip not included

for LEAD FREE ESD SAFE RoHS

FM-2029 ESD SAFE

Hot-Air Pencil

Nozzle not included

for LEAD FREE ESD SAFE RoHS

FM-2030 ESD SAFE

Heavy Duty Soldering Iron

Tip not included

for LEAD FREE ESD SAFE RoHS

FM-2031 ESD SAFE

N_2 Heavy Duty Soldering Iron

Tip not included

for LEAD FREE ESD SAFE RoHS

FM-2032 ESD SAFE

Micro Soldering Iron

Tip not included

for LEAD FREE ESD SAFE RoHS

N_2 Soldering is available
with optional parts (P.47 & P.51).

FM-2022 ESD SAFE

SMD Hot Tweezers

Tip not included

for LEAD FREE ESD SAFE RoHS

FM-2023 ESD SAFE

Mini SMD Hot Tweezers

Tip included

for LEAD FREE ESD SAFE RoHS

FM-2024 ESD SAFE

Desoldering Tool

Nozzle not included

for LEAD FREE ESD SAFE RoHS

Station Type and Accessories

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-2024: 350 to 450°C FM-2030/2031: 200 to 500°C FM-2032: 200 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	410 W (450 W, max.)
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/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 mm nozzle)
Weight**	65 g (with ø1 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 mm nozzle)
Weight***	50 g (with ø4 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 mm nozzle)
Weight**	65 g (with ø1 mm nozzle)

Desolder Control Box

Power consumption	12 W (24 V)
Vacuum generator	Ejector type
Vacuum pressure	93 kPa (700 mmHg, max.)
Suction flow	20 L /min.
Nozzle to ground potential	<2 mV
Applied air pressure	490 kPa (5 kgf/cm^2) 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 ** Without cord and hose

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-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

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

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

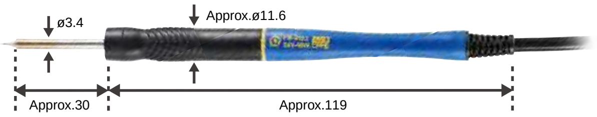
FM-2024 (Conversion kit, with DCB)	Desoldering tool, Handle (for gun configuration), Desoldering control box, Filter pipe assembly, Iron holder, Cleaning drill for heating element, Nozzle remover, Ceramic paper filter (10 pcs), Connecting cable, Instruction manual
FM-2026 (Conversion kit)	Handpiece, 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-2029 Features

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

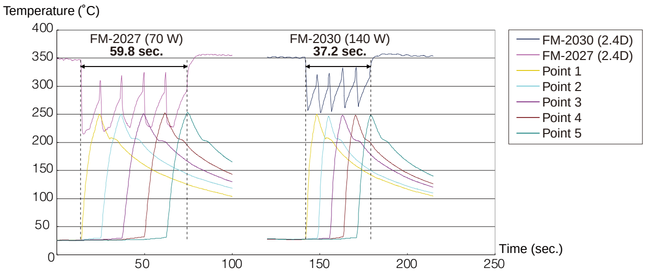
FM-2032 Size

Unit: mm



FM-2030 Features

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



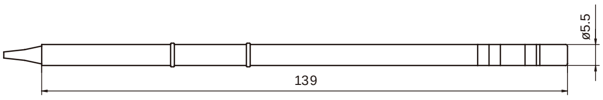
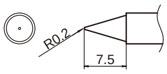
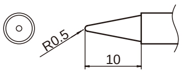
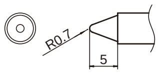
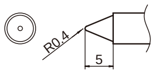
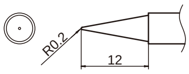
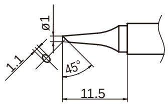
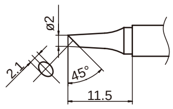
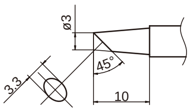
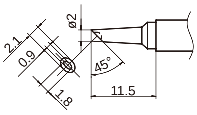
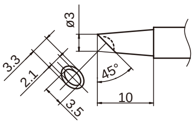
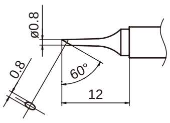
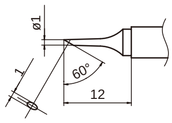
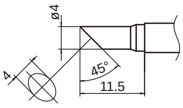
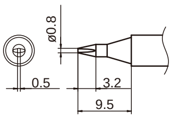
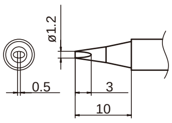
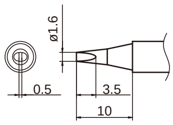
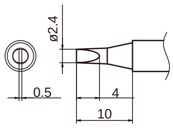
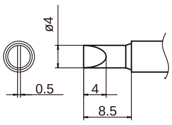
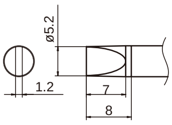
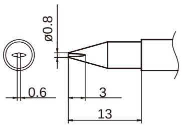
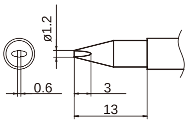
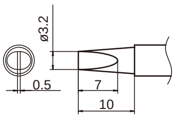
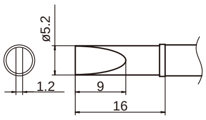
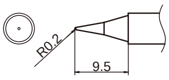
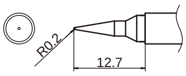
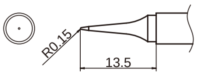
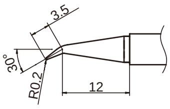
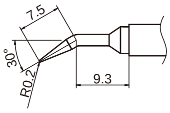
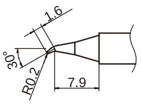
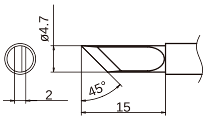
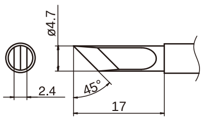
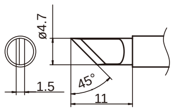
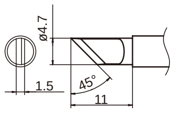
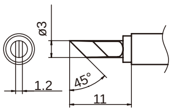
Test criteria

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 mm

Optional Tips for FM-2027

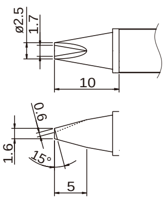
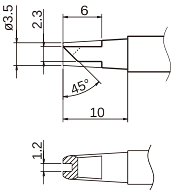
Unit: mm

Standard type

					
B	**T12-B Shape-B** 	**T12-B2 Shape-0.5B** 	**T12-B3 Shape-0.7B** 	**T12-B4 Shape-0.4B** 	**T12-BL Shape-BL** 
BC	**T12-BC1 Shape-1BC** **T12-BCF1*** 	**T12-BC2 Shape-2BC** **T12-BCF2*** 	**T12-BC3 Shape-3BC** **T12-BCF3*** 	**T12-BCM2 Shape-2BC** **with indent** 	**T12-BCM3 Shape-3BC** **with indent** 
C	**T12-C08 Shape-0.8C** 	**T12-C1 Shape-1C** 	**T12-C4 Shape-4C** **T12-CF4*** 		
D	**T12-D08 Shape-0.8D** 	**T12-D12 Shape-1.2D** 	**T12-D16 Shape-1.6D** 	**T12-D24 Shape-2.4D** 	**T12-D4 Shape-4D** 
	T12-D52 Shape-5.2D 	**T12-DL08 Shape-0.8DL** 	**T12-DL12 Shape-1.2DL** 	**T12-DL32 Shape-3.2DL** 	**T12-DL52 Shape-5.2DL** 
I	**T12-I Shape-I** 	**T12-IL Shape-IL** 	**T12-ILS Shape-ILS** 		
J	**T12-J02 Shape-0.2J** 	**T12-JL02 Shape-0.2JL** 	**T12-JS02 Shape-0.2JS** 		
K	**T12-K Shape-K** 	**T12-KF Shape-KF** 	**T12-KL Shape-KL** 	**T12-KR Shape-KR** 	**T12-KU Shape-KU** 

* These tips are tinned on the soldering surface only.

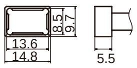
Concave type

T12-1610 	**T12-1612** 

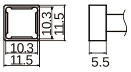
SMD type

Quad

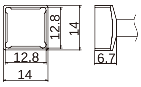
T12-1201 Quad 13.6 x 8.5



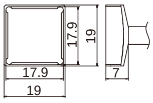
T12-1202 Quad 10.3 x 10.3



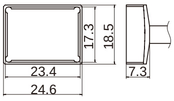
T12-1203 Quad 12.8 x 12.8



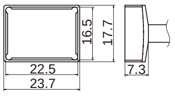
T12-1204 Quad 17.9 x 17.9



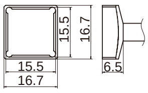
T12-1205 Quad 23.4 x 17.3



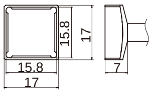
T12-1206 Quad 22.5 x 16.5



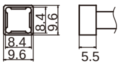
T12-1207 Quad 15.5 x 15.5



T12-1208 Quad 15.8 x 15.8

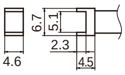


T12-1209 Quad 8.4 x 8.4

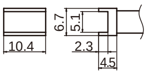


Tunnel

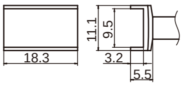
T12-1001 Tunnel 5.1 x 4.6



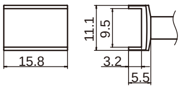
T12-1002 Tunnel 5.1 x 10.4



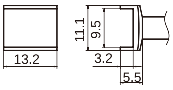
T12-1003 Tunnel 9.5 x 18.3



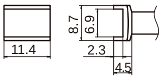
T12-1004 Tunnel 9.5 x 15.8



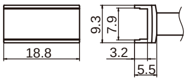
T12-1005 Tunnel 9.5 x 13.2



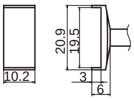
T12-1006 Tunnel 6.9 x 11.4



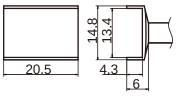
T12-1007 Tunnel 7.9 x 18.8



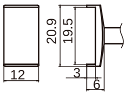
T12-1008 Tunnel 19.5 x 10.2



T12-1009 Tunnel 13.4 x 20.5

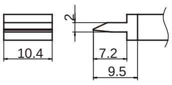


T12-1010 Tunnel 19.5 x 12

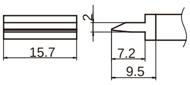


Spatula

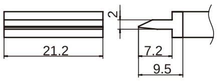
T12-1401 Spatula 10.4



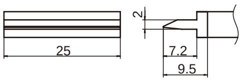
T12-1402 Spatula 15.7



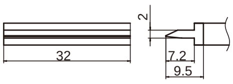
T12-1403 Spatula 21.2



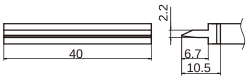
T12-1404 Spatula 25



T12-1405 Spatula 32

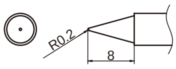


T12-1406 Spatula 40

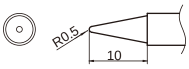


Long life type

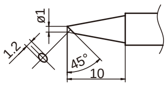
T12-BZ Shape-B (Z)



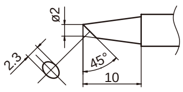
T12-B2Z Shape-0.5B (Z)



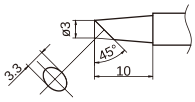
T12-BC1Z Shape-1BC (Z)
T12-BCF1Z*



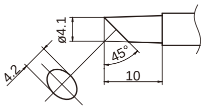
T12-BC2Z Shape-2BC (Z)
T12-BCF2Z*



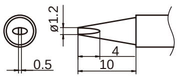
T12-BC3Z Shape-3BC (Z)
T12-BCF3Z*



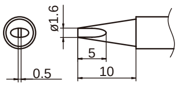
T12-C4Z Shape-4C (Z)
T12-CF4Z*



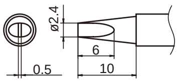
T12-D12Z Shape-1.2D (Z)



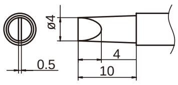
T12-D16Z Shape-1.6D (Z)



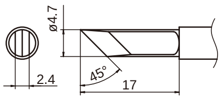
T12-D24Z Shape-2.4D (Z)



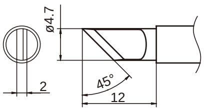
T12-D4Z Shape-4D (Z)



T12-KFZ Shape-KF (Z)

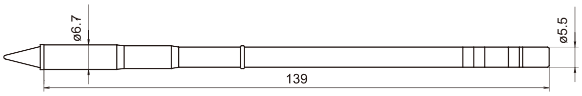


T12-KRZ Shape-KR (Z)

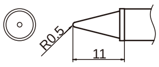


* These tips are tinned on the soldering surface only.

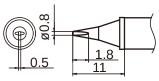
Heavy duty type



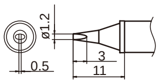
T12-WB2 Shape-0.5WB



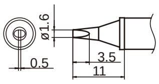
T12-WD08 Shape-0.8WD



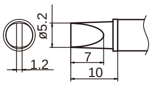
T12-WD12 Shape-1.2WD



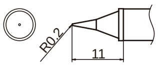
T12-WD16 Shape-1.6WD



T12-WD52 Shape-5.2WD



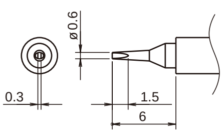
T12-WI Shape-WI



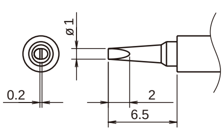
Optional Tips for FM-2032

Unit: mm

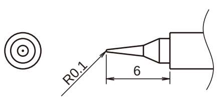
T30-D06 Shape-0.6D



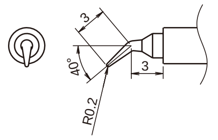
T30-D1 Shape-1D



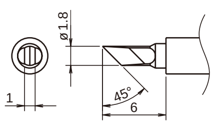
T30-I Shape-I



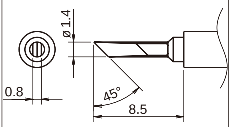
T30-J Shape-J



T30-KU Shape-KU



T30-KN Shape-KN



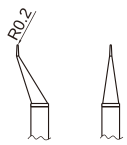
Optional Tips for FM-2022

Unit: mm

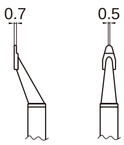
CHIP

*1 set: 2 pcs

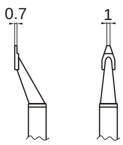
T8-1001 Chip 0.5I



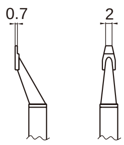
T8-1002 Chip 0.5C



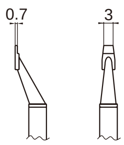
T8-1003 Chip 1L



T8-1004 Chip 2L

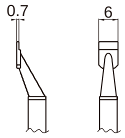


T8-1013 Chip 3L

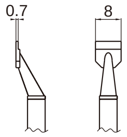


SOP

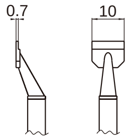
T8-1005 SOP 6L



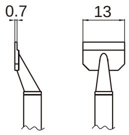
T8-1006 SOP 8L



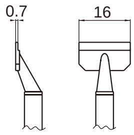
T8-1007 SOP 10L



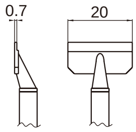
T8-1008 SOP 13L



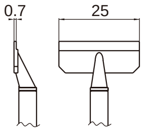
T8-1009 SOP 16L



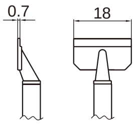
T8-1010 SOP 20L



T8-1011 SOP 25L



T8-1012 SOP 18L



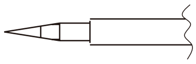
Replacement Tips for FM-2023

Unit: mm

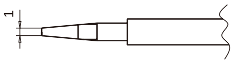
CHIP

*1 set: 2 pcs

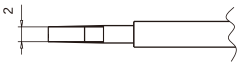
T9-I Chip I



T9-L1 Chip 1L



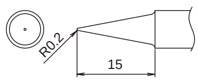
T9-L2 Chip 2L



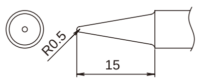
Optional Tips for FM-2030

Unit: mm

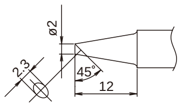
T22-BL Shape-BL



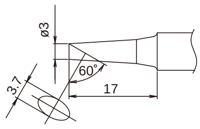
T22-BL2 Shape-2BL



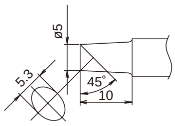
T22-BC2 Shape-2BC



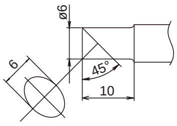
T22-C3 Shape-3C



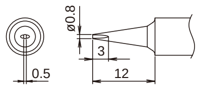
T22-C5 Shape-5C



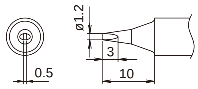
T22-C6 Shape-6C



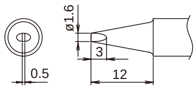
T22-D08 Shape-0.8D



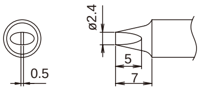
T22-D12 Shape-1.2D



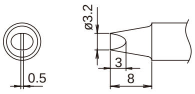
T22-D16 Shape-1.6D



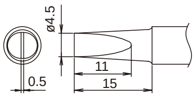
T22-D24 Shape-2.4D



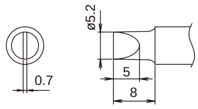
T22-D32 Shape-3.2D



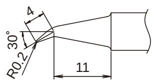
T22-D45 Shape-4.5D



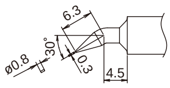
T22-D52 Shape-5.2D



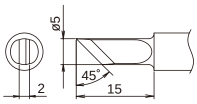
T22-J02 Shape-0.2J



T22-JD08 Shape-0.8JD



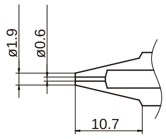
T22-K Shape-K



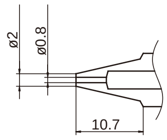
Optional Nozzles for FM-2024

Unit: mm

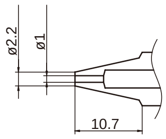
N1-06 Nozzle ø0.6



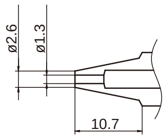
N1-08 Nozzle ø0.8



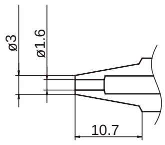
N1-10 Nozzle ø1



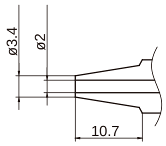
N1-13 Nozzle ø1.3



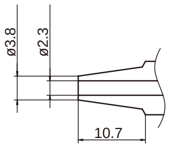
N1-16 Nozzle ø1.6



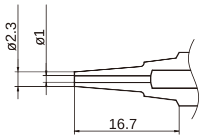
N1-20 Nozzle ø2



N1-23 Nozzle ø2.3

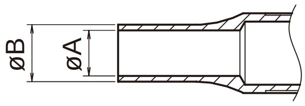


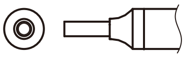
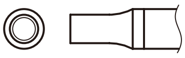
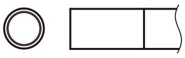
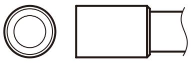
N1-L10 Nozzle ø1 long



Optional Nozzles for FM-2029

Unit: mm



		øA	øB
N4-01 Nozzle ø2		2	2.5
N4-02 Nozzle ø4		4	5
N4-03 Nozzle ø6		6	7
N4-04 Nozzle ø8		8	9

Optional Tips for the FM-2026

Please see the optional tips on P.51.

Optional Tips for the FM-2031

Please see the optional tips on P.50.

FX-801 ESD SAFE

Heavy Duty Soldering Station Digital

Tip not included

for LEAD FREE ESD SAFE RoHS

Heavy duty

Soldering (Option)

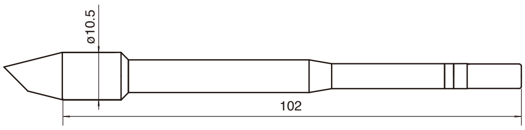
Auto off SLEEP Low ℃ OFFSET PRE℃

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

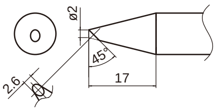
Optional Tips for FX-8002

Unit: mm

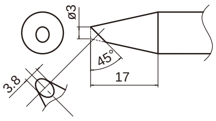
Regular type



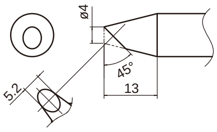
T33-BC2 Shape-2BC



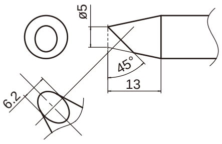
T33-BC3 Shape-3BC



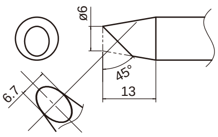
T33-BC4 Shape-4BC



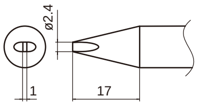
T33-BC5 Shape-5BC



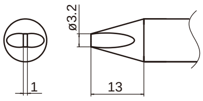
T33-BC6 Shape-6BC



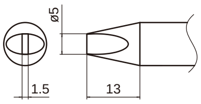
T33-D24 Shape-2.4D



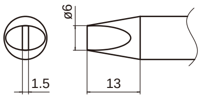
T33-D32 Shape-3.2D



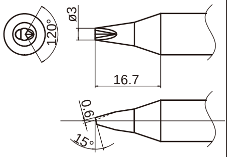
T33-D5 Shape-5D



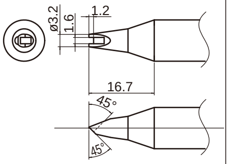
T33-D6 Shape-6D



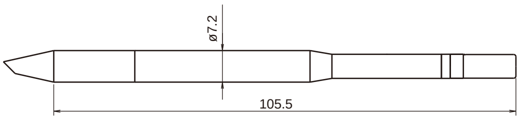
T33-1610



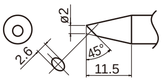
T33-1611



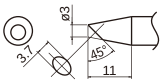
Slim type



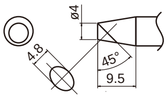
T33-SSBC2 Shape-2SSBC



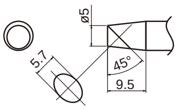
T33-SSBC3 Shape-3SSBC



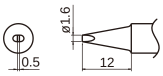
T33-SSBC4 Shape-4SSBC



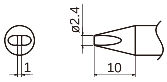
T33-SSBC5 Shape-5SSBC



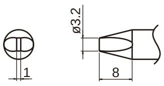
T33-SSD16 Shape-1.6SSD



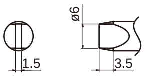
T33-SSD24 Shape-2.4SSD



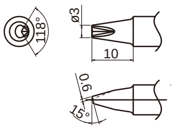
T33-SSD32 Shape-3.2SSD



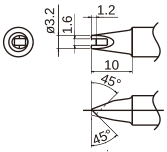
T33-SSD6 Shape-6SSD



T33-SS1610



T33-SS1611



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.

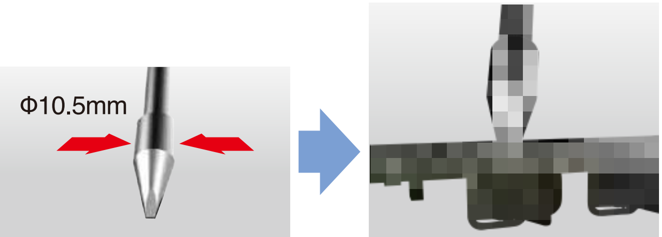
For further details, please scan here.

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.

A wide variety of tip shapes

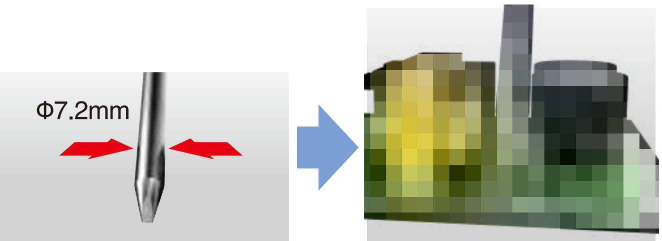
・Regular type

Best suited for components with high thermal mass such as transformers and coils.



・Slim type

Slimmed-down tips for narrow spaces without losing of enough power.



Connectable with N_2 soldering iron
To improve solder wettability and spreadability

FX-8003

N_2 Soldering Iron

Tip not included Please see the optional tips on P.49.

For further details, see the N_2 system (P.46 & P.47).

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)
Temperature range	50 to 500ºC
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

FX-838 ESD SAFE

Heavy Duty Soldering Iron Digital

Tip not included

for LEAD FREE ESD SAFE RoHS

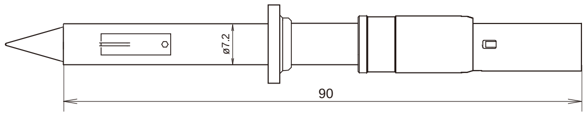
Heavy duty
Soldering (Option)

Auto off SLEEP Low ℃ OFFSET PRE℃

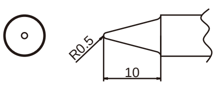
- High powered 150 W soldering iron
- Best suited for soldering of power-supply boards, heat sinks, and shield cases
- Applicable also to the soldering of multilayer boards with micro components

Optional Tips for FX-8301

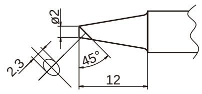
Unit: mm



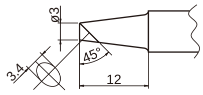
T20-B2 Shape-0.5B



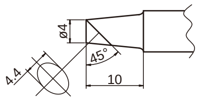
T20-BC2 Shape-2BC
T20-BCF2*



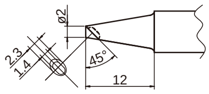
T20-BC3 Shape-3BC
T20-BCF3*



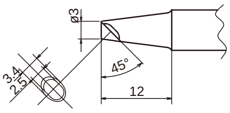
T20-BC4 Shape-4BC
T20-BCF4*



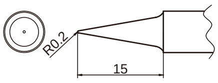
T20-BCM2 Shape-2BC with indent



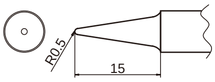
T20-BCM3 Shape-3BC with indent



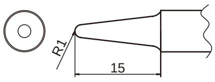
T20-BL Shape-BL



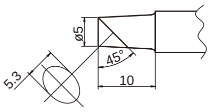
T20-BL2 Shape-2BL



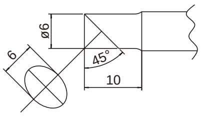
T20-BL3 Shape-3BL



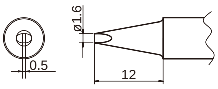
T20-C5 Shape-5C



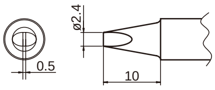
T20-C6 Shape-6C



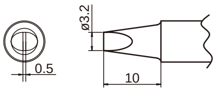
T20-D16 Shape-1.6D



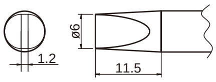
T20-D24 Shape-2.4D



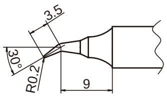
T20-D32 Shape-3.2D



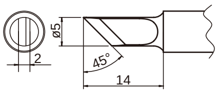
T20-D6 Shape-6D



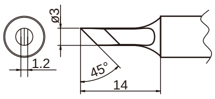
T20-J02 Shape-0.2J



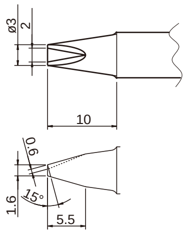
T20-K Shape-K



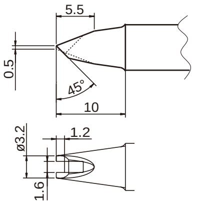
T20-KU Shape-KU



T20-1610



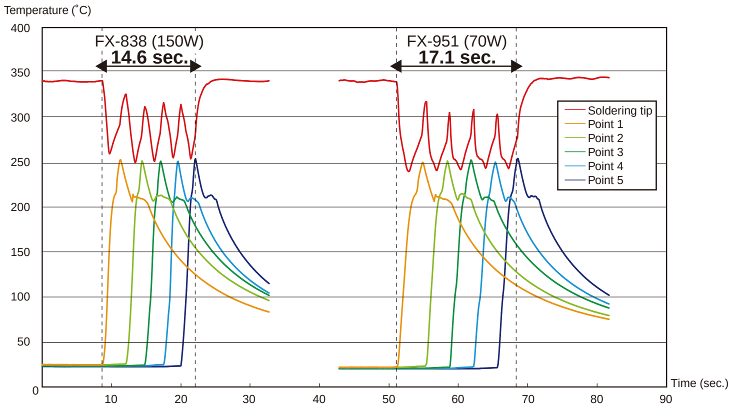
T20-1611



* These tips are tinned on the soldering surface only.

Features

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

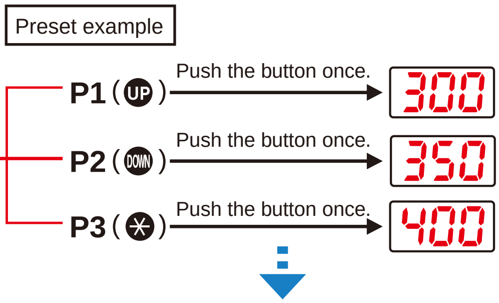


Test criteria

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.



One push of a button can quickly recall each setting.

Connectable with N_2 soldering iron

To improve solder wettability and spreadability

FX-8302 ESD SAFE

N_2 Soldering Iron

Tip not included Please see the optional tips on P.50.

For further details, see the N_2 system (P.46 & P.47).

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

FX-888D ESD SAFE

All-Round Soldering Station **Digital**

Tip included

for LEAD FREE | ESD SAFE | RoHS

Soldering | N2 Soldering (Option) | Solder Feed Soldering (Option) | Hot Tweezer Rework (Option)

Low ℃ | OFFSET | PRE ℃

- 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.

FX-889 ESD SAFE

2-Port All-Round Soldering Station **Digital**

Tip included

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

for LEAD FREE | ESD SAFE | RoHS

Soldering | N2 Soldering (Option) | Solder Feed Soldering (Option) | Hot Tweezer Rework (Option)

Low ℃ | OFFSET | PRE ℃

- 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.

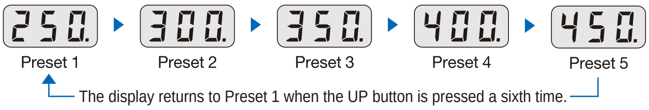
Common features

Strict temperature management

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

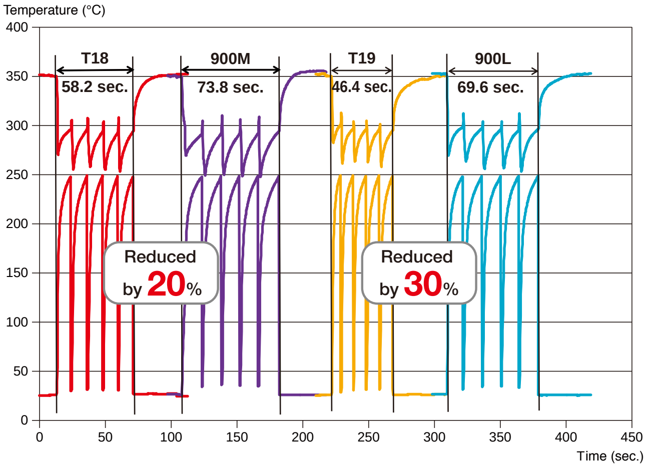
- **Password function**
  Settings can be locked using a password to prevent them from being changed unexpectedly.

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


250.
300.
350.
400.
450.
Preset 1
Preset 2
Preset 3
Preset 4
Preset 5
The display returns to Preset 1 when the UP button is pressed a sixth time.

- **Adjustment mode**
  With adjustment mode, what used to be a troublesome procedure is now as simple as entering the measured tip temperature in 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-100B)

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)	217 mm (with B tip)
Weight*	46 g (with B tip)	46 g (with B tip)

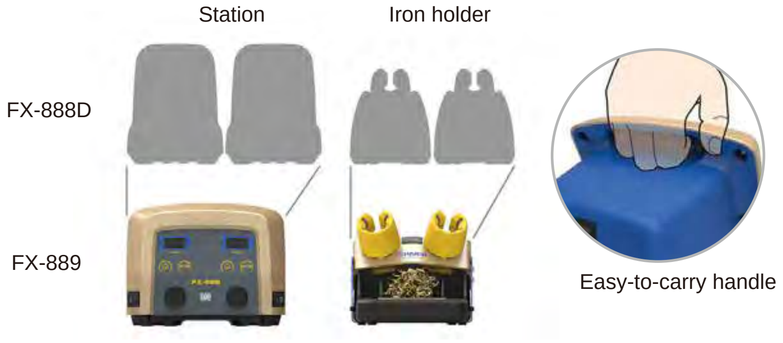
* Without cord

Station Type and Accessories

Features of FX-889

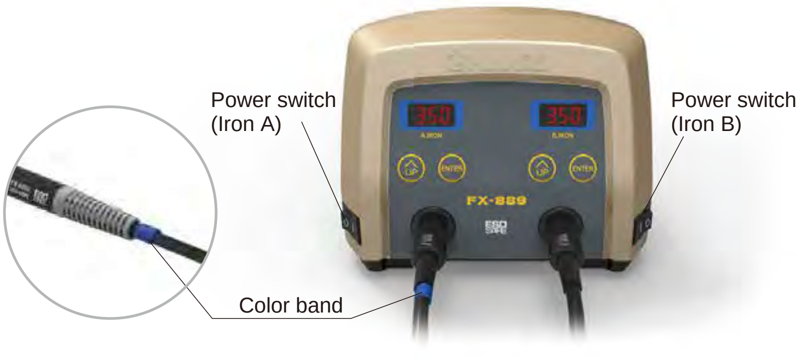
User-Friendly Design

- **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.

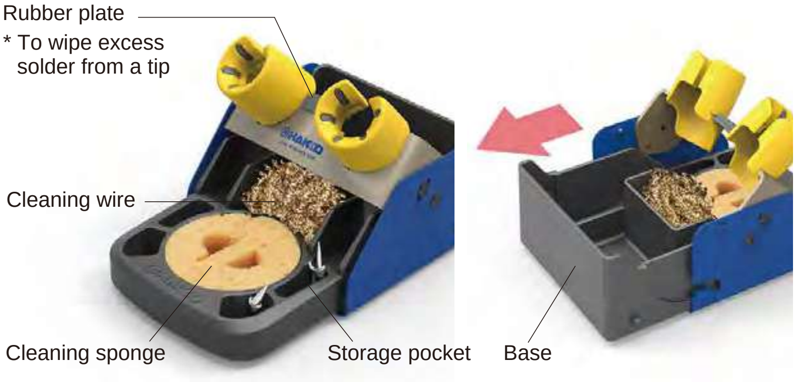


- **Power-saving design**
  Independent switches cut the power for each iron when not in use.
  Power-saving design minimizes standby electricity.

- **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



FX-8801 ESD SAFE

Soldering Iron M type

Tip included

for LEAD FREE ESD SAFE RoHS

FX-8802 ESD SAFE

N_2 Soldering Iron

Tip included

for LEAD FREE ESD SAFE RoHS

FX-8803 ESD SAFE

Soldering Gun

Tip included

for LEAD FREE ESD SAFE RoHS

FX-8804 ESD SAFE

SMD Hot Tweezers

Tip included

for LEAD FREE ESD SAFE RoHS

FX-8805 ESD SAFE

Soldering Iron L 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

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

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 mm
Usable solder diameter	0.6, 0.8, 1, 1.2, 1.6 mm
Cord length	1.1 m
Dimensions	170 (W) × 180 (H) × 23 (D) mm
Weight*	207 g

* Without cord

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

* 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.
** Without cord

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

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

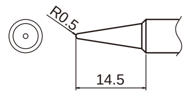
Part No.	Name	Specifications
B5122	Tip enclosure	With nut, required when converting from FX-8801 to FX-8805
B3730	Nut and tip enclosure	Required when converting from FX-8805 to FX-8801

Replacement Tips for FX-8801 and FX-8803

Unit: mm

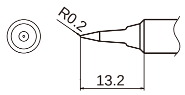
Applicable for FX-8803

T18-B Shape-B

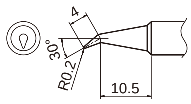


Applicable for FX-8803

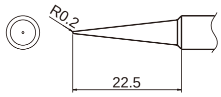
T18-SB Shape-SB



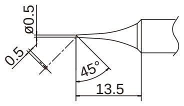
T18-BR02 Shape-0.2BR



T18-BL Shape-BL

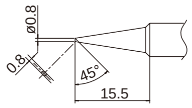


T18-C05 Shape-0.5C



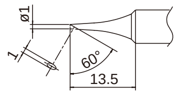
Applicable for FX-8803

T18-C08 Shape-0.8C

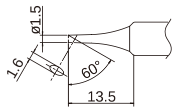


Applicable for FX-8803 (Only C1)

T18-C1 Shape-1C
T18-CF1*

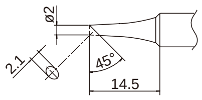


T18-CF15* Shape-1.5C



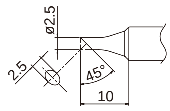
Applicable for FX-8803

T18-C2 Shape-2C
T18-CF2*



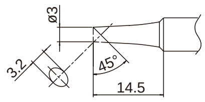
Applicable for FX-8803

T18-CSF25* Shape-2.5CS



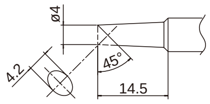
Applicable for FX-8803

T18-C3 Shape-3C
T18-CF3*



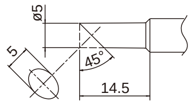
Applicable for FX-8803

T18-C4 Shape-4C
T18-CF4*



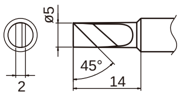
Applicable for FX-8803

T18-C5 Shape-5C



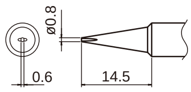
Applicable for FX-8803

T18-K Shape-K



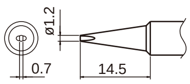
Applicable for FX-8803

T18-D08 Shape-0.8D



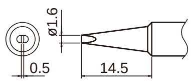
Applicable for FX-8803

T18-D12 Shape-1.2D



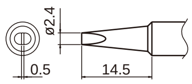
Applicable for FX-8803

T18-D16 Shape-1.6D



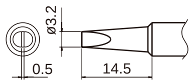
Applicable for FX-8803

T18-D24 Shape-2.4D

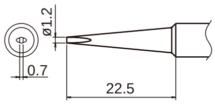


Applicable for FX-8803

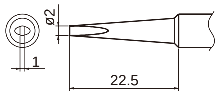
T18-D32 Shape-3.2D



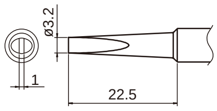
T18-DL12 Shape-1.2DL



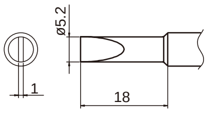
T18-DL2 Shape-2DL



T18-DL32 Shape-3.2DL

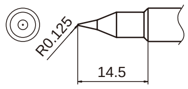


T18-S3 Shape-S3

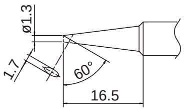


Applicable for FX-8803

T18-S4 Shape-S4

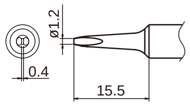


T18-S6 Shape-S6



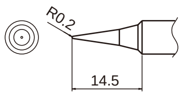
Applicable for FX-8803

T18-S9 Shape-S9



Applicable for FX-8803

T18-I Shape-I



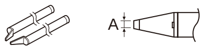
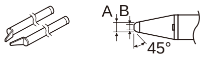
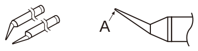
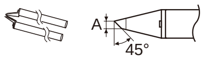
* These tips are tinned on the soldering surface only.

Replacement Tips and Nozzles for FX-8802

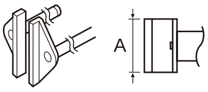
Please see the replacement tips on P.51.

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	

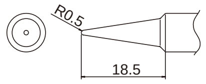
For SOP Component

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	

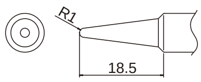
Replacement Tips for FX-8805

Unit: mm

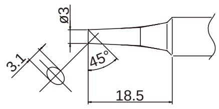
T19-B Shape-B



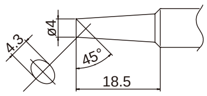
T19-B2 Shape-2B



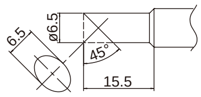
T19-C3 Shape-3C



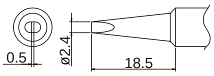
T19-C4 Shape-4C



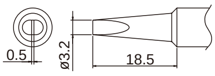
T19-C65 Shape-6.5C



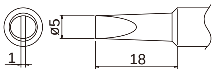
T19-D24 Shape-2.4D



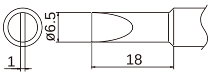
T19-D32 Shape-3.2D



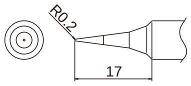
T19-D5 Shape-5D



T19-D65 Shape-6.5D



T19-I Shape-I



- The preheating effect is achieved by passing nitrogen gas along the heating element in the hand piece.
- Improvement of wettability and spreadability
- Preventing oxidation

FX-780 / FX-781

N_2 Generator

for LEAD FREE RoHS

- Highest concentration of nitrogen gas: 99.9%
- Compact design reduces footprint.
- Large-capacity type accepts 2 soldering irons (FX-781).

FX-791

N_2 Flowmeter

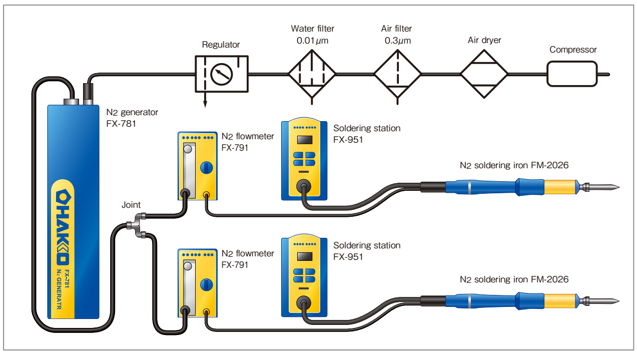
for LEAD FREE RoHS

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

Connection Method

For two soldering irons

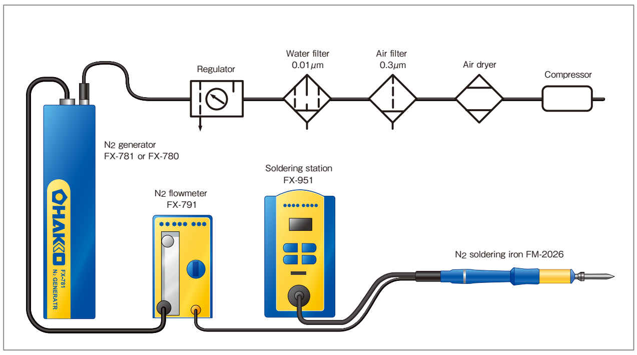
Large-capacity type：FX-781



＊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)

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) × 282 (H) × 71 (L) mm	73 (W) × 407 (H) × 71 (L) mm
Weight**	1.5 kg	2 kg

* Without sockets and valve
** Without racks

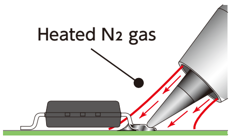
Model No.	FX-791
Pressure of discharged gas	0.2 MPa (2 kgf/cm^2)
Gas flow	0.25 to 2.5 L /min.
Dimensions	70 (W) × 121 (H) × 134 (D) mm
Weight	600 g

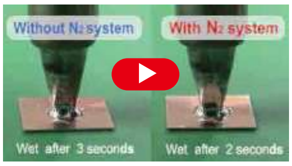
Packing List

FX-780	Unit, Rack for unit (2 pcs), Instruction manual
FX-781	Unit, Racks for unit (4 pcs), Instruction manual
FX-791	Unit, Instruction manual

Effects of N_2 system

N_2 gas is heated inside soldering iron and is discharged from the tip end. It prevents soldering joint from oxidation and gives preheating effect to workpiece. As a result, solderability increases.

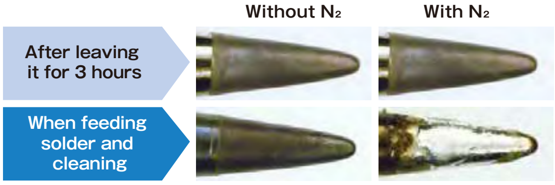




For further details, please scan here.

•Preventing oxidation

Heated N_2 gas reduces the oxidization of tips (iron plating). As a result, the wettability of tips is improved.

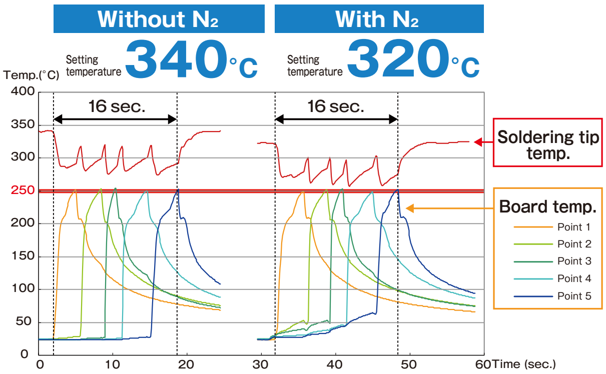

Without N_2
With N_2
After leaving it for 3 hours
When feeding solder and cleaning

■ Test criteria

・After applying power for 3 hours with the temperature set at 400°C, feed solder and perform cleaning, and then compare the conditions.

•Preheating effect

Heated N_2 gas preheats the workpiece. As a result, even if the temperature setting is low, soldering can be finished in the same time as before.



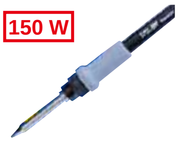
■ Test criteria

Board	Paper phenol copper board
Component	Connector
Solder	Lead-free solder (Sn-3Ag-0.5Cu) Φ0.5mm
Tip shape	T12-D24 and T13-D24
Measurement method	Measure the time until the workpiece reached to 250℃ at 5-points

- Compatible with no-clean soldering(low-activity flux)
- Solves the insufficient heat supply problems which may occur during soldering of multilayer boards
- Reduces cracking in multilayer ceramic capacitors by thermal stress
- Reduces soldering time
- Relieves loads applied to heat-sensitive parts
- Reduces tip oxidation

The use of N_2 gas improves workability, quality stability and reduces running cost.

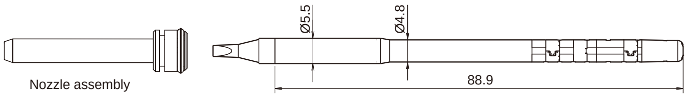
Applicable Soldering Station

	N_2 Soldering Iron	Soldering Station
IoT Capable	FN-1102 **95 W** 	FN-1010
Heavy Duty	FX-8003 **260 W** 	FX-801
	FX-8302 **150 W** 	FX-838
High Performance	FM-2031 **140 W** 	FM-206 FM-203
	FM-2032 **48 W** 	FX-951 FM-206 FM-203
	FM-2026 **70 W** * Use FM-2026 below 400°C.	FX-951 FM-206 FM-203 FM-204 FX-950
All-Round	FX-8802 **65 W** * Use FX-8802 below 450°C.	FX-888D FX-889

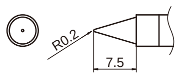
Optional Tips and Nozzle Assemblies for FN-1102

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

Unit: mm

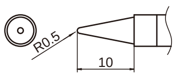


T36-B Shape-0.2B



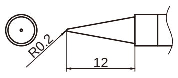
B5233 Nozzle assembly A

T36-B2 Shape-0.5B



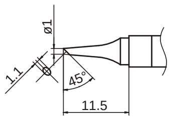
B5234 Nozzle assembly B

T36-BL Shape-BL



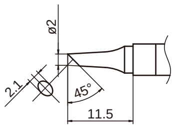
B5234 Nozzle assembly B

T36-BC1 Shape-1BC



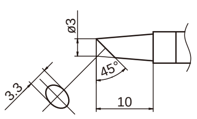
B5235 Nozzle assembly C

T36-BC2 Shape-2BC



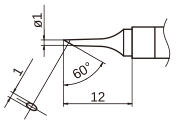
B5234 Nozzle assembly B

T36-BC3 Shape-3BC



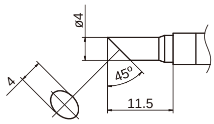
B5236 Nozzle assembly D

T36-C1 Shape-1C



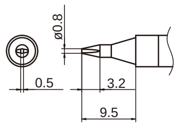
B5235 Nozzle assembly C

T36-C4 Shape-4C



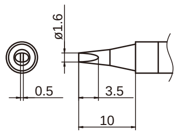
B5236 Nozzle assembly D

T36-D08 Shape-0.8D



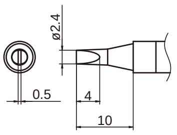
B5233 Nozzle assembly A

T36-D16 Shape-1.6D



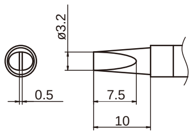
B5233 Nozzle assembly A

T36-D24 Shape-2.4D



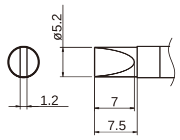
B5233 Nozzle assembly A

T36-DL32 Shape-3.2DL



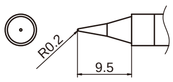
B5237 Nozzle assembly E

T36-D52 Shape-5.2D



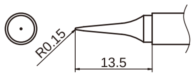
B5237 Nozzle assembly E

T36-I Shape-I



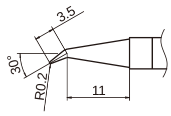
B5233 Nozzle assembly A

T36-ILS Shape-ILS



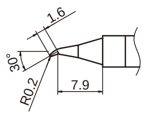
B5235 Nozzle assembly C

T36-J02 Shape-0.2J



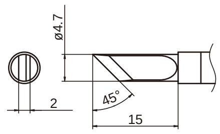
B5234 Nozzle assembly B

T36-JS02 Shape-0.2JS



B5233 Nozzle assembly A

T36-K Shape-K



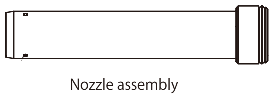
B5237 Nozzle assembly E

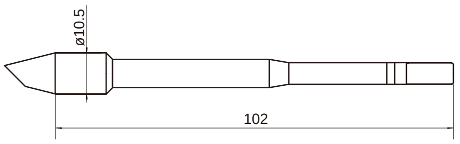
Optional Tips and Nozzle Assemblies for FX-8003

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

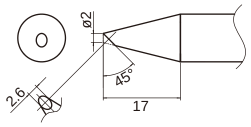
Unit: mm

Regular type



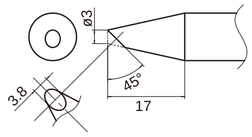


T33-BC2 Shape-2BC



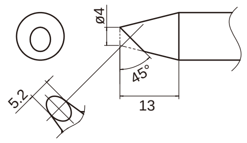
B5070 Nozzle assembly B

T33-BC3 Shape-3BC



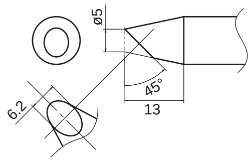
B5070 Nozzle assembly B

T33-BC4 Shape-4BC



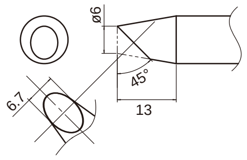
B5069 Nozzle assembly A

T33-BC5 Shape-5BC



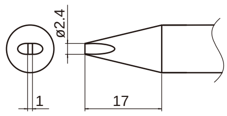
B5069 Nozzle assembly A

T33-BC6 Shape-6BC



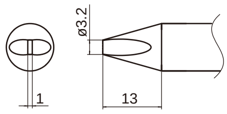
B5069 Nozzle assembly A

T33-D24 Shape-2.4D



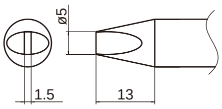
B5070 Nozzle assembly B

T33-D32 Shape-3.2D



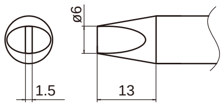
B5069 Nozzle assembly A

T33-D5 Shape-5D



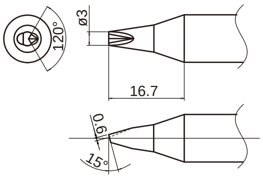
B5069 Nozzle assembly A

T33-D6 Shape-6D



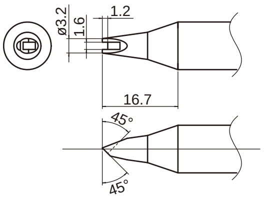
B5069 Nozzle assembly A

T33-1610



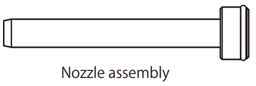
B5070 Nozzle assembly B

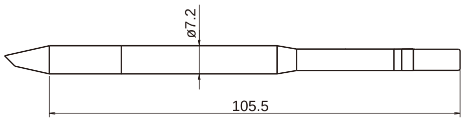
T33-1611



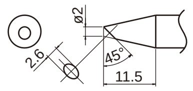
B5070 Nozzle assembly B

Slim type



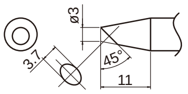


T33-SSBC2 Shape-2SSBC



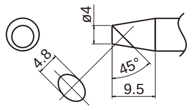
B5239 Nozzle assembly C

T33-SSBC3 Shape-3SSBC



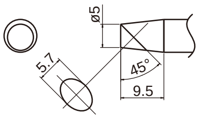
B5239 Nozzle assembly C

T33-SSBC4 Shape-4SSBC



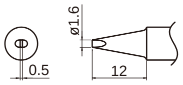
B5240 Nozzle assembly D

T33-SSBC5 Shape-5SSBC



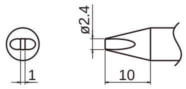
B5240 Nozzle assembly D

T33-SSD16 Shape-1.6SSD



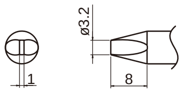
B5239 Nozzle assembly C

T33-SSD24 Shape-2.4SSD



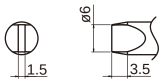
B5240 Nozzle assembly D

T33-SSD32 Shape-3.2SSD



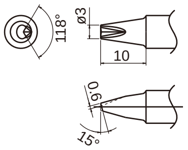
B5241 Nozzle assembly E

T33-SSD6 Shape-6SSD



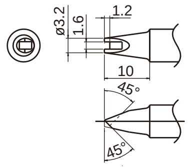
B5241 Nozzle assembly E

T33-SS1610



B5239 Nozzle assembly C

T33-SS1611

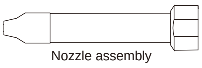


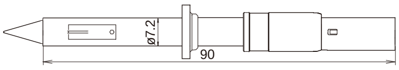
B5239 Nozzle assembly C

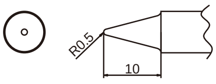
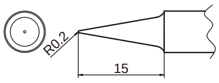
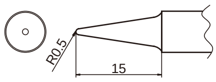
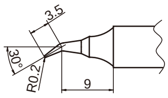
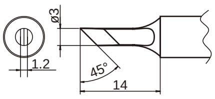
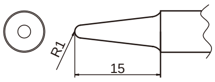
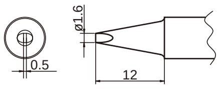
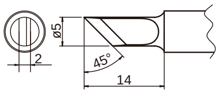
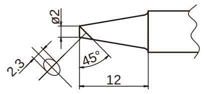
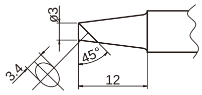
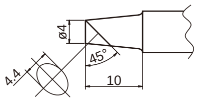
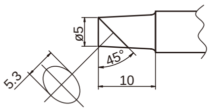
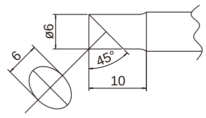
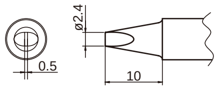
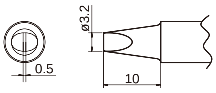
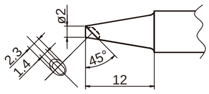
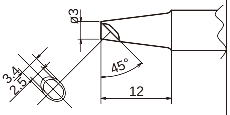
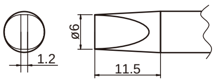
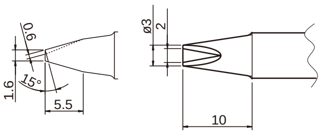
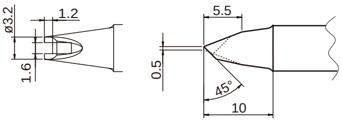
Optional Tips and Nozzle Assemblies for FX-8302

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

Unit: mm





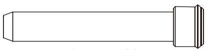
T20-B2 Shape-0.5B  B3121 Nozzle assembly A	**T20-BL Shape-BL**  B3121 Nozzle assembly A	**T20-BL2 Shape-2BL**  B3121 Nozzle assembly A	**T20-J02 Shape-0.2J (0.2RSB)**  B3122 Nozzle assembly B	**T20-KU Shape-KU**  B3122 Nozzle assembly B	**T20-BL3 Shape-3BL**  B3123 Nozzle assembly C
T20-D16 Shape-1.6D  B3123 Nozzle assembly C	**T20-K Shape-K**  B3123 Nozzle assembly C	**T20-BC2 Shape-2BC** **T20-BCF2***  B3124 Nozzle assembly D	**T20-BC3 Shape-3BC** **T20-BCF3***  B3124 Nozzle assembly D	**T20-BC4 Shape-4BC** **T20-BCF4***  B3124 Nozzle assembly D	**T20-C5 Shape-5C**  B3124 Nozzle assembly D
T20-C6 Shape-6C  B3124 Nozzle assembly D	**T20-D24 Shape-2.4D**  B3124 Nozzle assembly D	**T20-D32 Shape-3.2D**  B3124 Nozzle assembly D	**T20-BCM2 Shape-2BC with indent**  B3124 Nozzle assembly D	**T20-BCM3 Shape-3BC with indent**  B3124 Nozzle assembly D	**T20-D6 Shape-6D**  B3561 Nozzle assembly E
T20-1610  B3124 Nozzle assembly D		**T20-1611**  B3124 Nozzle assembly D			

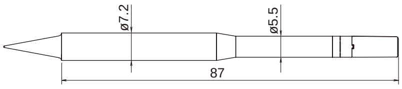
* These tips are tinned on the soldering surface only.

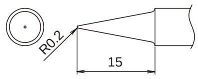
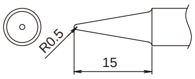
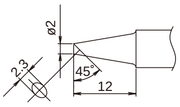
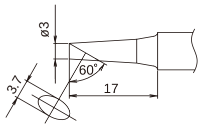
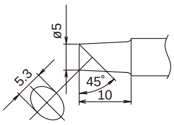
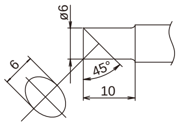
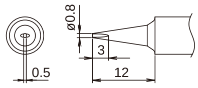
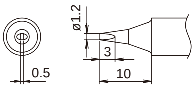
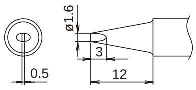
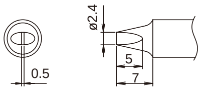
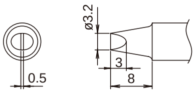
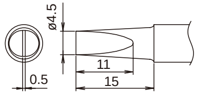
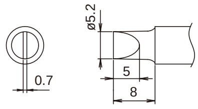
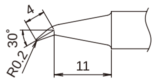
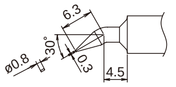
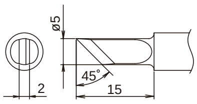
Optional Tips and Nozzle Assemblies for FM-2031

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

Unit: mm



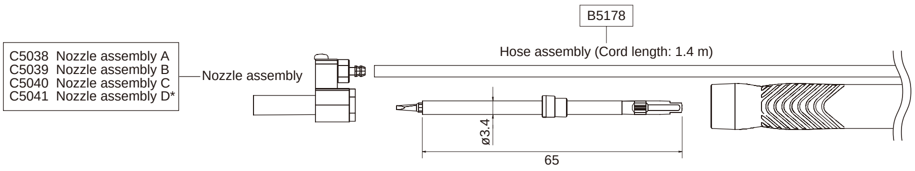


T22-BL Shape-BL  B3121 Nozzle assembly A	**T22-BL2 Shape-2BL**  B3121 Nozzle assembly A	**T22-BC2 Shape-2BC**  B3121 Nozzle assembly A	**T22-C3 Shape-3C**  B3121 Nozzle assembly A	**T22-C5 Shape-5C**  B3124 Nozzle assembly D	**T22-C6 Shape-6C**  B3124 Nozzle assembly D
T22-D08 Shape-0.8D  B3123 Nozzle assembly C	**T22-D12 Shape-1.2D**  B3121 Nozzle assembly A	**T22-D16 Shape-1.6D**  B3123 Nozzle assembly C	**T22-D24 Shape-2.4D**  B3561 Nozzle assembly E	**T22-D32 Shape-3.2D**  B3124 Nozzle assembly D	**T22-D45 Shape-4.5D**  B3124 Nozzle assembly D
T22-D52 Shape-5.2D  B3124 Nozzle assembly D	**T22-J02 Shape-0.2J**  B3121 Nozzle assembly A	**T22-JD08 Shape-0.8JD**  B3561 Nozzle assembly E	**T22-K Shape-K**  B3123 Nozzle assembly C		

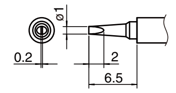
Optional Tips and Nozzle Assemblies for FM-2032

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

Unit: mm

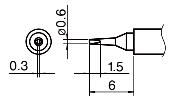


T30-D1 Shape-1D



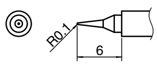
C5038 Nozzle assembly A
C5041 Nozzle assembly D*

T30-D06 Shape-0.6D



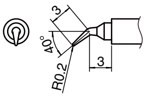
C5038 Nozzle assembly A
C5041 Nozzle assembly D*

T30-I Shape-I



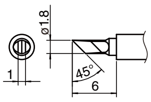
C5038 Nozzle assembly A
C5041 Nozzle assembly D*

T30-J Shape-J



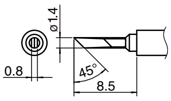
C5040 Nozzle assembly C
C5041 Nozzle assembly D*

T30-KU Shape-KU



C5038 Nozzle assembly A
C5041 Nozzle assembly D*

T30-KN Shape-KN



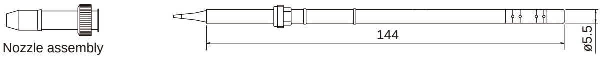
C5039 Nozzle assembly B
C5041 Nozzle assembly D*

* Shorter nozzle design provides better visibility.
For further information, visit our website.

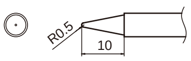
Optional Tips and Nozzle Assemblies for FM-2026

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

Unit: mm

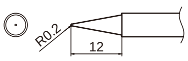


T13-B2 Shape-0.5B



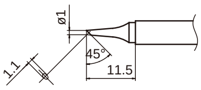
B2708 Nozzle assembly C

T13-BL Shape-BL



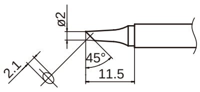
B2898 Nozzle assembly E

T13-BC1 Shape-1BC
T13-BCF1*



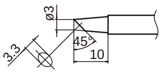
B2899 Nozzle assembly F

T13-BC2 Shape-2BC
T13-BCF2*



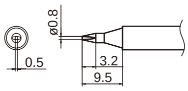
B2706 Nozzle assembly A

T13-BC3 Shape-3BC
T13-BCF3*



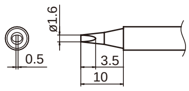
B2900 Nozzle assembly G

T13-D08 Shape-0.8D



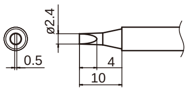
B2709 Nozzle assembly D

T13-D16 Shape-1.6D



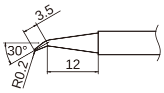
B2708 Nozzle assembly C

T13-D24 Shape-2.4D



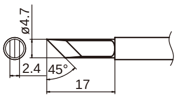
B2708 Nozzle assembly C

T13-J02 Shape-0.2J



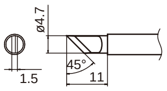
B2707 Nozzle assembly B

T13-KF Shape-KF



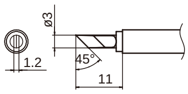
B2923 Nozzle assembly J

T13-KR Shape-KR



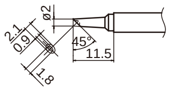
B2902 Nozzle assembly I

T13-KU Shape-KU



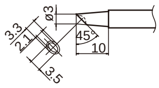
B2901 Nozzle assembly H

T13-BCM2 Shape-2BC with indent



B2706 Nozzle assembly A

T13-BCM3 Shape-3BC with indent



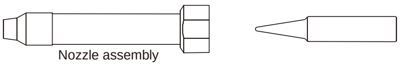
B2900 Nozzle assembly G

* These tips are tinned on the soldering surface only.

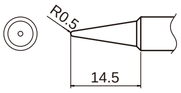
Replacement Tips and Nozzle Assemblies for FX-8802

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

Unit: mm

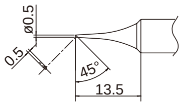


T18-B Shape-B



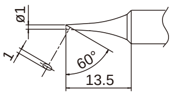
B3662 Nozzle assembly A

T18-C05 Shape-0.5C



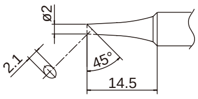
B3664 Nozzle assembly C

T18-C1 Shape-1C
T18-CF1*



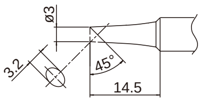
B3664 Nozzle assembly C

T18-C2 Shape-2C
T18-CF2*



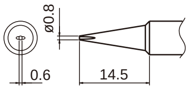
B3662 Nozzle assembly A

T18-C3 Shape-3C
T18-CF3*



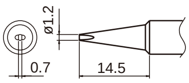
B3663 Nozzle assembly B

T18-D08 Shape-0.8D



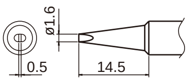
B3662 Nozzle assembly A

T18-D12 Shape-1.2D



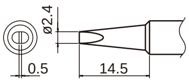
B3662 Nozzle assembly A

T18-D16 Shape-1.6D



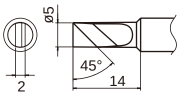
B3663 Nozzle assembly B

T18-D24 Shape-2.4D



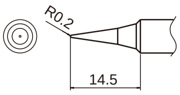
B3663 Nozzle assembly B

T18-K Shape-K



B3665 Nozzle assembly D

T18-I Shape-I



B3664 Nozzle assembly C

* These tips are tinned on the soldering surface only.

FX-600

Temperature Adjustable Soldering Iron

Tip included

for LEAD FREE

RoHS

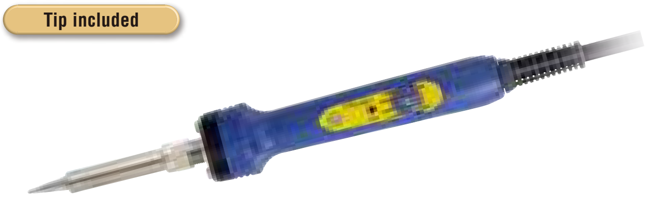
OFFSET

- **Adjustable temperature range: 200 to 500ºC**

FX-601

Heavy Duty Temperature Adjustable Soldering Iron

Tip included



for LEAD FREE

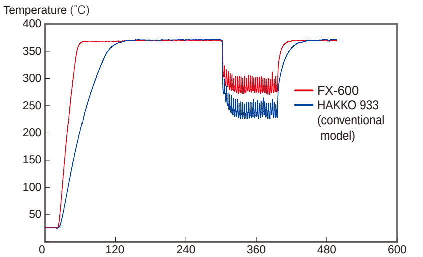
RoHS

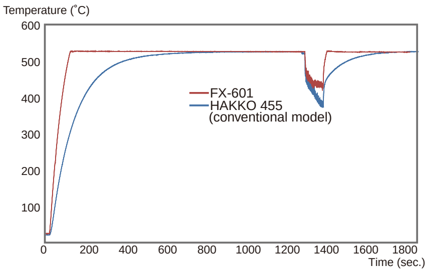
OFFSET

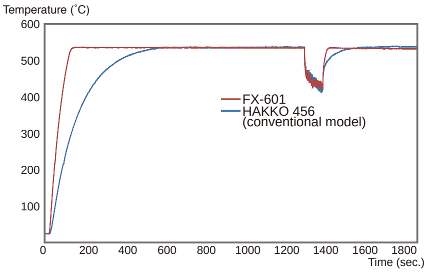
- **Maximum temperature: 540ºC**

Features

Superior heat conductivity





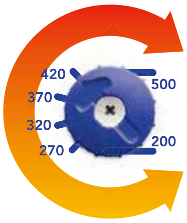


Test criteria

- Temperature of soldering iron with a diameter 1.6 x 5 mm piece of solder applied once every 3 seconds to paper phenol copper board.
- Lead-free solder is used.

Detach the control knob and lock the temperature setting.

Turn the CAL knob to attain a more accurate temperature.



* Accurate temperature control can be performed even outside the scale.

Specifications

Model No.	FX-600	FX-601
Power consumption	50 W (100 V), 59 W (110 V), 74 W (120 V), 43 W (220 V), 47 W (230 V), 51 W (240 V)	47 W (100 V), 56 W (110 V), 67 W (120 V), 42 W (220 V), 46 W (230 V), 50 W (240 V)
Temperature range	200 to 500ºC	240 to 540ºC
Temperature stability	±1ºC at idle temperature	±1ºC at idle temperature
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-2B (No. T19-B2)
Total length*	233 mm (with B tip)	237 mm (with 2B tip)
Weight*	61 g (with B tip)	68 g (with 2B tip)

* Without cord

Packing List

FX-600	Unit, Lock key, Instruction manual
FX-601	Unit, Lock key, Instruction manual

FX-600 with 605M

Option

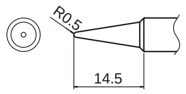
Part No.	Name	Specifications
FH300-81	Iron holder	With cleaning sponge
633-01	Iron holder	With 599B
633-02	Iron holder	With cleaning sponge
605M	Iron cover	–
B3720	Tip enclosure	With nut, required when converting from FX-600 to FX-601
B3730	Nut and tip enclosure	Required when converting from FX-601 to FX-600

* For information on the iron holders, see P.58.

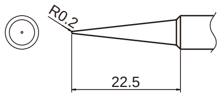
Replacement Tips for FX-600

Unit: mm

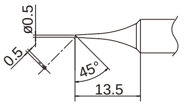
T18-B Shape-B



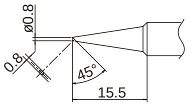
T18-BL Shape-BL



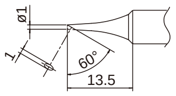
T18-C05 Shape-0.5C



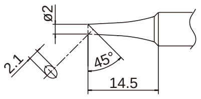
T18-C08 Shape-0.8C



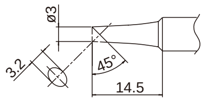
T18-C1 Shape-1C
T18-CF1*



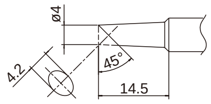
T18-C2 Shape-2C
T18-CF2*



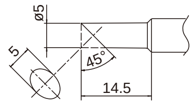
T18-C3 Shape-3C
T18-CF3*



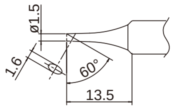
T18-C4 Shape-4C
T18-CF4*



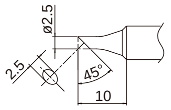
T18-C5 Shape-5C



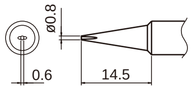
T18-CF15* Shape-1.5C



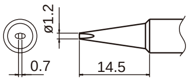
T18-CSF25* Shape-2.5CS



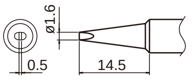
T18-D08 Shape-0.8D



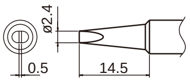
T18-D12 Shape-1.2D



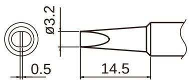
T18-D16 Shape-1.6D



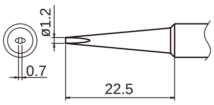
T18-D24 Shape-2.4D



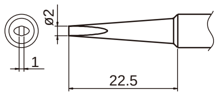
T18-D32 Shape-3.2D



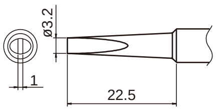
T18-DL12 Shape-1.2DL



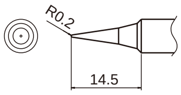
T18-DL2 Shape-2DL



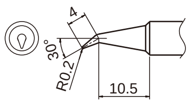
T18-DL32 Shape-3.2DL



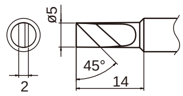
T18-I Shape-I



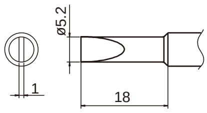
T18-BR02 Shape-0.2BR



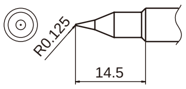
T18-K Shape-K



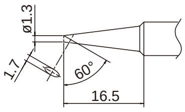
T18-S3 Shape-S3



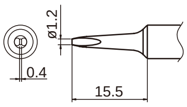
T18-S4 Shape-S4



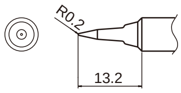
T18-S6 Shape-S6



T18-S9 Shape-S9



T18-SB Shape-SB

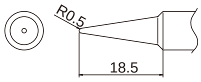


* These tips are tinned on the soldering surface only.

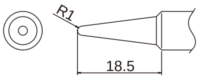
Replacement Tips for FX-601

Unit: mm

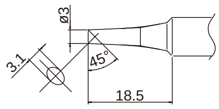
T19-B Shape-B



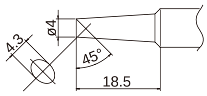
T19-B2 Shape-2B



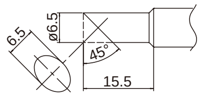
T19-C3 Shape-3C



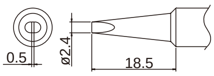
T19-C4 Shape-4C



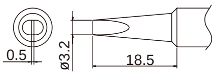
T19-C65 Shape-6.5C



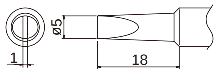
T19-D24 Shape-2.4D



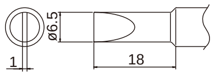
T19-D32 Shape-3.2D



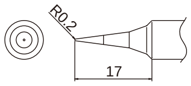
T19-D5 Shape-5D



T19-D65 Shape-6.5D



T19-I Shape-I



DASH

Ceramic Heater Soldering Iron

Tip included

RoHS

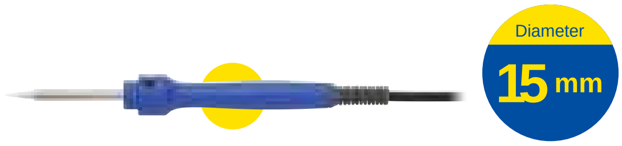
- An entry model of ceramic heater soldering iron
- Ideal for electronic circuit assembly

Packing List

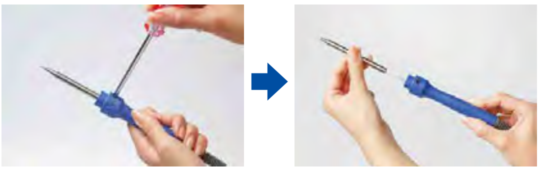
FX-650	Unit

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	15 to 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	–

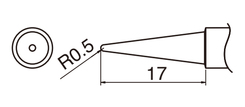
* For information on the iron holders, see P.58.

No.605M (with FX-650)

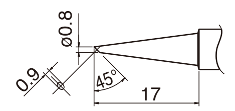
Replacement Tips for DASH

Unit: mm

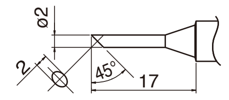
T34-B Shape-B



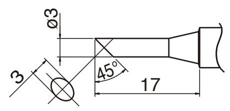
T34-C08 Shape-0.8C



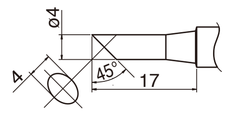
T34-C2 Shape-2C



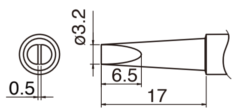
T34-C3 Shape-3C



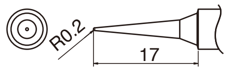
T34-C4 Shape-4C



T34-D32 Shape-3.2D



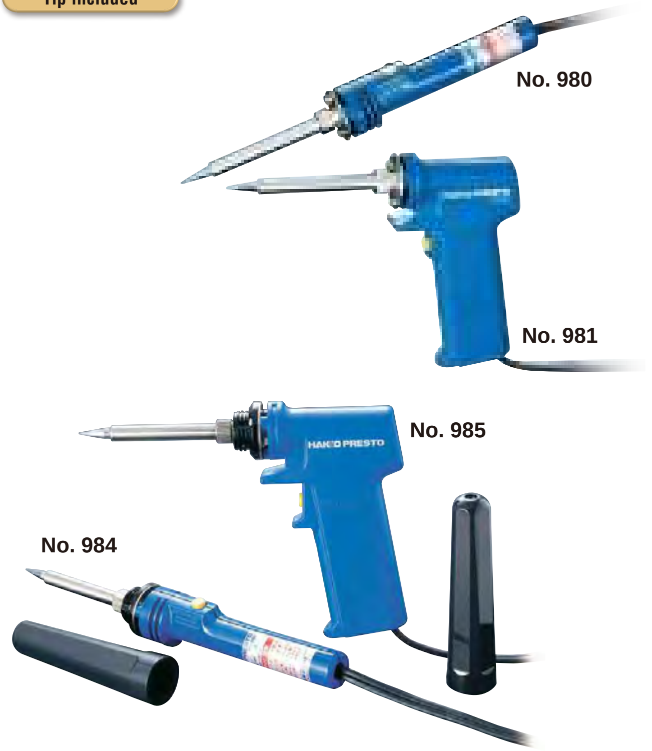
T34-I Shape-I



PRESTO

W-Switchable Ceramic Heater Soldering Iron

Tip included



- The boost switch can immediately raise the power from 20 W in normal operation mode to 130 W, which enables the soldering iron to be heated up at a high speed.
- PRESTO can be used for a wide range of applications.
- A safety cap is available for 984 and 985.

When capped

Packing List

980, 981	Unit
984, 985	Unit, Safety cap

Specifications

Model No.	980	981	984	985
Power consumption	20/130 W (while the switch is pushed)			
Heating element	Ceramic heater			
Standard tip	Shape-B (No. 980-T-B)			
Total length*	205 mm	160 mm	205 mm	160 mm
Weight*	48 g	92 g	56 g	100 g

* Without cord and cap

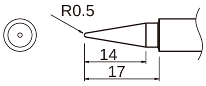
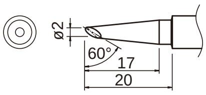
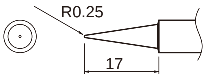
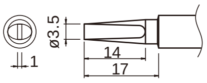
Option

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

* For information on the iron holders, see P.58.

Replacement Tips for PRESTO

Unit: mm

980-T-B Shape-B	980-T-BC Shape-BC	980-T-BI Shape-BI	980-T-D Shape-D
			

FX-901

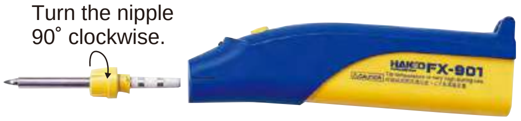
Battery-Powered Soldering Iron

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



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 300ºC, which is the minimum temperature at which soldering can be performed.

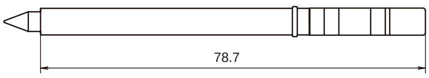
* When using batteries other than those specified above, the performance and the operating time will vary.

** Without cap

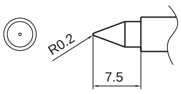
*** Without battery

Replacement Tips for FX-901

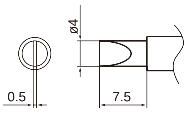
Unit: mm



T11-B Shape-B



T11-D4 Shape-4D



RED

Nichrome Heater Soldering Iron

Tip included

- Ideal for use in a variety of soldering works

Specifications

Model No.	500	501	502	503
Power consumption	20 W	30 W	40 W	60 W
Heating element	Nichrome heater			
Standard tip	ø3 × 65 mm (No.BB3)	ø4 × 70 mm (No.BB4)		ø6 × 85 mm (No.BB6)
Total length*	199 mm	207 mm		248 mm
Weight*	60 g	65 g		95 g

* Without cord

Option

Part No.	Name	Specifications
602	Iron holder	With cleaning sponge
603	Iron holder	With cleaning sponge

* For information on the iron holders, see P.58.

MG

Solder Feed Soldering Gun

Tip included

- Solder feed mechanism built in the body allows users to make fine adjustments.

Specifications

Model No.	582	583	585	587	589	592
Power consumption	30 W	40 W	60 W	80 W	100 W	150 W
Heating element	Nichrome heater					
Standard tip	ø4 mm (No.582-T-4)		ø6 mm (No.585-T-6)	ø8 mm (No.587-T-8)		ø10 mm (No.592-T-10)
Dimensions	197 x 149 mm		213 x 149 mm	227 x 149 mm		241 x 149 mm
Weight*	266 g		290 g	318 g	322 g	380 g

* Without cord

Packing List

582, 583, 585, 587, 589, 592	Unit, 1.6 mm diameter Guide nozzle, Instruction manual

* 2.3 mm diameter guide nozzle is originally set into the unit.

Option

Part No.	Name	Specifications
582-N-0.8	Guide nozzle	0.8 mm
582-N-1.0	Guide nozzle	1 mm
582-N-1.2	Guide nozzle	1.2 mm
607	Iron holder	With cleaning sponge
582-022	Spool holder	–

* For information on the iron holder, see P.58.

IRON HOLDER

Iron Holder

No.FH300-81*

No.633-01

No.633-02

No.607

No.602

No.603

* HAKKO 599B can be also mounted.

Wire-type tip cleaner

No.599B

HAKKO 599B

Prevents soldering tip oxidation

Applicable Soldering Irons

Part No.	FH300-81	633-01	633-02	607	602	603
Soldering irons	DASH PRESTO FX-600 FX-601	DASH PRESTO FX-600 FX-601	DASH PRESTO FX-600 FX-601	MG	RED	RED

611

Reel Stand

- 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.

No.611-2

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	87 (W) × 78 (H) × 141 (D) mm	87 (W) × 200 (H) × 141 (D) mm
Weight	450 g	750 g

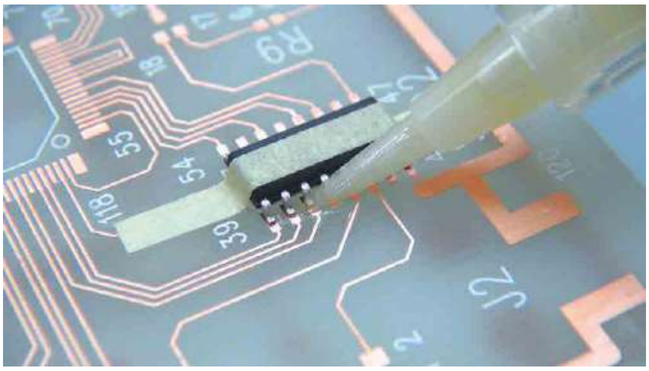
FS-210

Brush-tip Type Flux Pen

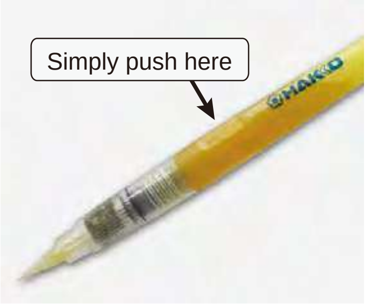
- Pen tip does not split easily.
- You can fill your favorite flux into FS-210.
- Simply push the pen shaft when you need some extra flux.

Features

Pen for pinpoint application of optimum amount of flux



Simply push the shaft for a generous coating of flux



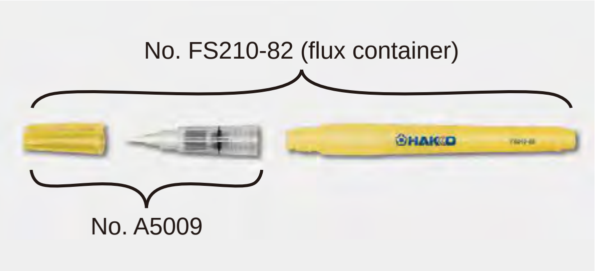
Packing List

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

* No flux contained.

Replacement Parts

A5009	Brush-tip with a cap (5 pcs)



373

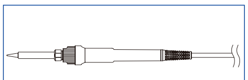
Self Feeder

- **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

・One-handed soldering

Soldering irons



* See the applicable soldering irons in the P.61.

+

HAKKO 373

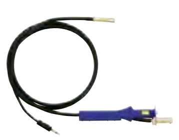
+

Solder diameter adjustment ring

+

Tube unit

with switch



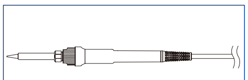
+

Guide pipe assembly

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, 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

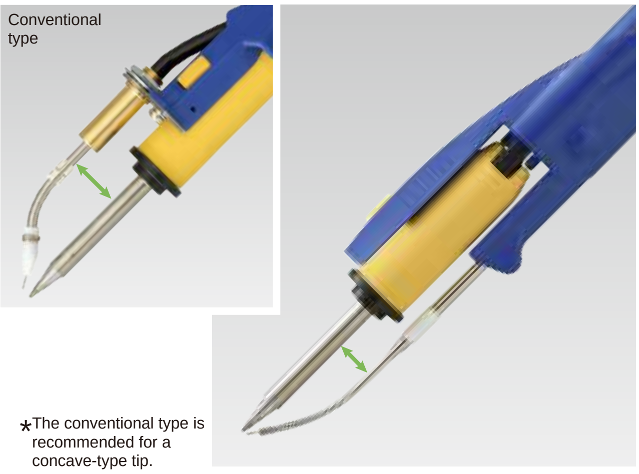
373	Unit, Instruction manual

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.

Features

The new tube unit and guide pipe assembly for the best productivity

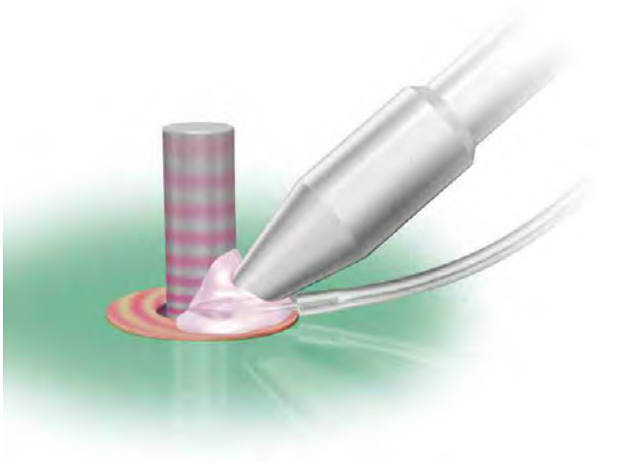
The combination of the new tube unit and the new guide pipe assembly makes it possible to obtain **"Heat-Bridge Effect"**.
The new optional parts are designed to feed solder from the underside of the tip.
The one-handed soldering just like manual soldering can be achieved.



*The conventional type is recommended for a concave-type tip.

What is a “Heat-Bridge” ?

It is the phenomenon that the heat from the tip being transferred quickly to soldering joint area via molten solder.



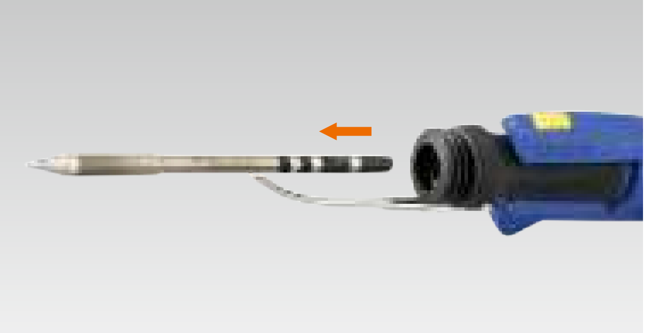
Easy adjustment of the solder feeding position

The new tube unit makes it easy to adjust the solder feeding position by holding the guide pipe assembly tightly with the two parts.

For farther details, please scan here.

Tip replacement without removing the tube unit

Tip can be replaced without removing the tube unit. It saves the trouble of adjusting the position of solder feeding.



Easy maintenance

New guide pipe assembly will have less residue of flux fume and clogging with the residue while feeding solder from the underside of the tip.

Impact of flux fume: High

Impact of flux fume: Low

*Image for illustration purpose

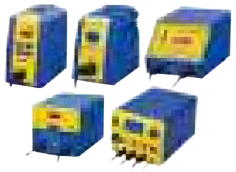
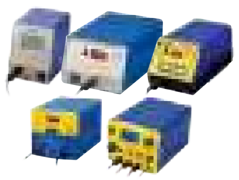
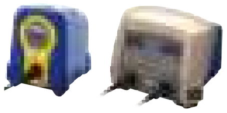
Quick and sure tip cleaning with FT-720

The tip cleaner FT-720 cleans a tip quickly and surely even having the guide pipe assembly on a handpiece.
For further information of FT-720, see P. 70 to 72.

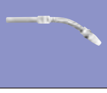
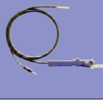
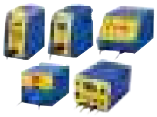
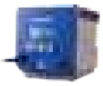
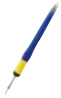
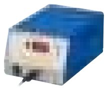
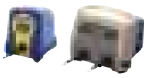
Solder Feed System

Accessory Selection Guide

■One-handed operation soldering Bottom-feed type

Station	Applicable soldering iron	Solder feed unit	Solder diameter (Φ) : mm	Solder diameter adjustment ring	Guide pipe assembly	Tube unit	Iron receptacle
FX-951 FX-950/FX-952 FM-203/FM-206 	FM-2028 FM-2027 	373	0.6, 0.65	B1626	B5268	C5056	B5265
			0.8	B1627	B5269		
			1	B1628	B5270		
			1.2	B1629	B5271	C5057	
FX-100 	FX-1001 	373	0.6, 0.65	B1626	B5268	C5056	B5266
			0.8	B1627	B5269		
			1	B1628	B5270		
			1.2	B1629	B5271	C5057	
FN-1010 FX-801 FX-838 FM-203/FM-206 	FN-1101 FX-8002 FX-8301 FM-2030 	373	0.6, 0.65	B1626	B5272	C5058	B5265
			0.8	B1627	B5273		
			1	B1628	B5274		
			1.2	B1629	B5275	C5059	
FX-888D FX-889 	FX-8801 FX-8805 	373	0.6, 0.65	B1626	B5272	C5058	B5267
			0.8	B1627	B5273		
			1	B1628	B5274		
			1.2	B1629	B5275	C5059	

Conventional type

Station	Applicable soldering iron	Solder feed unit	Solder diameter (Φ) : mm	Solder diameter adjustment ring	Guide pipe assembly  or	Tube unit  or
FX-951 FX-950/FX-952 FM-203/FM-206 	FM-2028 FM-2027	373	0.6, 0.65	B1626	B3481	B3477
			0.8	B1627	B3482	
			1	B1628	B3483	
			1.2	B1629	B3484	B3478
FN-10101 FM-203/FM-206	FN-1101 FM-2030	373	0.6, 0.65	B1626	B3726	B3477
			0.8	B1627	B3727	
			1	B1628	B3728	
			1.2	B1629	B3729	B3478
FX-100 	FX-1001  *The spacer No.B5183 is required separately	373	0.6, 0.65	B1626	B3481	B3477
			0.8	B1627	B3482	
			1	B1628	B3483	
			1.2	B1629	B3484	B3478
FX-801 	FX-8002	373	0.6, 0.65	B1626	B5072	B3477
			0.8	B1627	B5073	
			1	B1628	B5074	
			1.2	B1629	B5075	B3478
FX-838	FX-8301	373	0.6, 0.65	B1626	B3566	B3563
			0.8	B1627	B3567	
			1	B1628	B3568	
			1.2	B1629	B3569	
			1.6	B1630	B3570	B3564
FX-888D FX-889	FX-8801	373	0.6, 0.65	B1626	B2146	B2143
			0.8	B1627	B2147	
			1	B1628	B2148	
			1.2	B1629	B2149	
			1.6	B1630	B2150	B2144
FX-888D FX-889 	FX-8805	373	0.6, 0.65	B1626	B2151	B2143
			0.8	B1627	B2152	
			1	B1628	B2153	
			1.2	B1629	B2154	
			1.6	B1630	B2155	B2144

■Feeder pen

Applicable soldering iron	Solder feed unit	Solder diameter	Options		
			Solder diameter adjustment ring	Feeder pen	Switch or
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 mm	B1628		
		1.2 mm	B1629	C1235	
		1.6 mm	B1630		

375

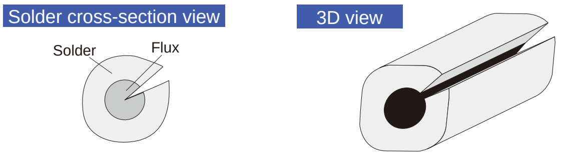
V-Groove Maker

- 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

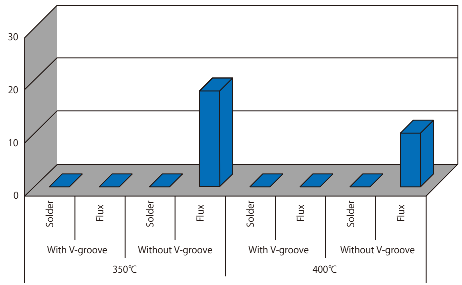
-Examination of solder and flux splash

Test criteria

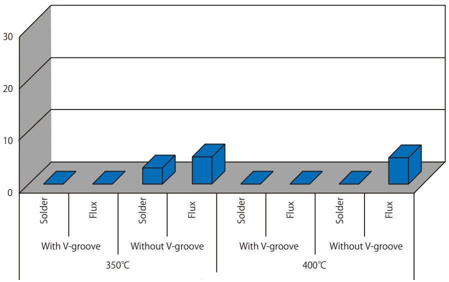
Measurement method	Measure the amount of solder and flux splashing after solder is fed to the soldering iron
Temperature setting for soldering iron	350°C and 400°C
Solder	Lead-free (Sn-3Ag-0.5Cu) Halogen-free flux ø0.3 mm and ø1 mm
Solder feed length	50 mm

* 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 mm

Packing List

375	Unit, AC adapter, Instruction manual

Option

Part No.	Name
B1649	Foot switch
B2763	Hand switch

Specifications

Model No.	375
Rating	24 VDC 75 mA
Solder feed speed	27 mm/sec.
Usable solder diameter	ø0.3, 0.5, 0.6, 0.8, 1 mm
Dimensions	78 (W) × 98 (H) × 56 (D) mm
Weight	0.59 kg

AC adapter

Output voltage	24 VDC

FG-100B

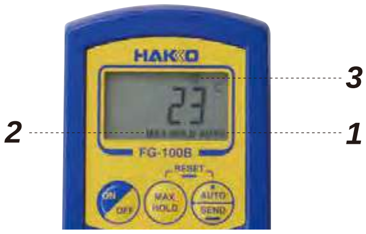
Thermometer with Auto-measurement Function

- **Automatic temperature measurement can minimize individual differences in measuring temperature.**
- **Measurement counter can be useful for control of changing sensor.**
- **Long life sensor AS5000 (with certificate of conformance) is equipped as standard.**

Features

Minimize individual differences in how to complete measurement and read result.

* Image photo below
AUTO HOLD function and MAX HOLD function cannot be used at the same time.



1. AUTO HOLD Function
The measurement will end automatically when tip temperature is stabilized.
The measurement process will be the same no matter who does it.

2. MAX HOLD Function
Max measured tip temperature will be displayed.
This function can be useful for quality control of components and P.W.B.

3. Temperature Measurement Count Function
Number of tip temperature measurement will be automatically counted.
This function can be useful for control of changing sensor.

Temperature Sending Function

Measurement result by AUTO HOLD function or MAX HOLD function can be sent to a soldering station (FN-1010 : refer to P.18) through infrared.
This function can eliminate manual process of recording results, the time for the process, and human error.

Packing List

FG-100B	Unit, 006P 9 V Manganese dry battery (for trial), Sensor, Instruction manual

Specifications

Model No.	FG-100B
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	Ambient temperature/Humidity range: 0 to 40°C, max.80% RH (without condensation)
Environmental conditions	Applicable rated pollution degree 2 (according to IEC/UL 61010-1)
Dimensions**	75 (W) × 44 (W) × 140 (D) mm
Weight***	125 g

* The temperature sensor can only be used to measure temperatures below 500°C. To measure higher temperatures, use an applicable temperature probe.
** Excluding protrusions
*** Without battery

Option / Replacements

Part No.	Name	Specifications
A1310	Temperature probe	For solder bath and pot
C1541	Temperature probe	For hot air station
A1556	Sensor A	–
A1557	Sensor B	–
AS5000	Sensor	lead-free with cert conformance

Long life sensor AS5000 (for FG-100B, FG-101B and FG-102) is equipped as standard.
Lasts 30 times longer than a conventional sensor*.
Save troubles of sensor replacements and enhance stable measurement for a long time.
Certificate of conformance is included.

* Based on our in-house test

FG-102

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
- Long life sensor AS5000 (with certificate of conformance) is equipped as standard.

Packing List

FG-102	Unit, Battery (6 pcs, for trial), Barcode reader, USB cable, Software (CD-ROM), Sensor, 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 and pot
C1541	Temperature probe	for hot air station
A1556	Sensor A	–
A1557	Sensor B	–
C5009	Bar code reader	–
AS5000	Sensor	lead-free with cert conformance

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	Ambient temperature/Humidity range: 0 to 40°C, max.80% 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 can only be used if measure temperatures below 500°C. To measure higher temperatures, use an applicable temperature probe.

** Without barcode reader

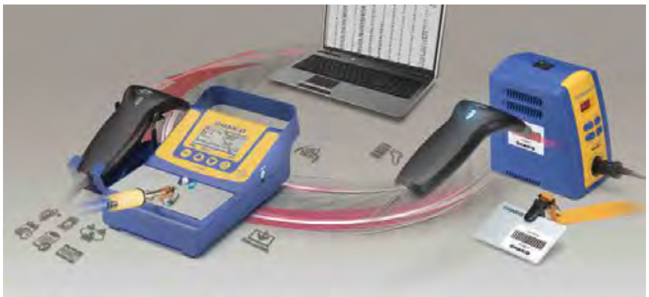
*** Without battery and barcode reader

**** Traceability management function can only be used for soldering irons.

Features

An Innovation in Tip Temperature Control

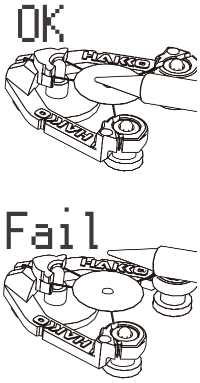
Flow chart of management



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.**

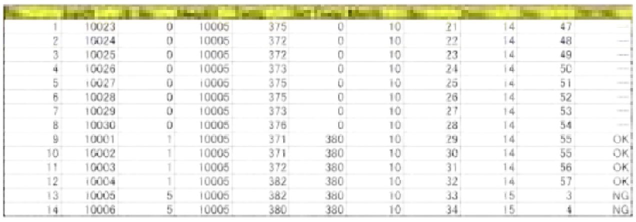
Free of errors in temperature measurement by standardization of temperature measurement
The unit has a function to notify the end of measurement. When measurement is finished, "H" icon stops blinking. The unit can find measurement errors and prompt an operator to repeat measurement. The display shows "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



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.

GROUP A	GROUP B	GROUP C
350℃	320℃	380℃

Automatic counting of the number of measurements

Notification of the calibration date

FG-101B

New

Soldering Iron Tester with Auto-measurement Function

for LEAD FREE RoHS

- **Soldering iron tester for measurement of tip temperature, leak voltage, and tip to ground resistance**
- **Human error-free operation**
- **Long life sensor AS5000 (with certificate of conformance) is equipped as standard.**

Packing List

FG-101B	Unit, Conduction wire, Ground clip, Multi-adapter*, European adapter*, Fuse, Power cord, Sensor, Instruction manual

*May not be included depending on the specifications

Option / Replacements

Part No.	Name	Specifications
A1310	Temperature probe	For solder bath and pot
C1541	Temperature probe	For hot air station
A1556	Sensor A	–
A1557	Sensor B	–
C5055	Adapter module	–
AS5000	Sensor	lead-free with cert conformance

Specifications

Model No.	FG-101B
Power consumption	3.2 W (100V), 3.6 W (100-110V) 3.2 W (120V), 3.6 W (220-240V)
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	Ambient temperature/Humidity range: 0 to 40°C, max.80% RH (without condensation)
Environmental conditions	Applicable rated pollution degree 2 (According to IEC/UL61010-1)
Dimensions	211(W) × 53(H) × 126(D) mm
Weight	0.95 kg

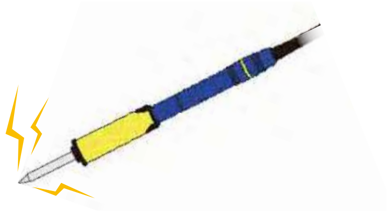
* The Temperature sensors can only be used to measure temperatures below 500ºC.
To measure higher temperatures, use an appropriate temperature probe.

Features

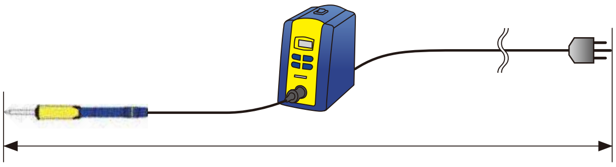
For the daily maintenance of soldering station
Control of "tip temperature", "leak voltage", and "tip to ground resistance" is required for a grounded soldering station for electronic components.

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

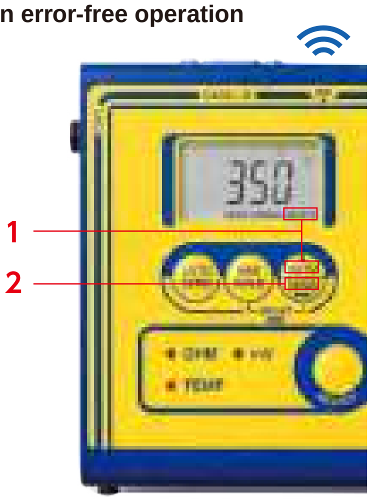
Leak voltage
Leak current is the current that leaks from the tip to a board or device. Leak voltage is a specific measurement of the level of this current. The leakage can adversely affect delicate devices, so it is necessary to check leak voltage on a daily basis.



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.



Human error-free operation



1. AUTO HOLD function
The measurement will end automatically when the displayed tip temperature is stabilized.
Individual differences in temperature measurement can be minimized.

2. Data send function (infrared)
Measurement result can be sent to IoT capable soldering station, such as FN-1010, and be recorded automatically.
Human errors in manual recording can be eliminated.

Option

Adapter module
By connecting FG-101B and IoT capable soldering station, such as FN-1010, with adapter module, data transfer can be easy and smooth.
For more details, please visit website.

No. C5055

FT-720 ESD SAFE New

Tip Cleaner

for LEAD FREE ESD SAFE RoHS

- Reduce time for tip cleaning and increase efficiency in soldering process.

FT-710 ESD SAFE

Solder-Splash-Preventing Rotary Tip Cleaner

for LEAD FREE ESD SAFE RoHS

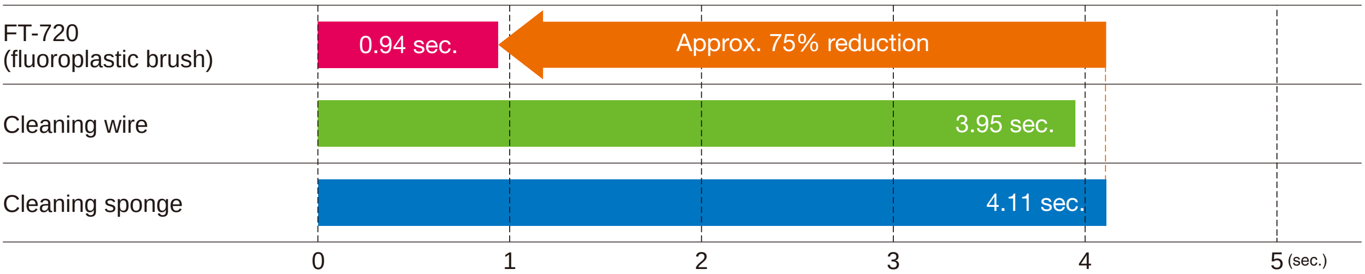
- Prevents solder from splashing when cleaning.

Features of FT-720

Quick tip cleaning

Increasing efficiency in soldering process by reducing time for tip cleaning.

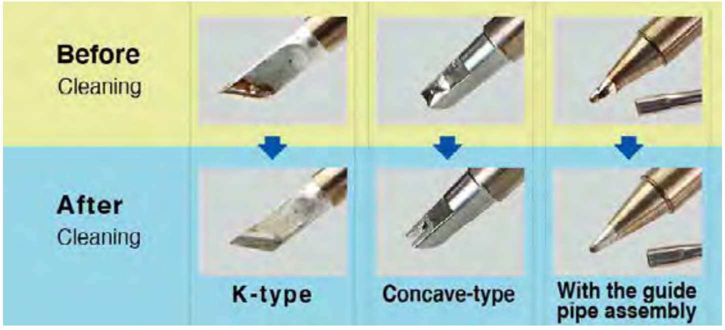
Comparison of cleaning time



* The above values are measured values and not guaranteed values.

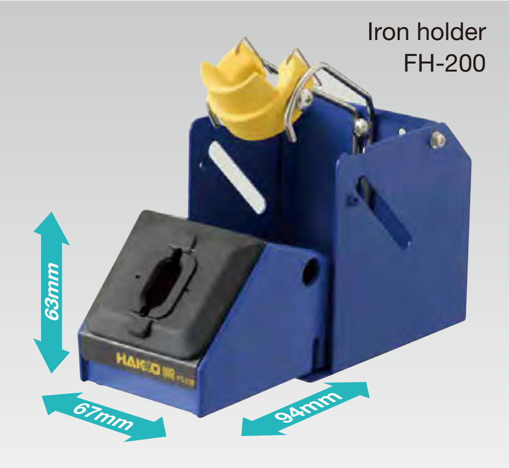
Cleaning a variety of tip shapes

FT-720 surely and quickly cleans a variety of tip shapes, and also a tip even having the guide pipe assembly on a handpiece.



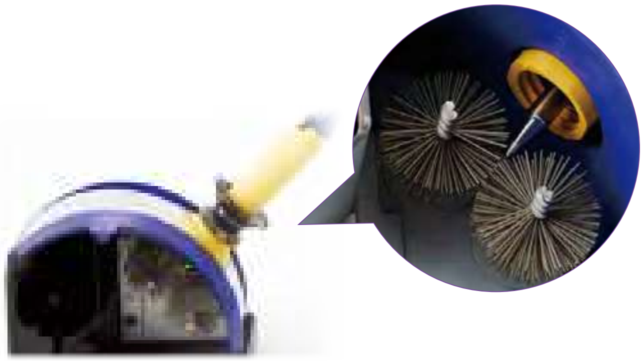
The compact design

It is also designed to be installed on the iron holder, FH-200, to make efficient use of the workspace.



Features of FT-710

Solder-Splash prevention



Please choose the receptacle to tip type

Compatibility table

Tip	Receptacle A	Receptacle B	Receptacle C
T12, T11, T36	✓		
T18		✓	
T20, T13, T22			✓

* This cleaner cannot be used with T12-JL02, quad type, tunnel type, and spatula type soldering tips of T12 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.

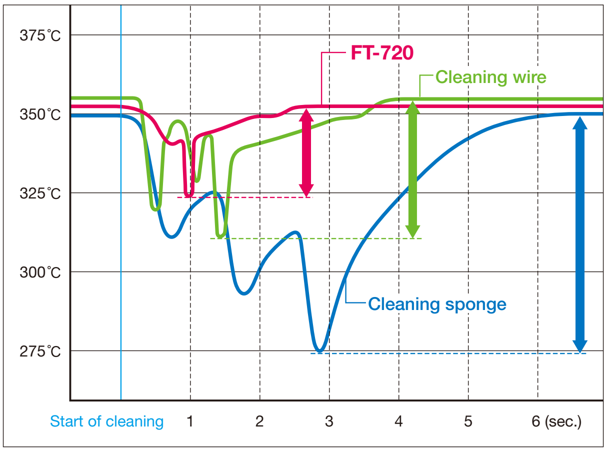
Tip Cleaner

Features of FT-710 and FT-720

Minimizing tip temperature drop

Tip cleaner can help increase productivity by shortening the cleaning time and minimizing the tip temperature drop with no use of water.

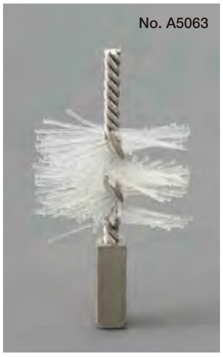
* The following graph is for FT-720. For FT-710, please visit our website.



⁎ The above values are measured values and not guaranteed values.

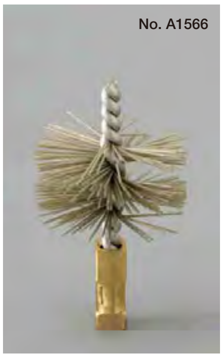
Brush lineup for different purposes

Fluoroplastic brush



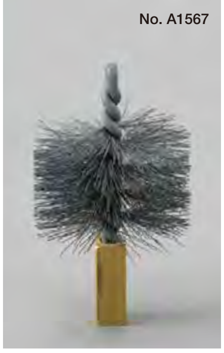
Long-life brush with excellent durability
Effective in reducing of solder balls while tip cleaning.

Resin brush



Effective in reducing the impact of tip oxidation
Recommended for soldering with lead-free alloy or halogen-free flux.

Metal brush

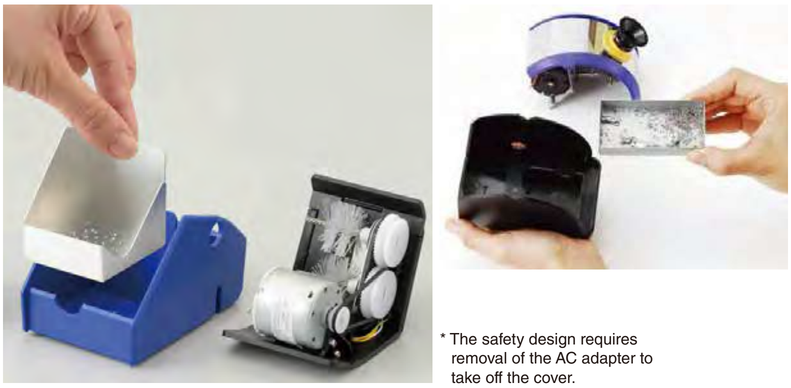


Effective in removing solder from a tip completely
Recommended for soldering fine and precise components.

Easy maintenance

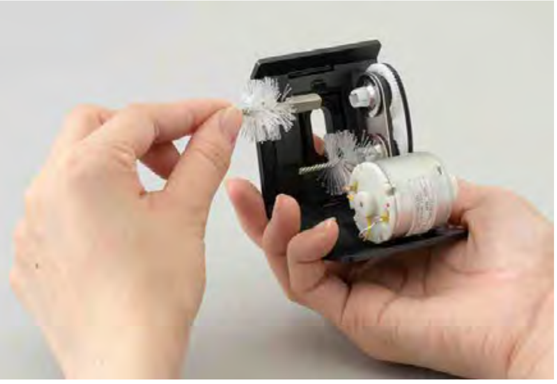
Solder waste can be easily removed just by taking off the cover. No tool is required to remove the brushes.

Removal of solder waste



* The safety design requires removal of the AC adapter to take off the cover.

Replacement of the cleaning brushes



Packing List

FT-720	Unit (with adjuster), AC adapter, Instruction manual
FT-710	Unit, AC adapter, Receptacle A, Receptacle B, Lock nut, Gauge, Instruction manual

Specifications

Model No.	FT-720	FT-710
Rating	24 VDC 140 mA	24 VDC 130 mA
Brush rotational speed	1670 rpm	2500 rpm
Standard receptacle	–	Receptacle A and B
Dimensions	67(W) × 63(H) × 94(D) mm	71 (W) × 77 (H) × 107 (D) mm
Weight	200 g	450 g

AC adapter

Output voltage	24 VDC	24 VDC

Optional for FT-720

Part No.	Name	Specifications
A1566	Cleaning brush A	Plastic brush, qty 2
A1567	Cleaning brush B	Metal brush, qty 2
A5062	Sensor cover	qty 10
A5061	Adjuster	–

Optional for FT-710

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

FT-700

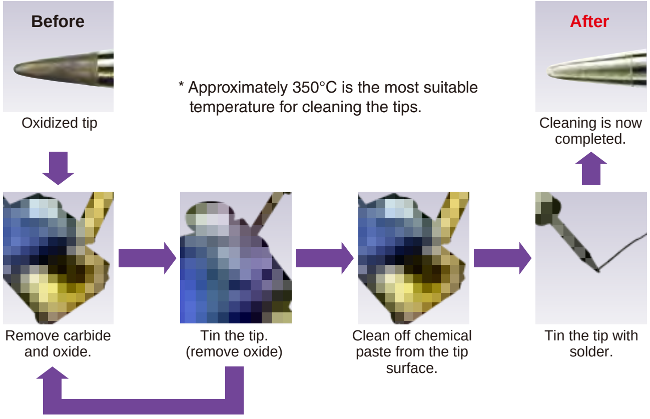
Tip Polisher

for LEAD FREE RoHS

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

Usage

Cleaning procedure


Before
Oxidized tip
After
Cleaning is now completed.
Remove carbide and oxide.
Tin the tip. (remove oxide)
Clean off chemical paste from the tip surface.
Tin the tip with solder.

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

Repeat the process twice or more until oxide is completely removed.

Use the brush to remove tough oxide.

Packing List

FT-700	Unit, Paste, Brush, Instruction manual

Specifications

Model No.	FT-700
Power consumption	3 W (100 V), 4.5 W (110 to 120 V, 220 to 240 V)
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.
* Make sure the tip is cleaned after use according to the procedure shown in the left.
* Do not use the chemical paste for purpose other than restoring of the soldering tip.

FS-100

Chemical Paste

for LEAD FREE RoHS

- Chemical paste best suited to the removal of oxide 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)

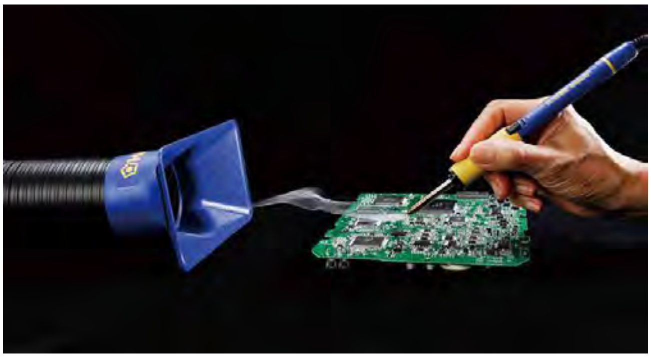
* The flux component of chemical paste consists of alicyclic amine hydrobromate, aliphatic amine hydrobromate, petrolatum, and wax.
* Make sure the tip is cleaned after use according to the procedure shown above.
* Do not use the chemical paste for purpose other than restoring of the soldering tip.

FA-430 ESD SAFE

Air-Purifying Fume Extractor

ESD SAFE RoHS

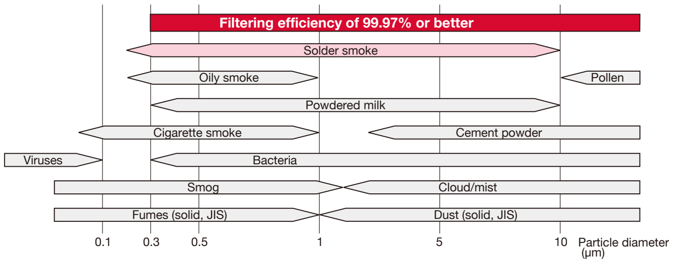
- HEPA filter (High Efficiency Particulate Air Filter)
- Filters out 99.97% of particles greater than 0.3 µm
- Recommended for quiet laboratory and office



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).

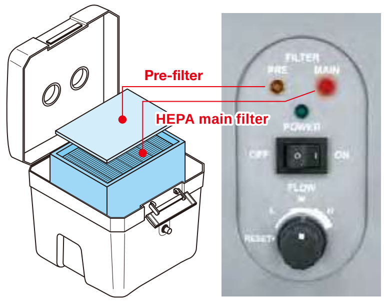
Filter replacement notification function

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 m^3/min.
	MEDIUM	3.7 m^3/min.
	LOW	2.8 m^3/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.

FA-431 ESD SAFE

Air-Purifying Fume Extractor

- **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**

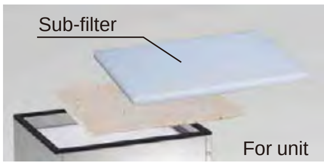
Features of FA-431

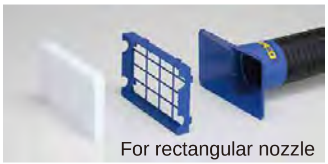
The life of pre-filter and main filter will be approximately 4 times* longer.

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

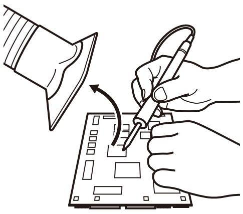
Quiet operation and powerful suction

	FA-430/431		Previous model (HAKKO 421)	
	Noise level dB (A)	Air volume m³/min.	Noise level dB (A)	Air volume m³/min.
HIGH	53	4.7	60*	3.2*
MEDIUM	50	3.7		
LOW	44	2.8		

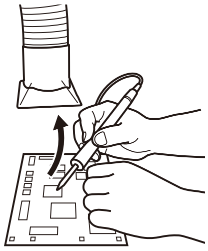
*Values measured when the unit was used with a 60 Hz power supply.

Flexible ducts and compact body for perfect placement

Movement of smoke is affected by the surrounding environment

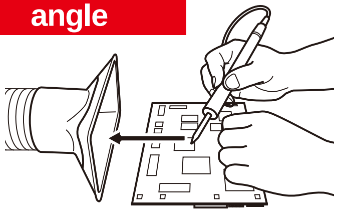


If the duct is mounted at an angle above the workpiece, it is affected by air conditioning.



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

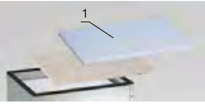
Perfect placement provides suction where you need it.

Option

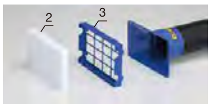
Part No.	Name	Specifications
C1571	Duct Set	With rectangular nozzle
C1572	Duct Set	With round nozzle
A5035	Sub-filter	For FA-431, set of 5
A5036	Sub-filter for rectangular nozzle	For FA-431, set of 20
A5037	Sub-filter for round nozzle	For FA-431, set of 20
B5146	Filter case for rectangular nozzle	For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

No.C1571

No.C1572



1: No.A5035

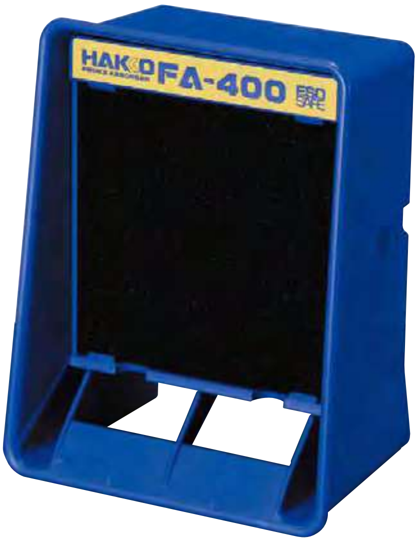


2: No.A5036
3: No.B5146

4: No.A5037
5: No.B5147

FA-400 ESD SAFE

Desktop Type Smoke Absorber

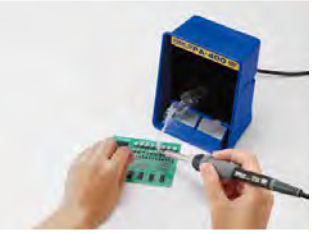


ESD SAFE RoHS

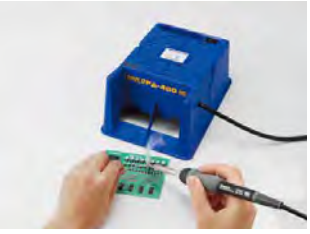
- Desktop solder smoke absorber that can be mounted horizontally or vertically
- An optional arm stand makes a third mounting position available.

2 Way Plus Placement

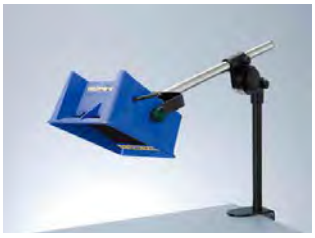
Vertically mounted:



Horizontally mounted:



Using a stand (option):



Packing List

FA-400	Unit, Filter, Instruction manual

Specifications

Model No.	FA-400
Power consumption	50 Hz: 15 W (100 V), 18 W (110 V), 19 W (220 V), 22 W (230 V), 24 W (240 V) 60 Hz: 13 W (100 V), 15 W (110 V), 19 W (120 V), 16 W (220 V), 18 W (230 V), 19 W (240 V)
Noise level*	50 Hz: 48 dB 60 Hz: 51 dB
Suction capacity**	Vertically: 1 m³/min. (50 Hz), 1.1 m³/min. (60 Hz) (max.) Horizontally: 0.4 m³/min. (50 Hz), 0.5 m³/min. (60 Hz) (max.)
Air velocity	Vertically: 1 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

494

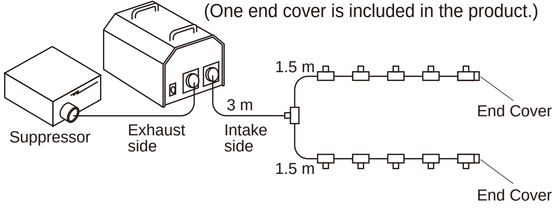
Smoke Absorbing System

RoHS

- Soldering smoke absorber for production-line use that enables the exhausting of fumes to an outdoor location
- Equipped with a suppressor to reduce exhaust noise during operation
- Up to 10 soldering irons can be connected to one unit

Example of Connections

* A single end cover is required for each line.
(One end cover is included in the product.)



Packing List

494	Unit, Filter case, Filter cap, Pre-filter (5 pcs), Duct (3 m), End cover, Main filter (5 pcs), Inlet socket, Exhaust duct (5 m), Nylon strap, Suppressor, Absorption pipe set, Instruction manual

*When ordering HAKKO 494, specify the part number of the absorption pipe set.

Option

Part No.	Name	Specifications
C1540	Absorption pipe set <R>	Any with a handle ø16 mm or smaller
B1246	Parallel piping joint	–

Specifications

Model No.	494
Power consumption	50 Hz: 150 W 60 Hz: 200 W
Noise level*	With hose: 55 dB Without hose: 71 dB
Suction capacity	50 Hz: 1.56 m^3/min. 60 Hz: 1.82 m^3/min.
Static pressure	50 Hz: 2.3 kPa (240 mmAq.) 60 Hz: 3.2 kPa (325 mmAq.)
Dimensions**	322 (W) × 300 (H) × 386 (D) mm
Weight***	18 kg

* Measured at a distance of 1 m from the face of the unit.
** Without handle and cord
*** Unit only

96

Soldering Pot

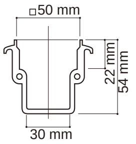
RoHS

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

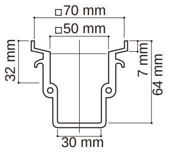
Features

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 450ºC	100 to 380ºC
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

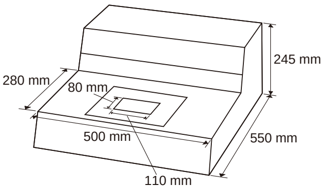
485

Flow Soldering System

for LEAD FREE

- **Compatible with lead-free solder**
- **The impeller and chamber, which are the parts that corrode most easily, are plated with corrosion-resistant material.**
- **Both temperature and time are used to control the solder flow.**

Dimensions



Packing List

485	Main unit, Air unit, Lamp (10 W [6 V]), Horizontal gauge, Spatula, IC tweezers, Waste collector, Positioning board, Foot switch, Locator light, Anti-oxidizer, 42-pin nozzle, 28-pin nozzle, 18/20-pin nozzle, 14/16-pin nozzle, 42-pin air hood, 28-pin air hood, 18/20-pin air hood, 14/16-pin air hood, Instruction manual

* Solder is not included.

Specifications

Model No.	485
Power consumption	850 W
Temperature range	Room temperature to 300ºC
Molten solder capacity	10 kg
Dimensions	500 (W) × 245 (H) × 550 (D) mm
Weight*	35 kg

Air unit

Air pressure	0.196 to 0.686 MPa (2 to 7 kgf/cm^2)
Dimensions	150 (W) × 100 (H) × 300 (D) mm
Weight**	3.5 kg

* Without solder and cord
** Without cord

FX-301B ESD SAFE

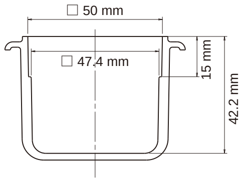
High Performance Soldering Pot **Digital**

for LEAD FREE ESD SAFE RoHS

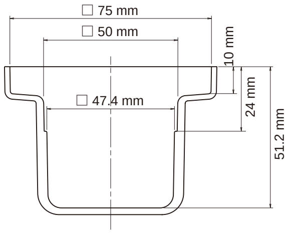
OFFSET

- 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.
- Two different sizes of solder pots are available.

50 × 50 square



75 × 75 square



FX-300

High Performance Soldering Pot **Analog**

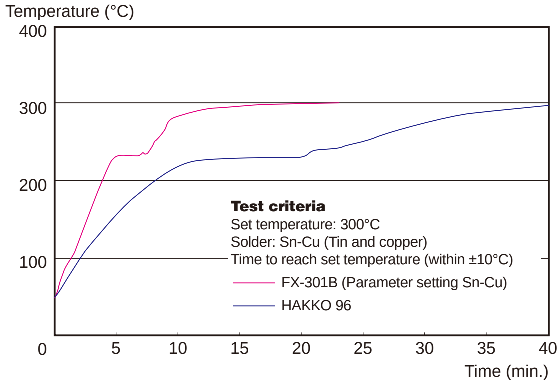
for LEAD FREE RoHS

- 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.
- Two different sizes of solder pots are available.

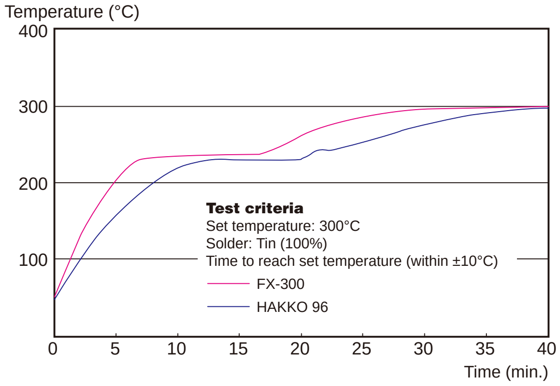
Quick Heat Up

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	200 W (100 V), 260 W (110 V), 290 W (120 V), 240 W (220 V), 260 W (230 V), 280 W (240 V)
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) × 42.2 (H) × 50 (D) mm 75 × 75 square durable type: 75 (W) × 51.2 (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	195 W (100 V), 220 W (110 V), 200 W (120 V), 190 W (220 V), 205 W (230 V), 215 W (240 V)
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) × 42.2 (H) × 50 (D) mm 75 × 75 square standard type: 75 (W) × 51.2 (H) × 75 (D) mm
Molten solder capacity**	50 × 50 square: 0.85 kg 75 × 75 square: 1.2 kg

* Without solder and cord

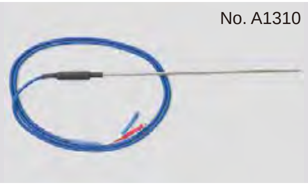
** The 50 × 50 square solder pot is originally installed. The 75 × 75 square solder pot is an optional part.

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 standard type
A1518	Solder pot	75 × 75 standard type
A1310	Temperature probe	For solder bath and pot

Temperature probe for soldering bath and pot

Possible to measure the temperature of solder with using thermometer and temperature probe.



FR-301

Nozzle quick change type

Portable Desoldering Tool

Nozzle included

RoHS

OFFSET

- Power switch and adjustable temperature control built in the handle
- Use of high thermal efficiency N61 series nozzles
- Reduction of solder clogging by improved heating core (in comparison with the previous model)

Packing List

FR-301	Unit, Pre-filter, Ceramic paper filter (L, qty 2), Nozzle wrench, Iron holder (simple type), Cleaning pin for heating core, Cleaning pin for ø1 mm nozzle, Instruction manual

Provided in a carrying case

Specifications

Model No.	FR-301
Power consumption	100 V 98 W (50/60 Hz) 110 V 122 W (50/60 Hz) 120 V 140 W (60 Hz) 220 V 100 W (50/60 Hz) 230 V 110 W (50/60 Hz) 240 V 120 W (50/60 Hz)
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.
Heating element	Ceramic heater
Standard nozzle	ø1 mm (No.N61-08)
Dimensions	215 (W) × 226 (H) mm (with ø1 mm (No.N61-08) nozzle)
Weight*	0.52 kg (with ø1 mm (No.N61-08) nozzle)

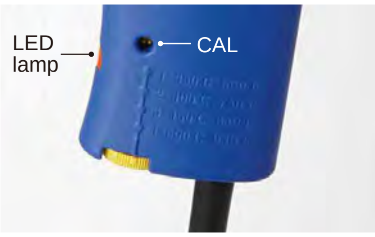
* Without cord

Features

Easy temperature control

LED indicators let you easily see when the heater is active and idling at your temperature setting.

Temperature range	
Setting 1	350°C
Setting 2	400°C
Setting 3	450°C
Setting 4	500°C



A wide selection of nozzles (N61 series)

SS type nozzles for micro land patterns

Oval shape nozzles for flat terminals

Long type nozzles for narrow space

Quick-change nozzle replacement with special tools

- Provided nozzle wrench

- Optional accessory Nozzle quick changer

Quick and safe nozzle replacement with nozzle quick changer

* It can't be used for the previous model (FR-300).

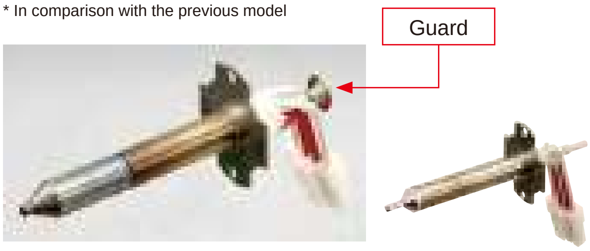
Nozzle quick changer for FR-301: part No. C5046

* The positioning jig (No. B5231) is separately required for oval type nozzle.

Reduction of solder clogging by improved heating core

This additional guard prevents a temperature drop of the heating core by making contact with the front holder and it enables to reduce solder clogging.

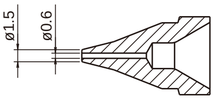
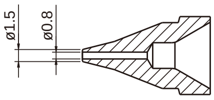
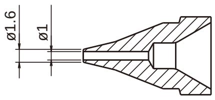
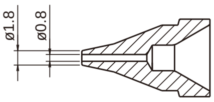
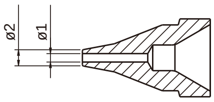
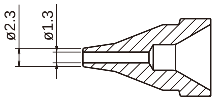
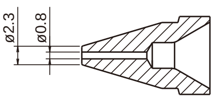
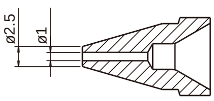
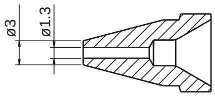
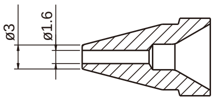
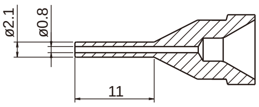
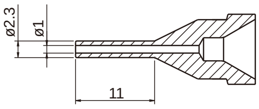
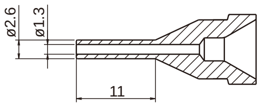
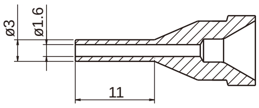
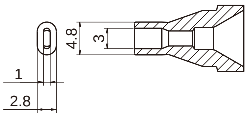
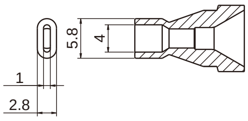
* In comparison with the previous model



Heating core of the previous product (FR-300)

Replacement Nozzles

Unit : mm

SS type	N61-01  	N61-02  	N61-03  	
S type	N61-04  	N61-05  	N61-06  	
Standard type	N61-07  	N61-08  	N61-09  	N61-10 
Long type	N61-11  	N61-12  	N61-13  	N61-14 
Oval type	N61-15  	N61-16  		

* N61 series nozzles can also be used for FR-410 desoldering station.

FR-400 ESD SAFE

Nozzle quick change type

GOOD DESIGN

Heavy Duty Desoldering Tool **Digital**

Nozzle included

Power Consumption
300 W

for LEAD FREE | ESD SAFE | RoHS

Desoldering

Auto off | SLEEP | Low ℃ | OFFSET

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

FR-410 ESD SAFE

Nozzle quick change type

High-Power Desoldering Tool **Digital**

Nozzle included

Power Consumption
140 W

for LEAD FREE | ESD SAFE | RoHS

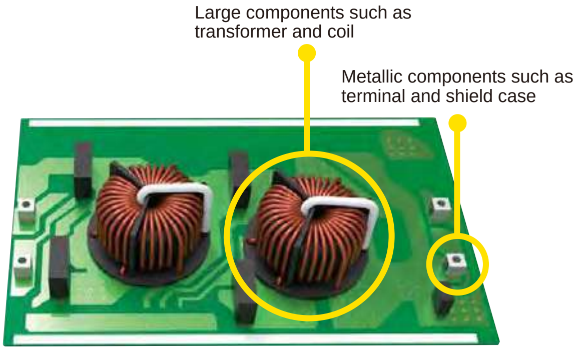
Desoldering

Auto off | SLEEP | Low ℃ | OFFSET

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

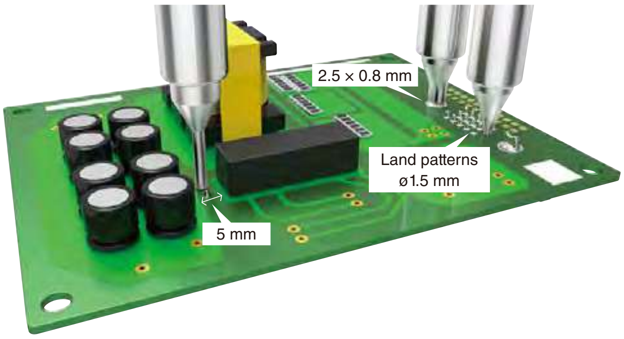
Feature of FR-400

300 W tremendous power makes incredible heating.

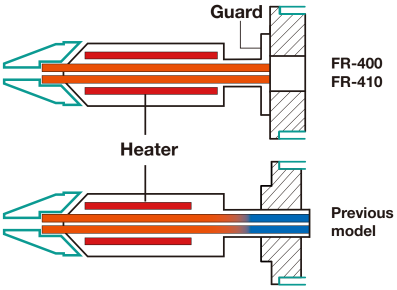

Large components such as transformer and coil
Metallic components such as terminal and shield case

Feature of FR-410

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



Common Features of FR-400 and FR-410



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.

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.

Reduction of solder clogging by improved heating core
The additional guard prevents a temperature drop of the heating core by making contact with the front holder and it enables to reduce solder clogging.

* In comparison with the previous model

Improvement in maintainability

■Easy heater replacement

By removing 3 screws

■Tool box for maintenance kit

■Quick change nozzle replacement with optional accessory

Quick and safe nozzle replacement with nozzle quick changer
* It can't be used for previous desoldering tools (FR-4001 or FR-4101).

Nozzle quick changer for FR-4003: Part No. C5045
Nozzle quick changer for FR-4103: Part No. C5046

* The positioning jig below is separately required for oval type nozzle.
Oval nozzle positioning jig: part No.B5229 for FR-4003
part No.B5230 for FR-4103

Packing List

FR-400	Station, Desoldering tool (FR-4003), Power cord, Iron holder (with cleaning wire), Tool box (Cleaning pin for ø1 mm, Cleaning pin for heating element, Cleaning drill for ø1 mm, Nozzle wrench, Filter [qty 2], Ceramic paper filter [qty 4]), Instruction manual
FR-410	Station, Desoldering tool (FR-4103), Power cord, Iron holder (with cleaning wire), Tool box (Cleaning pin for ø1 mm, Cleaning pin for heating element, Cleaning drill for ø1 mm, Nozzle wrench, Filter [qty 2], Ceramic paper filter L [qty 4]), Instruction manual

Specifications

Model No.	FR-400	FR-410
Power consumption	320 W	190 W
Temperature range	350 to 500 °C	330 to 450 °C
Temperature stability	±5 °C at idle temperature	±5 °C at idle temperature
Station		
Output voltage	AC 29 V	AC 24 V
Vacuum generator	Vacuum pump, double cylinder type	Vacuum pump, double cylinder type
Vacuum pressure	80 kPa (600 mmHg, max.)	80 kPa (600 mmHg, max.)
Suction flow*	15 L / min.	15 L / min.
Dimensions	166 (W) × 137 (H) × 264 (D) mm	165 (W) × 137 (H) × 244 (D) mm
Weight	5.7 kg	4.8 kg
Desoldering Tool		
Power consumption	300 W (29 V)	140 W (24 V)
Nozzle to ground resistance	<2 Ω	<2 Ω
Nozzle to ground potential	<2 mV	<2 mV
Heating element	Composite heater	Composite heater
Standard nozzle	ø1 mm (No. N60-02)	ø1 mm S type (No. N61-05)
Cord length	1.2 m	1.2 m
Total length**	183 mm (with ø1 mm nozzle)	168 mm (with ø1 mm S type nozzle)
Weight**	270 g (with ø1 mm nozzle)	190 g (with ø1 mm S type nozzle)

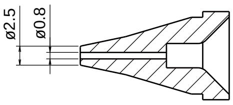
* The suction flow is measured at the filter case suction port of station.
** Without cord and hose

Desoldering Tool

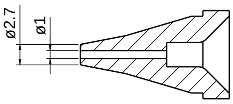
Replacement Nozzles for FR-400

Unit : mm

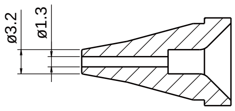
N60-01 Nozzle ø0.8



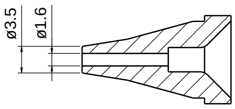
N60-02 Nozzle ø1



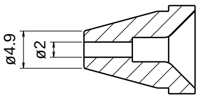
N60-03 Nozzle ø1.3



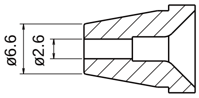
N60-04 Nozzle ø1.6



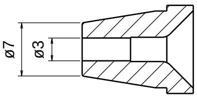
N60-05 Nozzle ø2



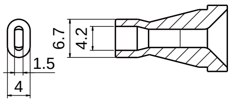
N60-06 Nozzle ø2.6



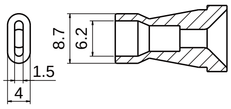
N60-07 Nozzle ø3



N60-08 Nozzle 4.2 x 1.5



N60-09 Nozzle 6.2 x 1.5

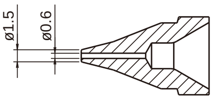


Replacement Nozzles for FR-410

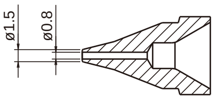
Unit : mm

SS type

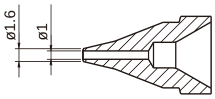
N61-01



N61-02

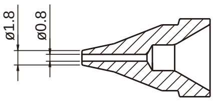


N61-03

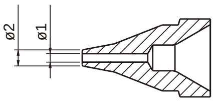


S type

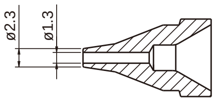
N61-04



N61-05

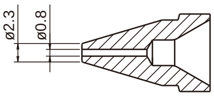


N61-06

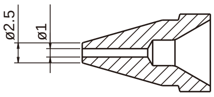


Standard type

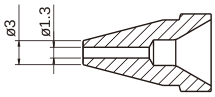
N61-07



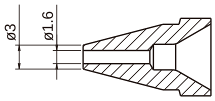
N61-08



N61-09

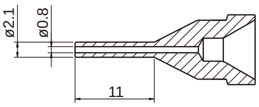


N61-10

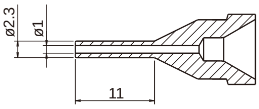


Long type

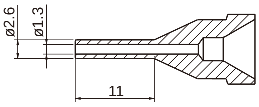
N61-11



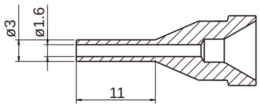
N61-12



N61-13

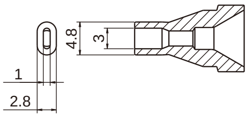


N61-14

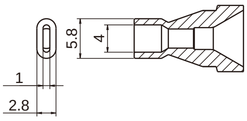


Oval type

N61-15



N61-16



* N61 series nozzles can also be used for FR-301 desoldering tool.

FM-204 ESD SAFE

Composite-type Desoldering Tool Digital

Nozzle not included

for LEAD FREE ESD SAFE RoHS

Soldering (Option) Soldering (Option) N_2 Desoldering

Auto off SLEEP Low ℃ 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

Features

Replacing the handpiece enables soldering.

■Soldering

FM-2027

■N_2 System (P.46 & P.47)

Set-up example

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

Specifications

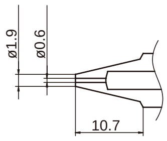
Model No.	FM-204
Power consumption	120 W
Temperature range	FM-2024: 350 to 450ºC FM-2026/2027: 200 to 450ºC
Temperature stability	±5ºC at idle temperature
Station	
Output voltage	AC 24 V
Vacuum generator	Vacuum pump, double cylinder type
Vacuum pressure	80 kPa (600 mmHg, max.)
Suction flow*	15 L /min.
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 mm nozzle)
Weight**	65 g (with ø1 mm nozzle)

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

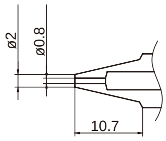
Optional Nozzles for FM-204

Unit : mm

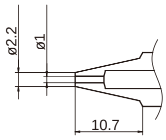
N1-06 Nozzle ø0.6



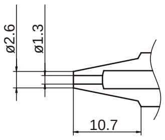
N1-08 Nozzle ø0.8



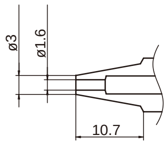
N1-10 Nozzle ø1



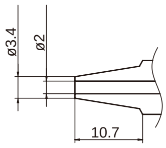
N1-13 Nozzle ø1.3



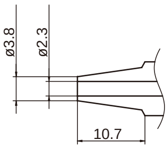
N1-16 Nozzle ø1.6



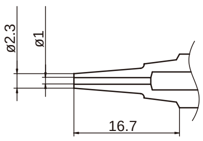
N1-20 Nozzle ø2



N1-23 Nozzle ø2.3



N1-L10 Nozzle ø1 long



SPPON

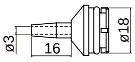
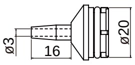
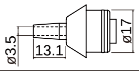
Desoldering Tool

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)

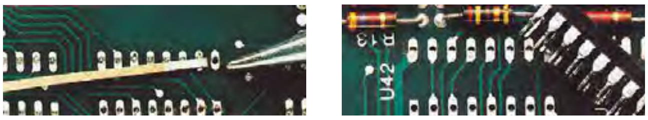
WICK

Desoldering Wire

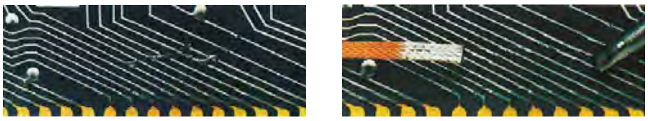
- Economical and easy-to-use desoldering wire
- ESD SAFE package

Features

Through-hole solder removal



Bridging solder removal



Specifications for FR-150

Flux type	ROL0 (IPC J-STD-004)
Halide content	0.00% (JIS Z 3197)
Copper plate corrosion	pass (JIS Z 3197)

Size

No clean type (halogen free)

Part No.	Description
FR150-81	0.7 mm × 1.5 m
FR150-82	1 mm × 1.5 m
FR150-83	1.5 mm × 1.5 m
FR150-84	2 mm × 1.5 m
FR150-85	2.5 mm × 1.5 m
FR150-86	3 mm × 1.5 m

Unflux type (unflux)

Part No.	Description
FR140-81	0.7 mm × 1.5 m
FR140-82	1 mm × 1.5 m
FR140-83	1.5 mm × 1.5 m
FR140-84	2 mm × 1.5 m
FR140-85	2.5 mm × 1.5 m
FR140-86	3 mm × 1.5 m

851 ESD SAFE

Hot-Air SMD Rework Station Analog

Nozzle included

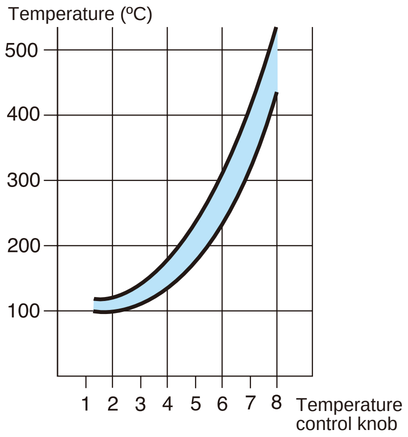
ESD SAFE RoHS

Hot Air
Rework

OFFSET

- **Single-nozzle hot air rework system that is perfect for the repair or local heating of small surface-mounted components**
- **Slim grip is ideal for work in narrow spaces.**

Temperature Distribution Chart



Test criteria

Measured at a point	2 mm from the nozzle
Room temperature	20 ºC
Nozzle used	A1066 ø2 mm

Replacement Nozzles

Part No.	Name	Specifications
A1065	Nozzle	ø1.5 mm
A1066	Nozzle	ø2 mm
A1067	Nozzle	ø3 mm
A1147	Nozzle	ø1 mm

Packing List

851	Station with handpiece, Handpiece holder, Nozzle holder, Instruction manual

Specifications

Model No.	851
Power consumption	85 W
Hot air temperature	100 to 540ºC

Station

Power consumption	5 W
Air flow	6 L /min. (max.)
Dimensions*	167 (W) × 101 (H) × 182 (D) mm
Weight*	1.8 kg

Handpiece

Power consumption	80 W
Standard nozzle	ø2 mm (No. A1066)
Total length**	217 mm
Weight**	180 g

* Without cord and handpiece
** Without cord

FR-810B ESD SAFE

Hot-Air SMD Rework Station **Digital**

Nozzle included

for LEAD FREE | ESD SAFE | RoHS

Hot Air Rework

Auto off | SLEEP | OFFSET | PRE°C

- 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 P.W.B.

FR-811 ESD SAFE

Hot-Air SMD Rework Station **Digital**

Nozzle not included

for LEAD FREE | ESD SAFE | RoHS

Hot Air Rework

Auto off | SLEEP | OFFSET | PRE°C

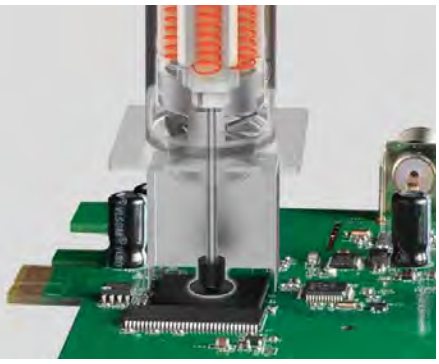
- Possible to make full-scale thermal profiles with 6-zone hot air and a bottom heater
- Possible to measure and record temperature of components and P.W.B. with type K thermocouple
- The dedicated software to link a station and a computer for easy and quick settings
- Easy data transfer through an USB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

Common Features of FR-810B and FR-811

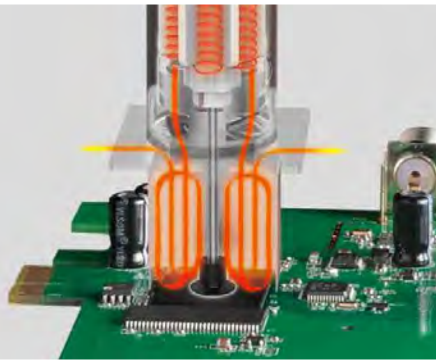
New user friendly functions for SMD rework

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.

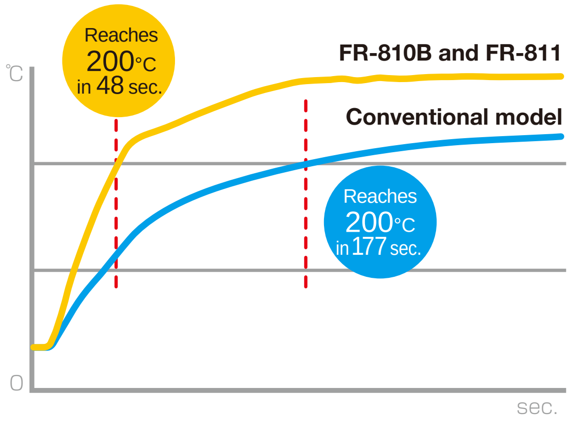


New type of nozzles
The new nozzles improve work efficiency with uniform heating (only with BGA nozzles).



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.



Test criteria

Model	FR-810B	Conventional model
Measurement method	Examination of time taken for connector sections soldered onto a ceramic board to be heated 200°C	
Board	Ceramic board	
Component used	Connector	
Nozzle shape	N51-02	A1130
Temperature setting	600°C	500°C
Air flow setting	9 (115 L /min.)	20 L /min.

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

Quick-change N51 nozzles

Simple heater replacement

Specifications

Port No.	FR-810B	FR-811
Power consumption	700 W (100 V), 840 W (110 V), 820 W (120 V), 1100 W (220 V), 1200 W (230 V), 1300 W (240 V)	
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	

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

Option

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

* Please ask about correct part number to the nearest HAKKO dealer or distributor in your area.

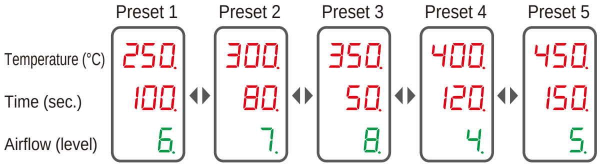
Common Features of FR-810B and FR-811

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.

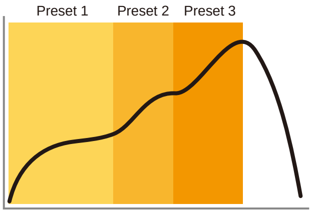
Handpiece holder No.B5048 in the picture can be attached to FR-811 as well (option).

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).



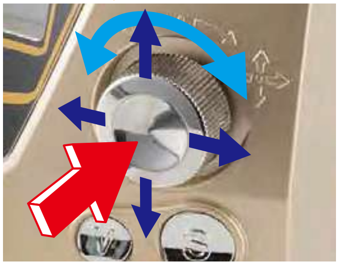
	Temperature (°C)	Time (s)	Airflow
Preset 1	250	100	6
Preset 2	300	40	6
Preset 3	350	50	6
Preset 4	100	000	6
Preset 5	100	000	6

* 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

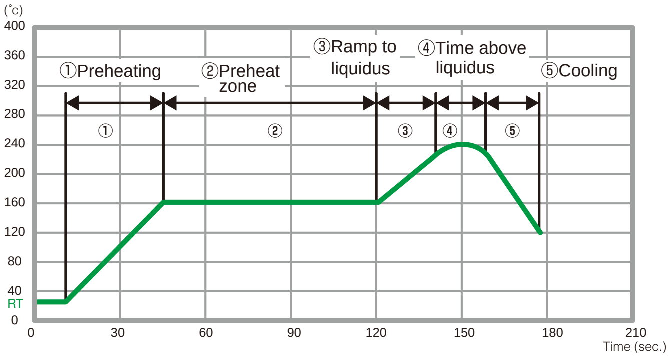
A USB device terminal for easy data transfer

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 airflow are controlled. Therefore FR-811 can make a full-scale thermal profile which is close to reflow profiles made by a reflow oven.

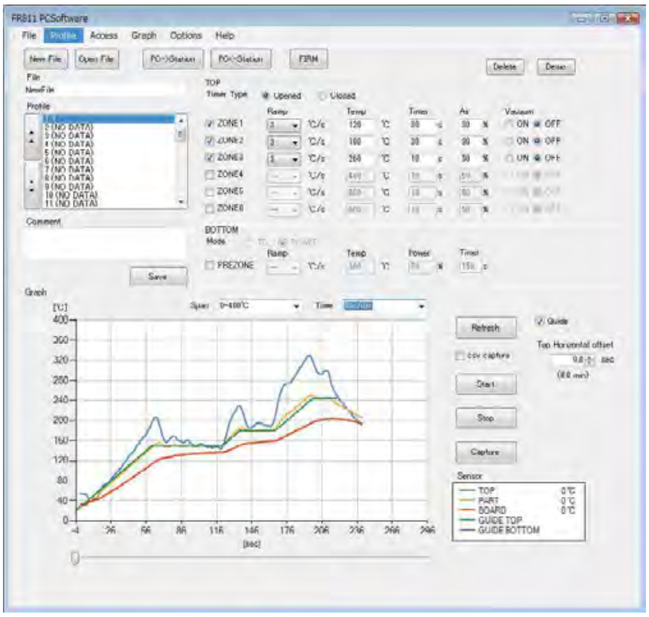


Record thermal data

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.



2 (NO DATA)
3 (NO DATA)
4 (NO DATA)
5 (NO DATA)
6 (NO DATA)
7 (NO DATA)
8 (NO DATA)
9 (NO DATA)
10 (NO DATA)
11 (NO DATA)

	Ramp		Temp		Timer		Air		Vacuum
☑ ZONE1	3	°C/s	120	°C	30	s	30	%	○ ON ● OFF
☑ ZONE2	3	°C/s	180	°C	30	s	30	%	○ ON ● OFF
☑ ZONE3	3	°C/s	260	°C	10	s	50	%	○ ON ● OFF
☐ ZONE4		°C/s		°C		s		%	
☐ ZONE5		°C/s		°C		s		%	
☐ ZONE6		°C/s		°C		s		%	

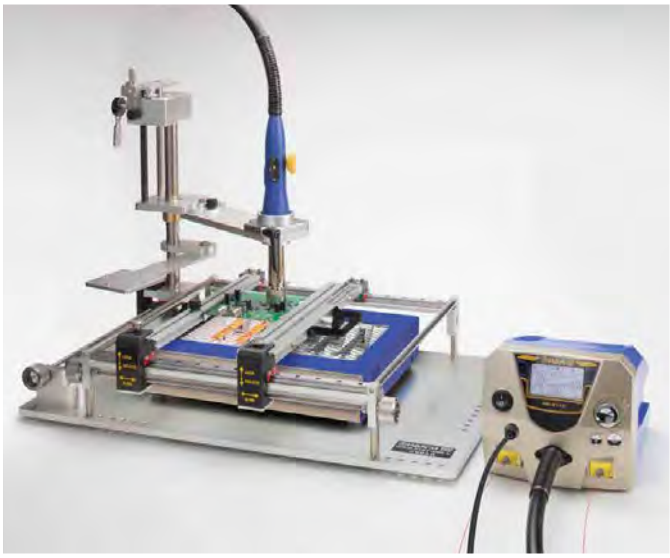
Linked operation with the bottom heater

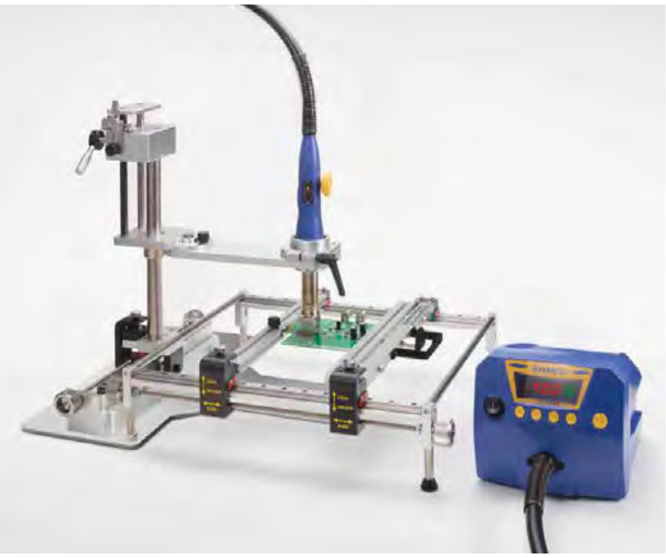
FR-811 can control on/off timing and output of the bottom heater which is available optionally.

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.

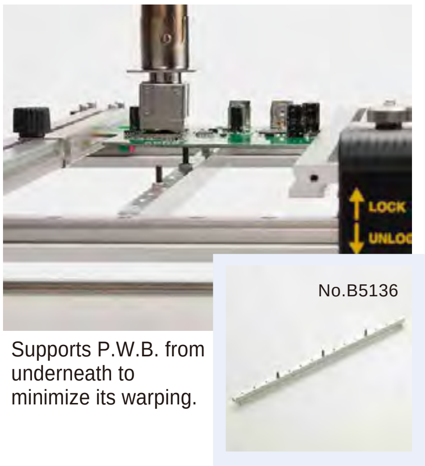
Board Holder

Makes it easy to set and remove a P.W.B. and to make fine adjustments after setting.

Board Clip

Accepts even irregular-shaped P.W.B.

Board Support Unit



Supports P.W.B. from underneath to minimize its warping.

Option

Temperature probe for hot air station

Possible to measure the temperature of hot air with using thermometer and temperature probe.
It is also possible to measure the temperature of workpieces with using thermometer and Sensor B (No. A1557) which comes with No. C1541.

No. C1541

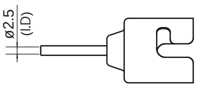
No. A1557

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

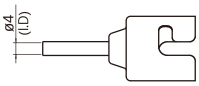
Unit: mm

Single

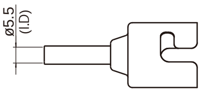
N51-01* Single 2.5



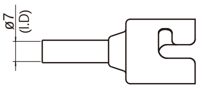
N51-02 Single 4



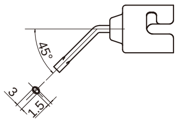
N51-03 Single 5.5



N51-04 Single 7

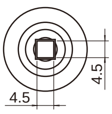


N51-05* Bent Single 1.5 × 3

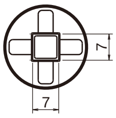


BGA

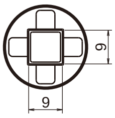
N51-10 BGA 4 × 4



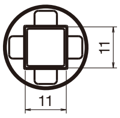
N51-11 BGA 6 × 6



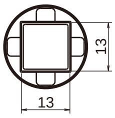
N51-12 BGA 8 × 8



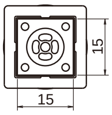
N51-13 BGA 10 × 10



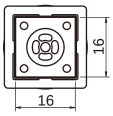
N51-14 BGA 12 × 12



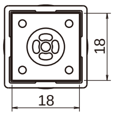
N51-15 BGA 14 × 14



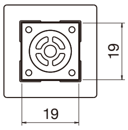
N51-16 BGA 15 × 15



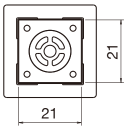
N51-17 BGA 17 × 17



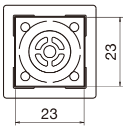
N51-18 BGA 18 × 18



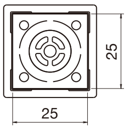
N51-19 BGA 20 × 20



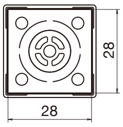
N51-20 BGA 22 × 22



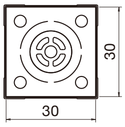
N51-21 BGA 24 × 24



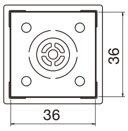
N51-22 BGA 27 × 27



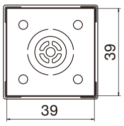
N51-23 BGA 29 × 29



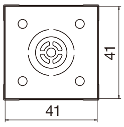
N51-24 BGA 35 × 35



N51-25 BGA 38 × 38



N51-26 BGA 40 × 40



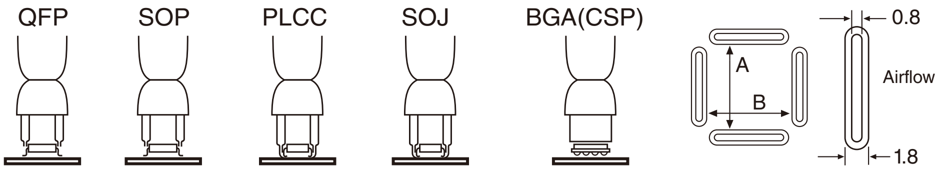
* The vacuum function does not operate with these nozzles.

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

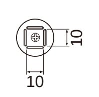
Unit: mm



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

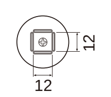
QFP and BQFP

A1125B QFP 10 × 10



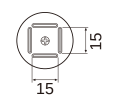
A: 10.2
B: 10.2

A1262B QFP 12 × 12



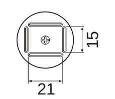
A: 12.2
B: 12.2

A1126B QFP 14 × 14



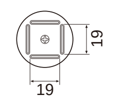
A: 15.2
B: 15.2

A1128B QFP 14 × 20



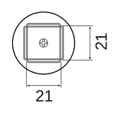
A: 15.2
B: 21.2

A1127B QFP 17.5 × 17.5



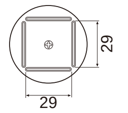
A: 19.2
B: 19.2

A1261B QFP 20 × 20



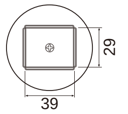
A: 20.2
B: 20.2

A1129B QFP 28 × 28



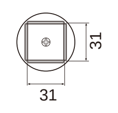
A: 29.7
B: 29.7

A1263B QFP 28 × 40



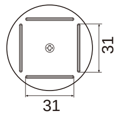
A: 27.7
B: 39.7

A1265B QFP 32 × 32



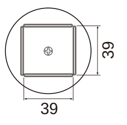
A: 32.2
B: 32.2

A1203B QFP 35 × 35



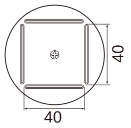
A: 35.2
B: 35.2

A1264B QFP 40 × 40



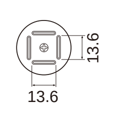
A: 40.2
B: 40.2

A1215B QFP 42.5 × 42.5



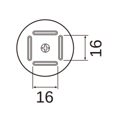
A: 42.5
B: 42.5

A1180B BQFP 17 × 17



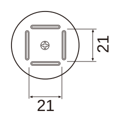
A: 18.2
B: 18.2

A1181B BQFP 19 × 19



A: 19.2
B: 19.2

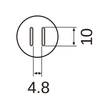
A1182B BQFP 24 × 24



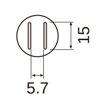
A: 24.2
B: 24.2

SOP and TSOL

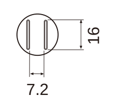
A1131* SOP 4.4 × 10



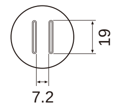
A1132* SOP 5.6 × 13



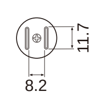
A1133* SOP 7.5 × 15



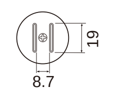
A1134* SOP 7.5 × 18



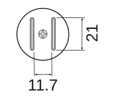
A1258B SOP 7.6 × 12.7



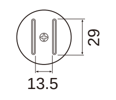
A1260B SOP 8.6 × 18



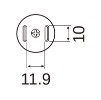
A1257B SOP 11 × 21



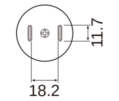
A1259B SOP 13 × 28



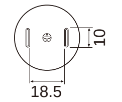
A1185B TSOL 13 × 10



A1186B TSOL 18 × 10

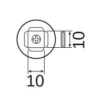


A1187B TSOL 18.5 × 8



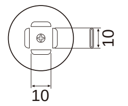
PLCC

A1188B PLCC 9 × 9 (20 pins)



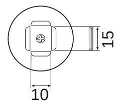
A: 11
B: 11

A1140B PLCC 11.5 × 11.5 (28 pins)



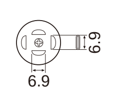
A: 13
B: 13

A1141B PLCC 11.5 × 14 (32 pins)



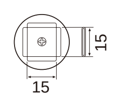
A: 15
B: 13

A1139B PLCC 12.5 × 7.3 (18 pins)



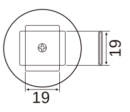
A: 9
B: 14

A1135B PLCC 17.5 × 17.5 (44 pins)



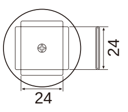
A: 18.5
B: 18.5

A1136B PLCC 20 × 20 (52 pins)



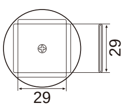
A: 21
B: 21

A1137B PLCC 25 × 25 (68 pins)



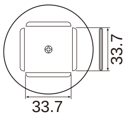
A: 26
B: 26

A1138B PLCC 30 × 30 (84 pins)



A: 31
B: 31

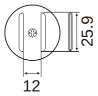
A1189B PLCC 34 × 34 (100 pins)



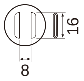
A: 36.5
B: 36.5

SOJ

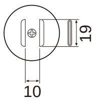
A1214B SOJ 10 × 26



A1183* SOJ 15 × 8

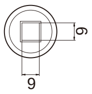


A1184B SOJ 18 × 8

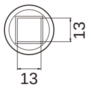


BGA

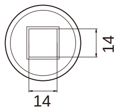
A1470 BGA 8 × 8



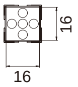
A1471 BGA 12 × 12



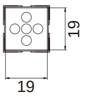
A1472 BGA 13 × 13



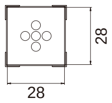
A1473 BGA 15 × 15



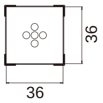
A1474 BGA 18 × 18



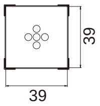
A1475 BGA 27 × 27



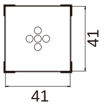
A1476 BGA 35 × 35



A1477 BGA 38 × 38

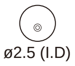


A1478 BGA 40 × 40

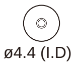


Single

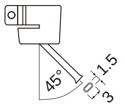
A1124B* Single 2.5



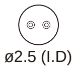
A1130* Single 4.4



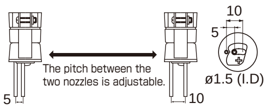
A1142B* Bent single 1.5 × 3



A1190* Dual single 2.5 × 9.5

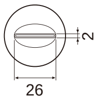


A1325* Dual single ø1.5 × 5 to 10 Adjustable pitch

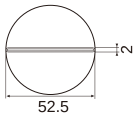


SIP

A1191* SIP 25L



A1192* SIP 50L



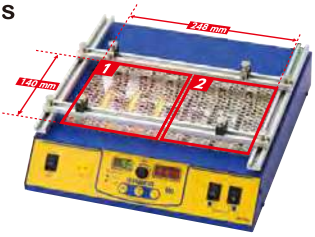
* The vacuum function does not operate with these nozzles.

FR-870B ESD SAFE

IR Preheater Digital

for LEAD FREE ESD SAFE RoHS

- Infrared preheater that provides the optimal heating effect over the whole workpiece surface
- Non-contact system enables the application of this preheater to doublesided boards.
- 2 independent switchable work grid partitions

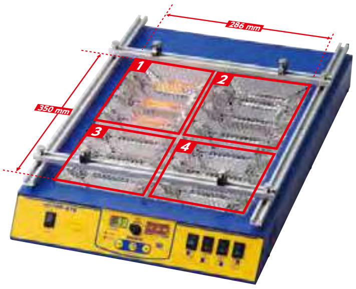


FR-872 ESD SAFE

Large Size IR Preheater Digital

for LEAD FREE ESD SAFE RoHS

- Large heating area 286 (W) x 350 (D) mm
- 4 independent switchable work grid partitions



FR-830 ESD SAFE

Preheater Analog

for LEAD FREE ESD SAFE RoHS

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

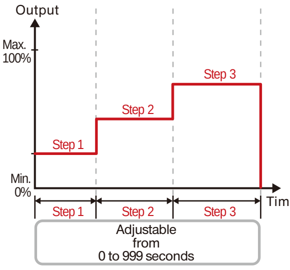
Features of FR-870B and FR-872

Power Mode
Control heater out put from 0% to 100%.

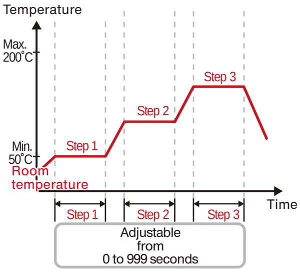
T/C Mode
Sense the temperature of the sensor attached to the board and control to maintain the set temperature for the board.

Auto Mode
Auto mode provides three steps (step 1 to 3) to create an optimal heating profile for the workpiece.

With Power Mode



With T/C Mode



Packing List

FR-870B	Unit, Thermocouple, Power cord, Heater lamp, Instruction manual
FR-872	Unit, Thermocouple, Heater, Power cord, Instruction manual

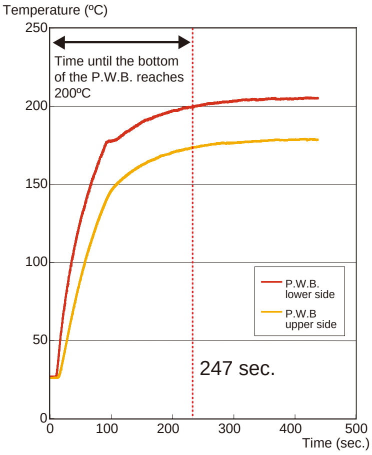
Specifications

Model No.	FR-870B	FR-872
Power consumption	500 W (100 V) 610 W (110 V) 730 W (120 V) 1130 W (220 V) 1240 W (230 V)	1050 W (100 V) 1250 W (110 V) 1440 W (120 V) 1150 W (220 V) 1250 W (230 V)
Operation mode	Power mode, T/C mode Auto power mode, Auto T/C mode	
Setting range	Power mode: 0 to 100% T/C mode: 50 to 200°C Set time: 0 to 999 seconds	
Heating element	Carbon heater	High efficiency carbon heater
Heater area dimensions	248 (W) × 140 (D) mm	286 (W) × 350 (D) mm
Heater zone	2	4
Temperature sensor	K-type thermocouple	
Heater lamp lifetime*	2100 hours	2100 hours
Heater control	Power mode: Percentage-based system T/C mode: PID control	
External connections	Start signal input possible	
Dimensions	290 (W) × 100 (H) × 311 (D) mm	AC 100 to 120 V: 360 (W) × 97 (H) × 535 (D) mm AC 220 to 230 V: 360 (W) × 97 (H) × 524 (D) mm
Weight	3.2 kg	5.6 kg

* Provided for reference purpose only and is not guaranteed.

Features of FR-830

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	210 W (100 V), 240 W (110 V), 470 W (120 V), 230 W (220 V), 250 W (230 V), 270 W (240 V)
Air flow	0.15 m^3/min. (fan capability)
Temperature range	150 to 300ºC (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	–

FR-701 ESD SAFE

Nozzle quick change type

Repair System Digital

for LEAD FREE ESD SAFE RoHS

Soldering | Soldering (Option) N2 | Solder Feed Soldering (Option) | Desoldering | Hot Tweezer 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. 41.
For information on features of desoldering tool, see P. 85.
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-4103), Iron holder for soldering iron (with cleaning sponge and wire), Iron holder for desoldering tool (with cleaning wire), Tool box (Cleaning pin for ø1 mm, Cleaning pin for heating element, Cleaning drill for ø1 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. 43 to 45.
For information on replacement nozzles for desoldering tool FR-4103, see P. 86.

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	80 kPa (600 mmHg, max.)
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 ground resistance	<2 Ω
Nozzle to ground potential	<2 mV
Heating element	Composite heater
Standard nozzle	ø1 mm S type (No. N61-05)
Cord length	1.2 m
Total length**	168 mm (with ø1 mm S type nozzle)
Weight**	190 g (with ø1 mm S type nozzle)

* Without cord
** Without cord and hose

FR-702 ESD SAFE

Nozzle quick change type

Rework System Digital

for LEAD FREE ESD SAFE RoHS

Soldering
N2 Soldering (Option)
Solder Feed Soldering (Option)
Desoldering
Hot Tweezer Rework (Option)
Hot Air Rework
Auto off
SLEEP
Low ℃
OFFSET
PRE ℃

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

Features

For information on features of soldering iron, see P. 41.
For information on features of desoldering tool, see P. 85.
For information on features of hot air, see P. 91 to 92 (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-4103), Iron holder for soldering iron (with cleaning sponge and wire), Iron holder for desoldering tool (with cleaning wire), Tool box (Cleaning pin for ø1 mm, Cleaning pin for heating element, Cleaning drill for ø1 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. 43 to 45.
For information on replacement nozzles for desoldering tool FR-4103, see P. 86.
For information on replacement nozzles for hot air, see P. 95 to 97.

Specifications

Part No.	FR-702
Power consumption	1030 W (100 V), 1170 W (110 V), 1430 W (220 V), 1530 W (230 V), 1630 W (240 V)

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	80 kPa (600 mmHg, max.)
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 (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 mm S type (No. N61-05)
Cord length	1.2 m
Total length***	168 mm (with ø1 mm S type nozzle)
Weight***	190 g (with ø1 mm S type nozzle)

Handpiece (Hot air)

Power consumption	670 W (100 V), 810 W (110 V), 1070 W (220 V), 1170 W (230 V), 1270 W (240 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.

FE-510

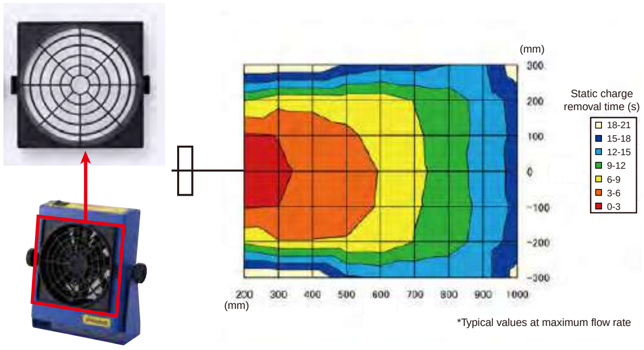
Static Eliminator

- **Static eliminator enables the selection of the area in which static will be neutralized.**
- **Locking mechanism maintains the angle of the eliminator unit.**
- **Error output signal function is useful when incorporating the unit into line applications.**

Features

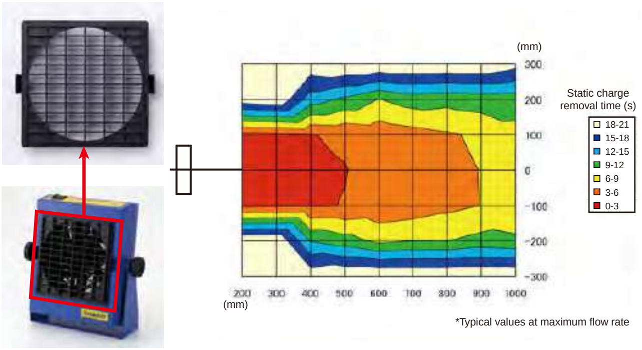
Static elimination area

Wide-angle louver



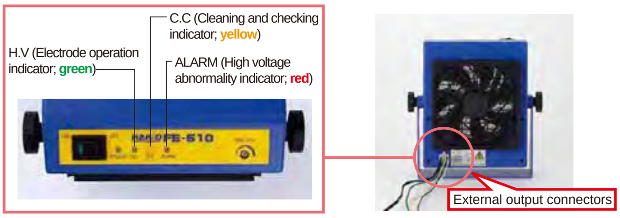
*Typical values at maximum flow rate

Straight louver



*Typical values at maximum flow rate

Error output signal


C.C (Cleaning and checking indicator; yellow)
H.V (Electrode operation indicator; green)
ALARM (High voltage abnormality indicator; red)
HAKKO FE-510
External output connectors

Superb ease of maintenance

The discharge electrode can be replaced simply by turning it gently in the clockwise direction.

Packing List

FE-510	Unit (with wide-angle louver), Straight louver, Cleaning brush, Filter, AC adapter, Output signal connection lead (1 set), Instruction manual

Specifications

Model No.	FE-510
AC adapter output/Capacity	DC 24 V 10 VA
Discharge method	High frequency AC method
High voltage output	Approx. AC 2000 V
Ion balance*	±10 V or less
Static elimination time*	Straight louver: Approx. 1.5 sec. Wide-angle louver: Approx. 2.5 sec.
High voltage abnormality output (ALARM)	MOS FET relay output Maximum allowed current: 100 mA Applied voltage: DC 30 V or less
Cleaning check output (C.C)	MOS FET relay output Maximum allowed current: 100 mA Applied voltage: DC 30 V or less
Air flow	1.5 to 3 m^3/min.
Air flow out angle	Vertically 360º variable (every 10º)
Quantity of produced ozone**	0.04 ppm or less
Operating environment	Ambient temperature/Humidity range: 0 to 40°C, 15 to 65% RH (without condensation)
Material for discharge electrode	Tungsten
Dimensions	150 (W) × 182 (H) × 50 (D) mm (without stand)
Weight***	0.79 kg

AC adapter

AC adapter output/Capacity	DC 24 V 1 A
Dimensions	34 (W) × 72 (H) × 51 (D) mm
Weight	100 g

* Typical value measured (before shipment) at a distance of 300 mm from the center of the fan outlet with the maximum flow rate

** Measured at a point 150 mm away from the center of the fan outlet

*** Including stand

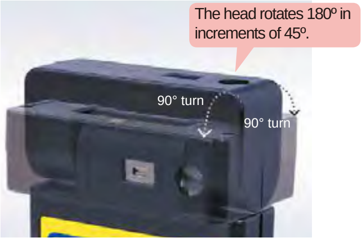
FG-450

Static Level Meter

- **Portable static level meter for the measurement of electric potential of films and plastic objects**
- **Useful when checking electric potential measurements in production lines.**
- **Also suitable for performing operation test of static eliminators.**

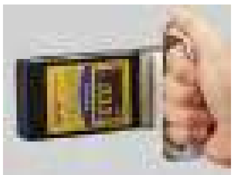
Features

Rotating sensor head



Selectable two modes in measurement

- Measuring static electricity (resolution: 10 V)



The red light image is projected to a point about 30 mm from the meter.

- Measuring ion balance (resolution: 1 V)

Packing List

FG-450	Unit (with carrying case), Grounding wire, Strap, 006P 9 V Manganese dry battery (for trial), Ion balance plate (with screw), Instruction manual

Specifications

Model No.	FG-450
Power supply	006P 9 V dry battery
Measurable potential range	Normal mode: 0.00 to ±19.99 kV (resolution: 0.01 kV) Ion balance mode: 0.000 to ±1.999 kV (resolution: 0.001 kV)
Signal detection method	Oscillating chopper method
Display refresh frequency	0.5 seconds
Measurement precision	±10% of reading ±2 digits
Continuous operating limit	Approx.10 hours (with an alkaline battery)
Measurement distance	30 mm (between object being measured and sensor)
Measurement distance adjustment	Red LED beam focusing method
Sensor head rotation angle	180º (stops every 45º)
Display	LCD display with built-in backlight
Polarity display	Positive polarity/negative polarity display
Mode switching	Switch modes by pressing MODE button
Battery check	Remaining charge displayed in display panel
Operating environment	Ambient temperature/Humidity range: 0 to 40°C, 20 to 70% RH (without condensation)
Dimensions	68 (W) × 138 (H) × 22 (D) mm
Weight*	160 g

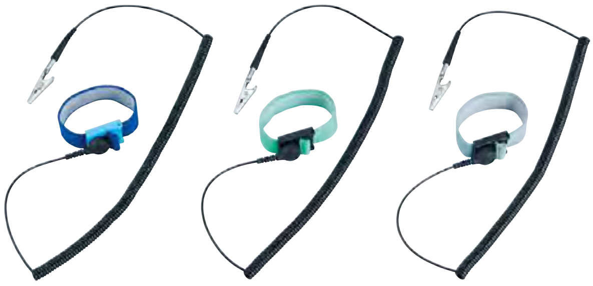
* Including battery

Option

Part No.	Name	Specifications
B3586	Body changing level measurement plate	–

442B

Wrist Strap



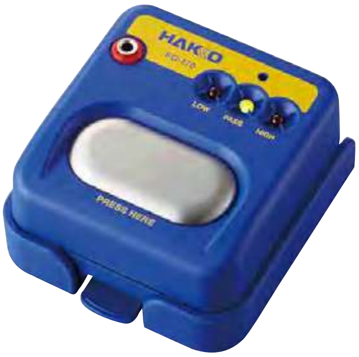
- This antistatic wrist strap prevents the human body from becoming charged with static electricity.
- The stretchable band is easy to adjust.
- A conductive thread is used for the band lining.

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

FG-470

Wrist Strap Tester



- Easy-to-use, quick-response tester for wrist straps
- A user-friendly pad secures pass/fail judgement on a wrist strap.
- Highly visible LED lamps and buzzer will indicate test result.
  * Buzzer sounds only for “PASS”.

Features

Connection patterns to choose depending on wrist straps

* Banana plug and grounding wire are included in FG-470.

1 Connect a banana plug of a wrist strap directly to FG-470.	2 Pinch a banana plug inserted in FG-470 with an alligator clip of a wrist strap.	3 Pinch a grounding wire inserted in FG-470 with an alligator clip of a wrist strap.

Dedicated holder included

A mounting holder can make it easy to plug and unplug even with one hand. No tool is required to remove a unit. A unit can be portable off the holder.

* Example of installation

* 4 Wood screws provided

Packing List

FG-470	Unit, 006P 9 V dry battery (for trial), Grounding wire, Banana plug, Mounting holder, Wood screws (qty 4), Instruction manual

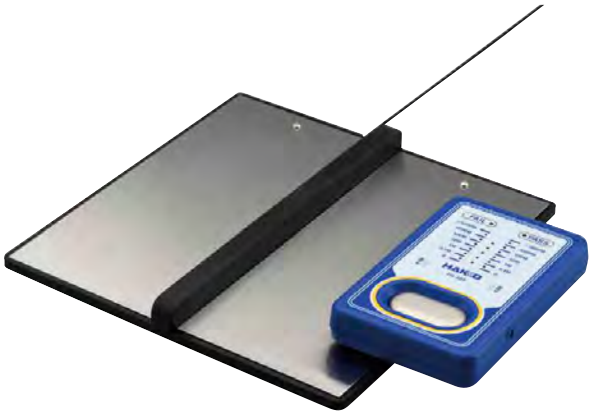
Specifications

Model No.		FG-470
Power supply		006P 9 V dry battery (alkaline cell recommended)
Indication	LOW	$R < 800$ kΩ
	PASS	800 kΩ $\leq R \leq$ 9 MΩ
	HIGH	$R > 9$ MΩ
Judgment level accuracy	800 kΩ	+ 10% / - 0%
	9 MΩ	+ 0% / - 10%
Battery life		Approx. 50,000 times (9 V alkaline)
Grounding wire		1 m
Operating environment		Ambient temperature/Humidity range: 0 to 40°C, max.80% RH (without condensation)
External dimensions		85 (W) × 44 (H) × 90 (D) mm
With mounting holder		92 (W) × 48 (H) × 97 (D) mm
Weight*		120 g
With mounting holder		160 g

* Without battery

FG-465 New

Footwear Tester



- Saves measurement data automatically
- Meets the requirement of JIS T 8103 : 2010
- Personal information can be registered in ID

Specifications

Model No.		FG-465
Rating		24 VDC 50 mA
Measurement voltage		20 VDC
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%
	0.1 MΩ ≤ R ≤ 100 MΩ	± 10%
	100 MΩ < R	± 8%
Operating environment		Ambient temperature/Humidity range: 0 to 40°C, max.80% RH (without condensation)
Environment condition		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

Output voltage	24 VDC

* Including mounting base

** Without cord

Packing List

FG-465	Unit, Test plate, Mounting base, Knob (qty 2), Wood screw (qty 2), Pan head screw (qty 2), AC adapter*, USB cable, Instruction manual

* AC adapter may not be included depending on the specifications.

Option

Part No.	Name
C5032	Stand
B5263	Unit integration base

Stand

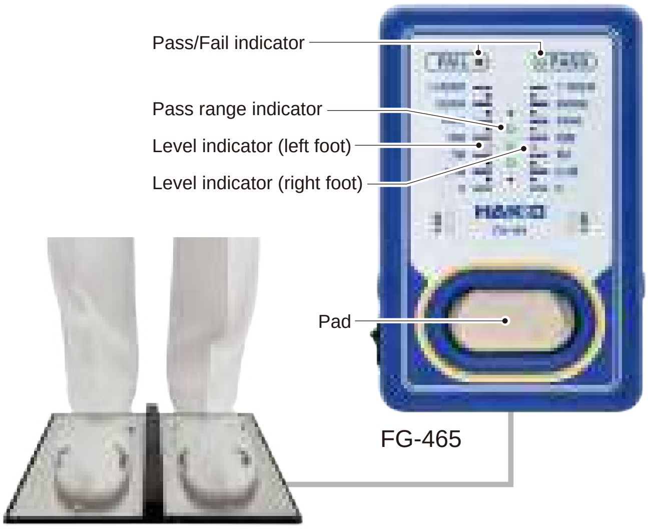
Unit integration base
(Connecting cable included)

An option part to integrate FG-465 and FG-470 is available.

Features

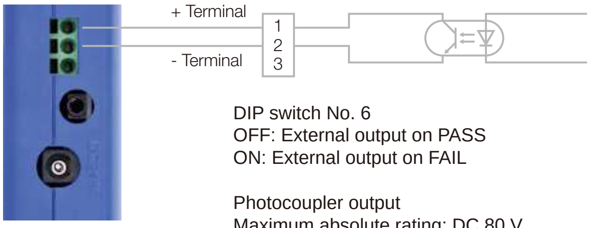
Dual foot plate

FG-465 measures anti-static performance of footwear on both feet but individually, and shows the results for each foot.



Evaluation external output

Evaluation results can be output through the external output terminal to interlock with other devices, to open a door, turn on a signal, etc.



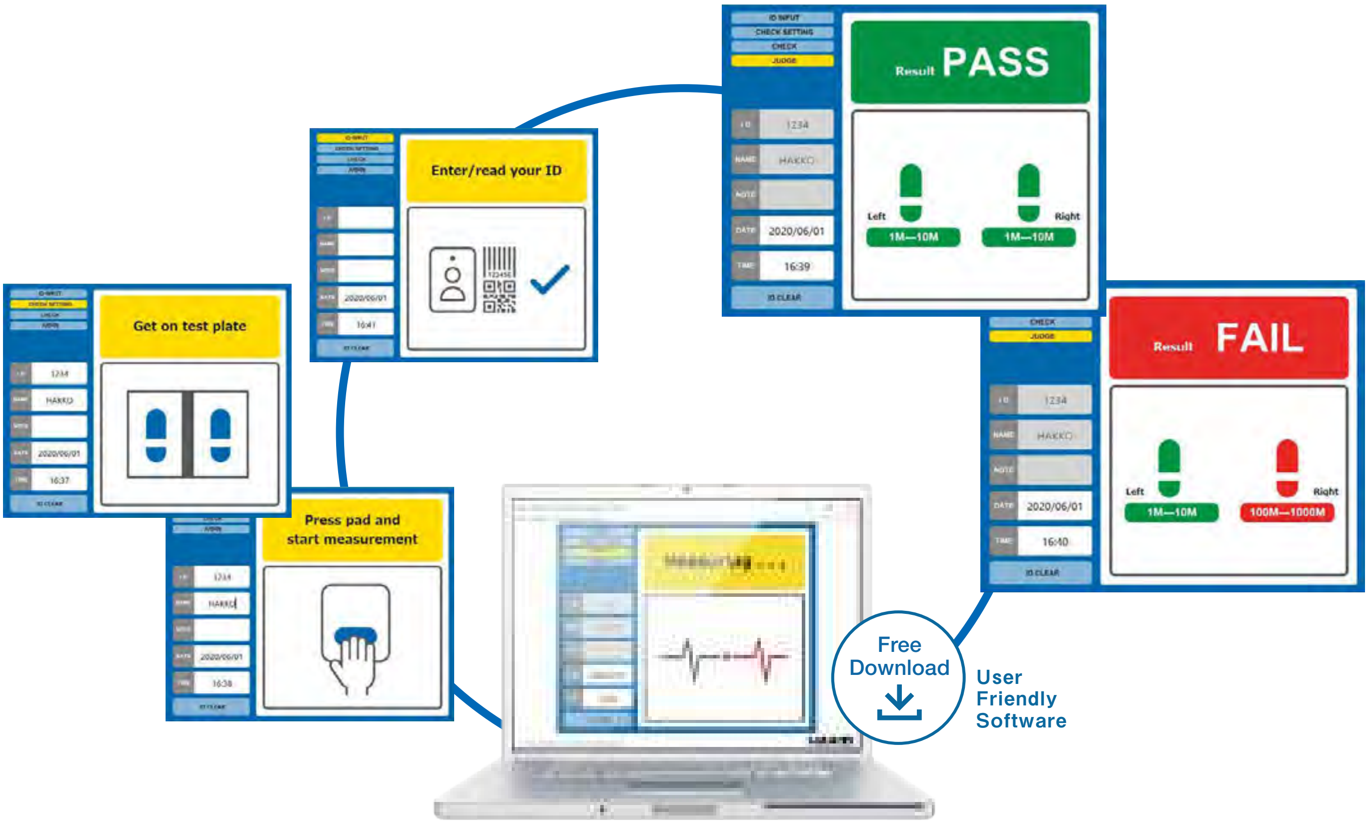
Left side view

DIP switch No. 6
OFF: External output on PASS
ON: External output on FAIL

Photocoupler output
Maximum absolute rating: DC 80 V
Maximum output current: DC 5 mA
Output time: ON for 1 second after evaluation

User-friendly software

The dedicated software makes it easy to check measurement status of FG-465. The software enables digital management of all the related measurement information including operator IDs.
*The registrations on our website are necessary to download the software.

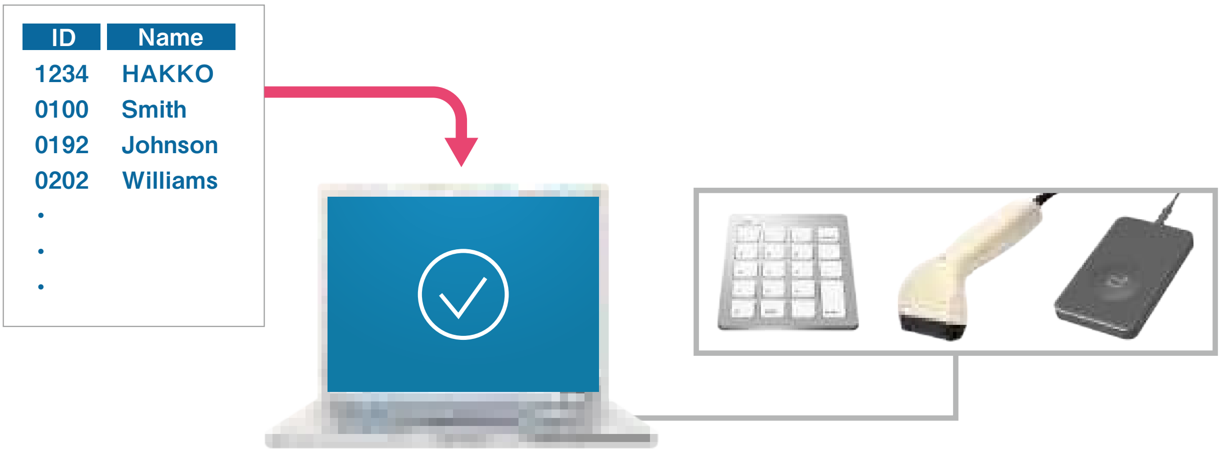


Free Download

User Friendly Software

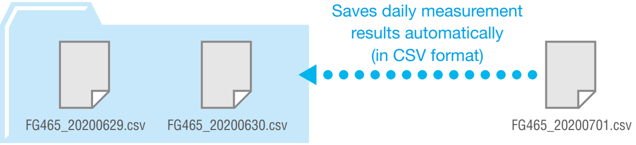
Features

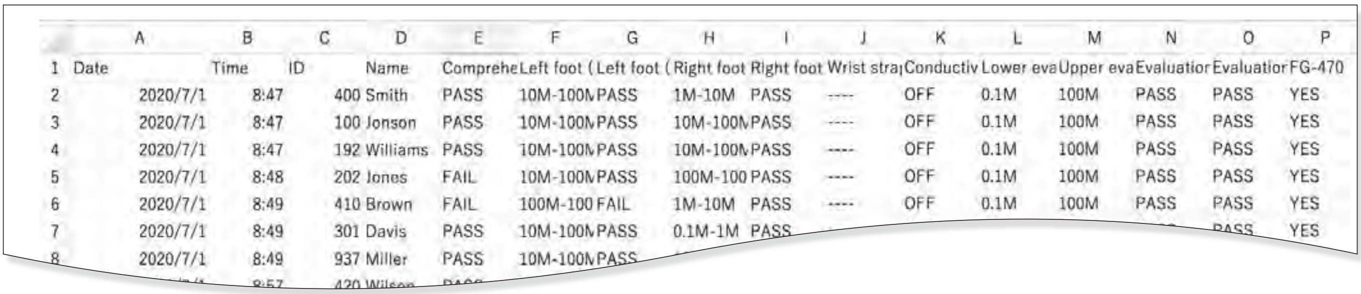
ID Management
IDs can be input by entering numeric values, reading barcode or IC card.
Personal information can be registered in ID and operator IDs can be recorded as a part of measurement information.



ID	Name
1234	HAKKO
0100	Smith
0192	Johnson
0202	Williams
•	
•	
•	

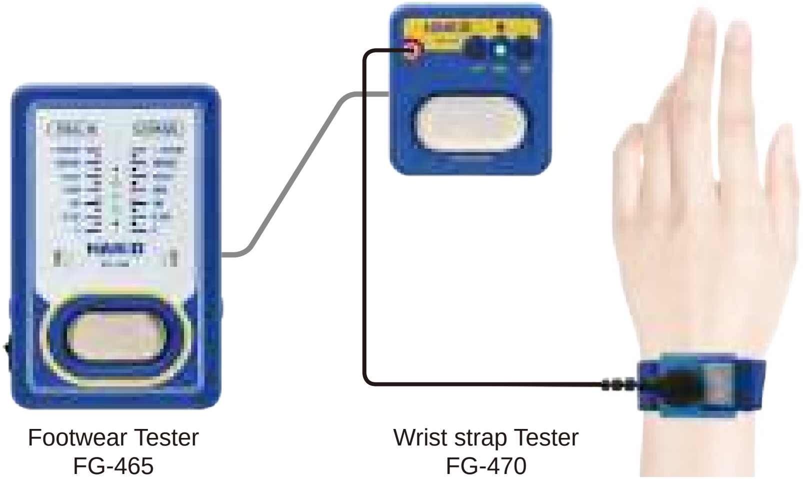
Improved traceability
The measurement information can be automatically saved as a digital data in a specified folder. The information consists of measurement date, time, operator ID, and result of each foot to improve traceability.


Saves daily measurement results automatically (in CSV format)
FG465_20200629.csv
FG465_20200630.csv
FG465_20200701.csv



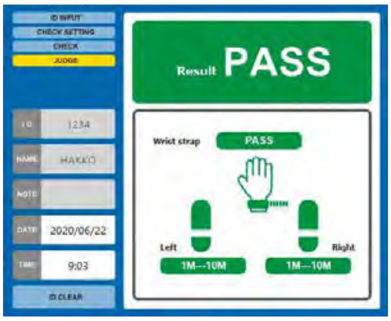
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Date	Time	ID	Name	Comprehe	Left foot (	Left foot (	Right foot	Right foot	Wrist stra	Conductiv	Lower eva	Upper eva	Evaluatior	Evaluatior	FG-470
2	2020/7/1	8:47	400	Smith	PASS	10M-100N	PASS	1M-10M	PASS	----	OFF	0.1M	100M	PASS	PASS	YES
3	2020/7/1	8:47	100	Jonson	PASS	10M-100N	PASS	10M-100N	PASS	----	OFF	0.1M	100M	PASS	PASS	YES
4	2020/7/1	8:47	192	Williams	PASS	10M-100N	PASS	10M-100N	PASS	----	OFF	0.1M	100M	PASS	PASS	YES
5	2020/7/1	8:48	202	Jones	FAIL	10M-100N	PASS	100M-100	PASS	----	OFF	0.1M	100M	PASS	PASS	YES
6	2020/7/1	8:49	410	Brown	FAIL	100M-100	FAIL	1M-10M	PASS	----	OFF	0.1M	100M	PASS	PASS	YES
7	2020/7/1	8:49	301	Davis	PASS	10M-100N	PASS	0.1M-1M	PASS						PASS	YES
8	2020/7/1	8:49	937	Miller	PASS	10M-100N	PASS									

Works as a combo tester
FG-465 can work as a combo tester with FG-470, a wrist strap tester, that makes it possible to conduct measurement, evaluation and recording of both footwear and wrist strap at once.
* Connecting cable (B5264) or Unit integration base (B5263), sold separately, is required.



Footwear Tester
FG-465

Wrist strap Tester
FG-470



Result PASS

ID 1234
NAME HAKKO
NOTE
DATE 2020/06/22
TIME 9:03

Wrist strap PASS
Left 1M---10M
Right 1M---10M

Vacuum Pick-Up Tool

392 ESD SAFE

Outlet-Powered Type

ESD SAFE RoHS

- Outlet-powered suction pick-up tool with built-in vacuum pump
- The pick-up capacity can be increased up to 230 gf with an optional pad.

393

Dropper Type

RoHS

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

394

Battery-Powered Type

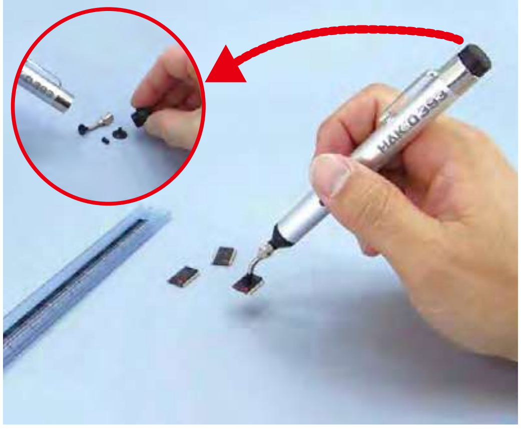
RoHS

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

Usage Example

HAKKO 392

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

392	Unit, ø0.4 mm bent nozzle, ø1.1 mm bent nozzle, ø3 mm pad, ø7 mm pad, Instruction manual
393	Unit, ø1.1 mm bent nozzle with stopper, ø3 mm pad, ø7 mm pad, ø10 mm pad, Instruction manual
394	Unit, ø1.1 mm bent nozzle with stopper, ø5 mm pad, ø10 mm pad, Two AAA Alkaline batteries (for trial), Instruction manual

Specifications

Model No.	392
Power consumption	5 W
Maximum pressure	37.3 kPa (280 mmHg)
Pad	Conductive silicone rubber
Dimensions	Station: 132 (W) × 83 (H) × 170 (D) mm Pen: ø10 × 123 (L) mm Hose: 1.1 m
Weight*	Station: 1.65 kg Pen: 25 g

* Without cord, nozzle and pad

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

FT-802 ESD SAFE

Thermal Wire Stripper

Blade not included

- Thermal wire stripper for higher quality and more preciseness

- It can strip insulation with no nick.
- Even very fine AWG 38 can be stripped with standard blades.
- Space saving by the integration of station and holder

Connectable with handpiece for knife type blade

Knife type blade can strip the insulation of big cable with no nick.

FT-8003 ESD SAFE

Handpiece for knife type blade

Blade included

Packing List

FT-802	Station (with wire material indicator seal), Handpiece with lead adjuster (FT-8004), Hexagon socket set screw (M2.5 x 2.5 [qty 2]), Hexagon wrench (1.27 mm), Power cord, Instruction manual
FT-8003 (Conversion kit)	Handpiece (FT-8003), Knife blade, Handpiece holder, Blade removal tool, Connecting cable, Instruction manual

Specifications

Model No.	FT-802
Power consumption	76 W

Station

Output voltage	AC 20 V
Dimensions	76 (W) × 159 (H) × 161 (D) mm
Weight	1.6 kg

Handpiece

Power consumption	72 W (20 V)
Cord length	1.6 m
Total length*	153 mm
Weight*	47 g

* Without cord and blade

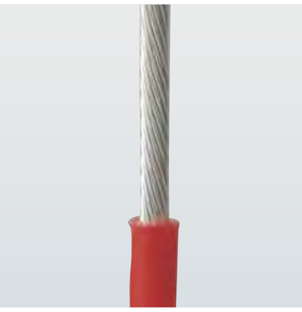
Model No.	FT-8003
Power consumption	46 W (24 V)
Tip to ground resistance	<2 Ω
Tip to ground potential	<2 mV
Cord length	1.3 m
Total length*	155 mm
Weight*	27 g

* Without cord and blade

Features

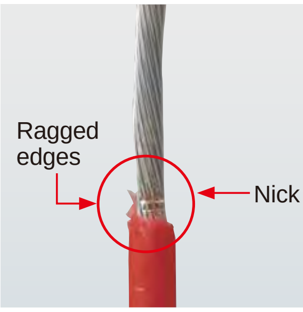
Thermal strip gives great sharpness.

FT-802



FT-802 can strip the insulation of AWG 38 wire with no nick.

Conventional wire stripper



Conventional wire stripper could make ragged edges of insulation or damage strands.

Output setting by the unit of 5%
Easy to set optimum output level as per material

Material	Output value (%)
PVC	10
PE	10
PA	20
PVDF	30
ETFE	40
SI	45
PTFE	55

* The above values are for reference.

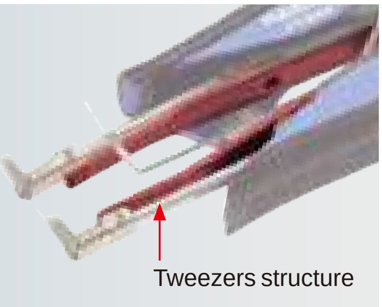
User-friendly display

Status of a handpiece at glance on the display.
User-friendly design for reduction of stress during the work.

- ○ A handpiece is correctly set in a holder.
- ○ Same as the output value.
- ○ Ready to work immediately.
- ○ Auto sleep function will activate after passing the set time.

Due to the tweezers structure, the cutting edges are always aligned.

The blades can be securely fixed by making the frame with tweezers structure.



Blades are replaceable and a handpiece can be saved.

No need to replace a handpiece when blades get worn out. Blades can be easily replaced by using the hex-wrench (included in the unit) and the blade removal plate.

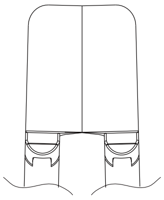
* The blades must be cool before replacement for safety.

Remove blades.

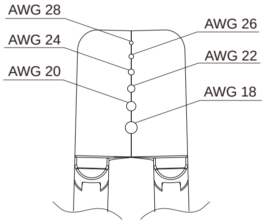
Put removed blades in the holder.

Optional Blades

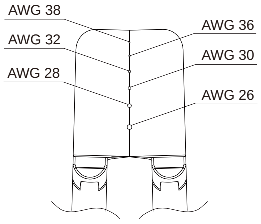
For FT-8004



G4-1601

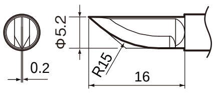


G4-1602



G4-1603

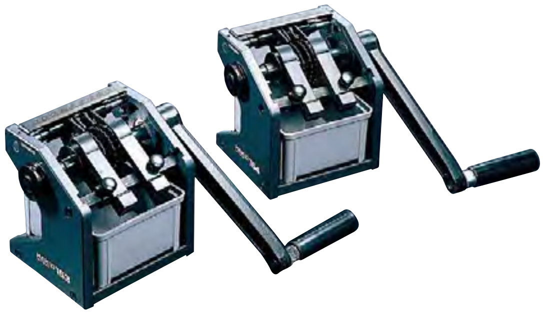
For FT-8003 (option)



G3-1601

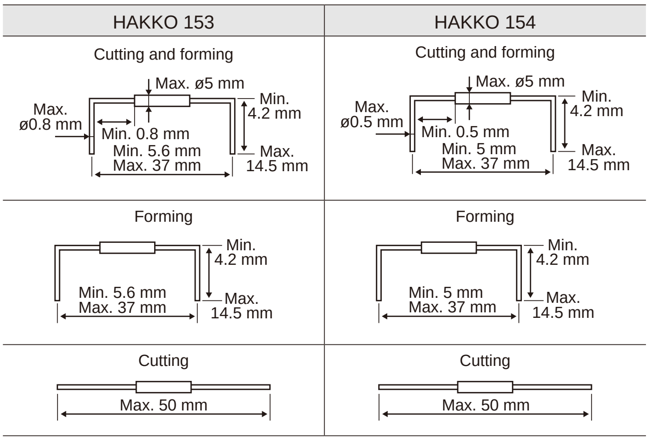
153 / 154

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



Packing List

153, 154	Unit, Parts tray, Clamp, Handle, 2 mm Hexagon wrench, 2.5 mm Hexagon wrench, 3 mm Hexagon wrench, 4 mm Hexagon wrench, Instruction manual

Specifications

Part No.	153-1	154-1
Forming size	5.6 mm pitch	5 mm pitch
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	

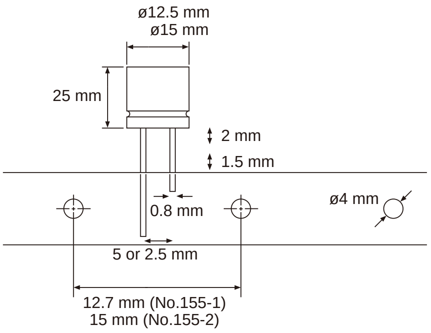
* These tools are not suited to work on components with lead frames (square lead).
** Including handle and clamp

155

Lead Cutter

- Lead cutter for radial components

Cutting



* Cutting only

Packing List

155	Unit, Parts tray, Clamp, Handle, 2 mm Hexagon wrench, 2.5 mm Hexagon wrench, 3 mm Hexagon wrench, 4 mm Hexagon wrench, Instruction manual

Specifications

Part No.	155-1	155-2
Diameter of lead wire	ø0.8 mm (max.)	
Lead wire*	For annealed copper lead wire only	
Processing part size	ø12.5 × 25 mm (max.)	ø15 × 25 mm (max.)
Feed hole pitch	12.7 mm	15 mm
Lead pitch**	5 mm, 2.5 mm	5 mm
Processing size	1.5 mm from taping end, 2 mm from component end (min.)	
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 mm.
*** Including handle and clamp

152B

Motor Drive

Lead cutter or former is not included in HAKKO 152B.

RoHS

- **Motor drive that enables automatic cutting and forming of taped components**
- **Constant-torque drive ensures precise and speedy processing.**
- **Speed control knob enables the adjustment of the processing speed.**

Packing List

152B	Unit, Instruction manual

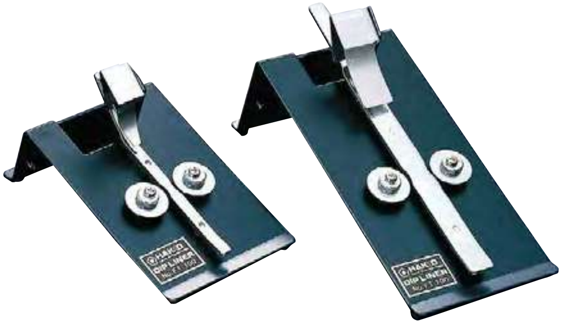
Specifications

Model No.	152B
Power consumption	30 W
Processing capacity (with HAKKO 153, 154)	50 Hz : 30,000 pcs/hr (max.) 60 Hz : 36,000 pcs/hr (max.)
Processing capacity (with HAKKO 155)	50 Hz : 15,000 pcs/hr (max.) 60 Hz : 18,000 pcs/hr (max.)
Dimensions	430 (W) × 140 (H) × 150 (D) mm
Weight*	5.6 kg

* Without cord

DIPLINER

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

HAND TOOLS

Cutting pliers, pliers and tweezers

RoHS

- Pliers are recommended to cut or process annealed copper wires for electronic parts and excellent sharpness and durability due to our unique heat-treatment
- Non-magnetic stainless-steel tweezers for electronic parts

Full flush cut to make cut surface extremely flat

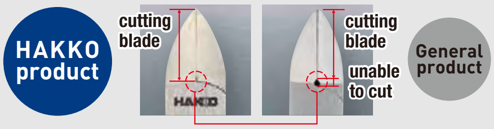
Micro cutting pliers

Narrow cutting blades for
tight spaces

Cutting pliers

Excellent wearing
resistance and durability

Wires can be cut even at the lowest position of blades near to the joint.



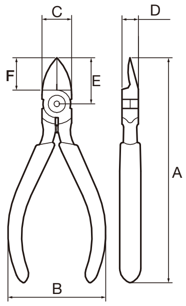
FT-600

FT-601

Specifications

Part No.	FT600-81			FT601-81		
Cutting capacity	ø1.2mm (max.)			ø1.5mm (max.)		
Dimensions (mm)	A	B	C	A	B	C
	117	50	11	117	51	15.5
	D	E	F	D	E	F
	6	21	13.4	8.5	24	16.8

* Do not cut steel wire, or the blade edge gets nicked.



Smooth jaws for minimal damage on materials

Long needle nose pliers

Needle nose eases
a work in tight spaces

Pliers

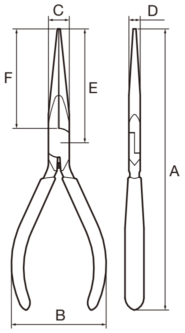
Great usability
Perfect to grasp and bend

FT-620

FT-621

Specifications

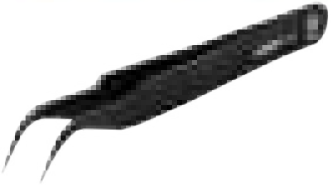
Part No.	FT620-81			FT621-81		
Dimensions (mm)	A	B	C	A	B	C
	148	50	11	124	50	11
	D	E	F	D	E	F
	6	60	52.4	6	36	28.4



Precision tweezers / straight

FT-640

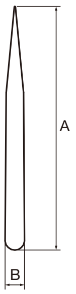
Precision tweezers / bent



FT-641

Specifications

Part No.	FT640-81		FT641-81	
Dimensions (mm)	A	B	A	B
	113	9	118	10



106

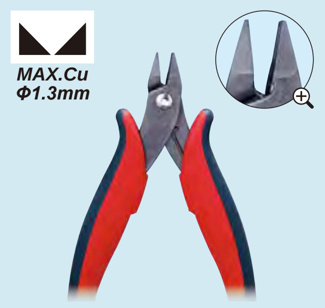
Cutting pliers, pliers

RoHS

- **Wire cutters/needle-nose pliers designed for general-purpose work**
- **Use in cutting copper and soft lead wires (do not use on hard drawn steel wires.)**

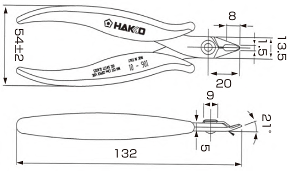
MAX.Cu =Max. annealed copper lead wire cutting capability

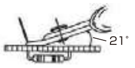
Cutting tool for flush cut with safety clip

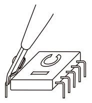


Part No.	106-01

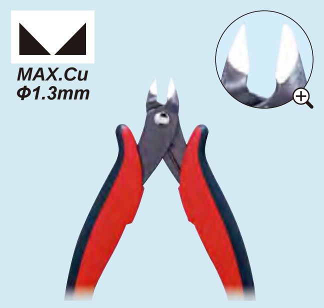
Unit : mm





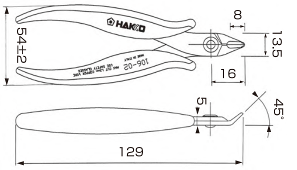


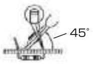
Cutting tool for flush cut with angled blade

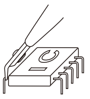


Part No.	106-02

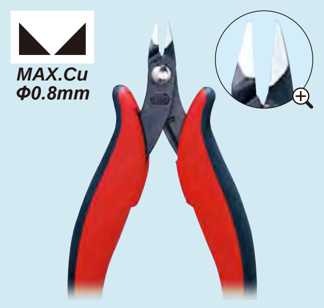
Unit : mm





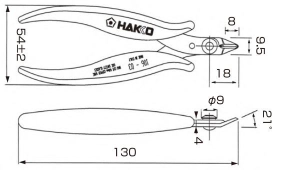


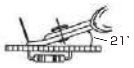
Cutting tool for flush cut with small blade

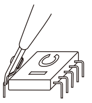


Part No.	106-03

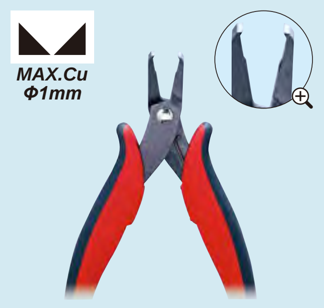
Unit : mm





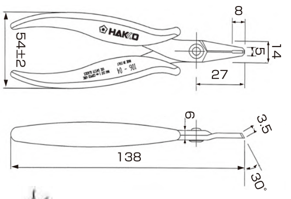


Cutting tool for a front, flush cut

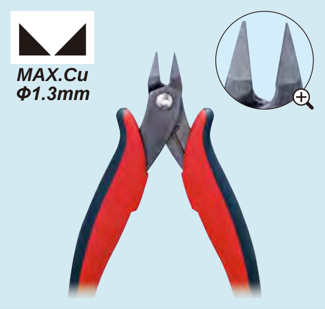


Part No.	106-04

Unit : mm

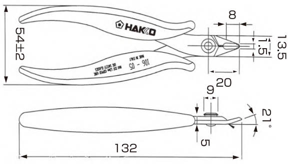


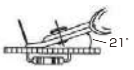
Cutting tool for flush cut

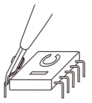


Part No.	106-05

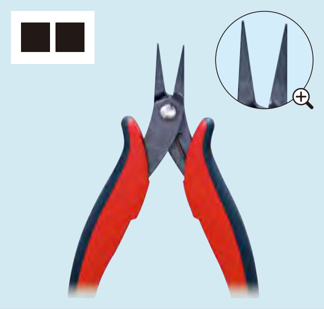
Unit : mm





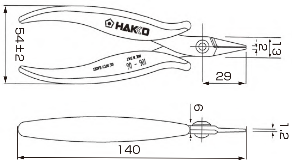


Short nose pliers

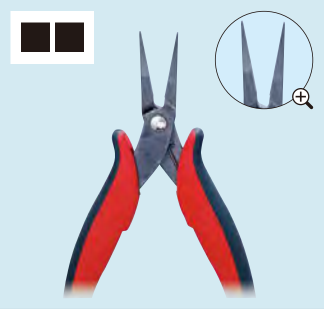


Part No.	106-06

Unit : mm

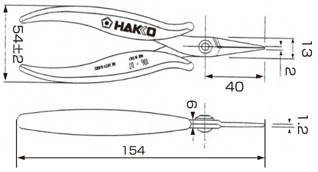


Long nose pliers

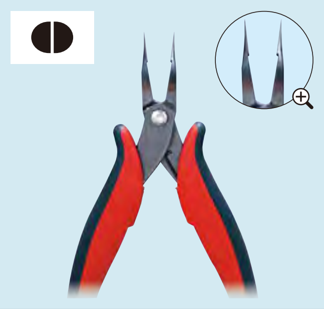


Part No.	106-07

Unit : mm

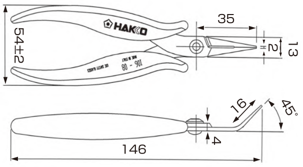


Bent nose pliers



Part No.	106-08

Unit : mm



FV-310

Heating Gun

- Stepless control on temperature and airflow for optimal settings
- Easy replacement of heating element
- Temperature range: 80 to 530˚C (for 220 - 240 V)
- Airflow range: 0.15 m^3/min.

Packing List

FV-310	Unit, Instruction manual

Provided in a carrying case

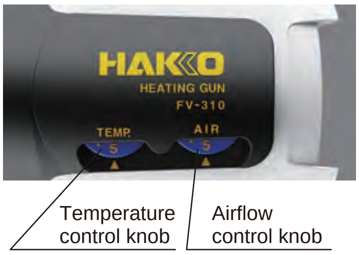
Specifications

Power Consumption	1000 W
Maximum Temperature*	530°C (50 to 530°C for 100 - 110 V 80 to 530°C for 220 - 240 V continuously variable)
Air Velocity	600 m/min.
Air Flow	0.15 to 0.25 m^3/min.
Dimensions**	240 (W) × 190 (H) × 70 (D) mm
Weight**	0.6 kg

* Measured at the point 10 mm from the pipe.
** Without cord

Features

Stepless control on temperature and airflow for optimal settings
Fine control of temperature and airflow for a variety of application contributes to improvement of work efficiency.



Types of applications

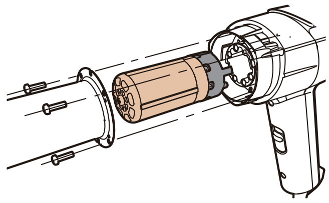
A	Drying painting and putty
B	Peeling sticker
C	Shrinking
D	Heat shrink tubing
E	Curving plastic material

Temperature distribution chart

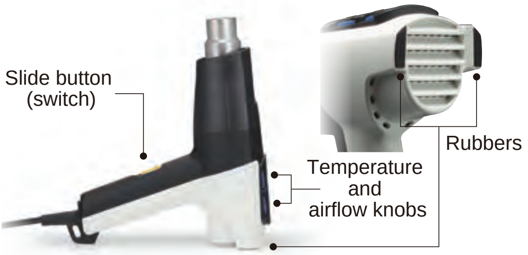
Temperature control knob (TEMP.) / Airflow control knob (AIR)	1	2	3	4	5
1 (0.15 m³/min.)	120 °C **A** **B** C D E	175 °C **A** **B** **C** D E	295 °C A B **C** **D** **E**	425 °C A B C **D** **E**	530 °C A B C D E
2 (0.17 m³/min.)	110 °C **A** **B** C D E	165 °C **A** **B** **C** D E	270 °C A B **C** **D** **E**	390 °C A B C **D** **E**	505 °C A B C D E
3 (0.2 m³/min.)	100 °C **A** **B** C D E	145 °C **A** **B** **C** D E	230 °C A B **C** **D** **E**	320 °C A B C **D** **E**	425 °C A B C D E
4 (0.23 m³/min.)	90 °C **A** B C D E	130 °C **A** **B** **C** D E	205 °C A **B** **C** **D** **E**	285 °C A B **C** **D** **E**	380 °C A B C **D** **E**
5 (0.25 m³/min.)	80 °C **A** B C D E	115 °C **A** **B** **C** D E	190 °C A **B** **C** **D** **E**	270 °C A B **C** **D** **E**	345 °C A B C **D** **E**

* This chart is for 220-240 V. For the chart for 100-110 V, please visit our website.
* The temperature and airflow volume are reference values; these values are not guaranteed.

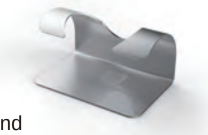
Easy replacement of heating element
It requires only a screwdriver to remove pipe and replace heating element.



Safety design for fall-prevention during hands-free operation
Anti-slip rubbers on the back improve stability and safety during hands-free operation.



Use of stand, an option part, secures stability for hands-free application.

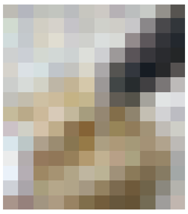


Stand
No.B5166

Option

Drying, painting and putty

Heat shrink tubing
Use of hook type nozzle and stand



Peeling sticker

Shrinking

Curving plastic material
Use of nozzle holder and single nozzle

Welding floor coverings
Use of nozzle holder and V type nozzle

Welding PVC sheet
Use of nozzle holder and spatula type nozzle along with roller

Spatula type nozzle 20 mm
No.N70-01

* Use this nozzle on the nozzle holder (N70-05).

Spatula type nozzle 62 mm
No.N70-02

Hook type nozzle 20 mm
No.N70-03

Hook type nozzle 40 mm
No.N70-04

Nozzle holder
No.N70-05

Single nozzle 12 mm
No.N70-06

* Use this nozzle on the nozzle holder (N70-05).

V type nozzle for 4 mm welding rod
No.N70-07

* Use this nozzle on the nozzle holder (N70-05).

Roller
No.A1115

MELTER

Glue Gun

- **Glue gun with temperature control function is applicable also to the adhesion of electronic components.**
- **Useful when fixing up sealing of carton boxes, dressing cases, and packages**
- **Only used with a stick-type adhesive that is easy to replenish (ø11.5 mm)**

Applications

When using polyamide adhesives

- Reinforce and insulate soldered parts
- Fasten capacitors, resistors, etc.
- Fasten jumper wires
- Perform insulation potting for terminals
- Fasten the ends of coils
- Fasten deflecting yokes and variable coils

When using EVA adhesives

- Glue paper products (cardboard boxes, gift boxes, etc.)
- Fasten wood products
- Fasten plastics and metals
- Fasten textiles and shock absorbent packing
- Reseal products during packaging

Packing List

804	Unit, #13 Spanner, #14 Spanner, Instruction manual

Specifications

Model No.	804
Power consumption	100 W
Melting temperature	100 to 200°C (variable)
Standard nozzle	ø2 mm (No. A1083)
Discharge capacity	900 g/h
Dimensions*	207 (L) × 173 (H) × 45 (D) mm
Weight*	350 g

* Without cord

Adhesive Used

This model has been designed for use with stick adhesives (those hardened into the shape of a stick) only. Be sure to use adhesives recommended by HAKKO.
(No. 810: UL94V-O recognized)

Part No.		810	811	812
Name		Polyamide	EVA	
Packing		1 kg		14 pcs
Color		Yellowish brown	Milky white	
Size		ø11.5 × 220 mm		
Viscosity		2300 cps. (2300 mPa·s)	5800 cps. (5800 mPa·s)	
Open time*		10 seconds	40 seconds	
Temperature at which adhesive is heat resistant		100°C	55°C	
Suitability	P.W.B.	○	–	
	Wood	○	○	
	Paper	○	○	
	Metal	◯	◯	
	Plastic	◯	◯	
Packing		In aluminum foil bag	In polyethylene bag	In blister pack

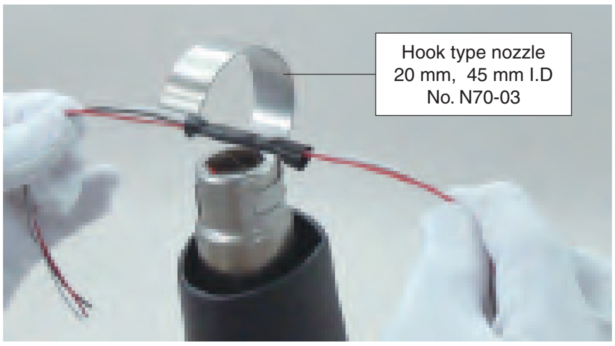
Adhesives marked with ○ are more suited for that material than adhesives marked with ◯.

* Application period

Topic Failure-Free Heat-Shrinking of Waterproof tube

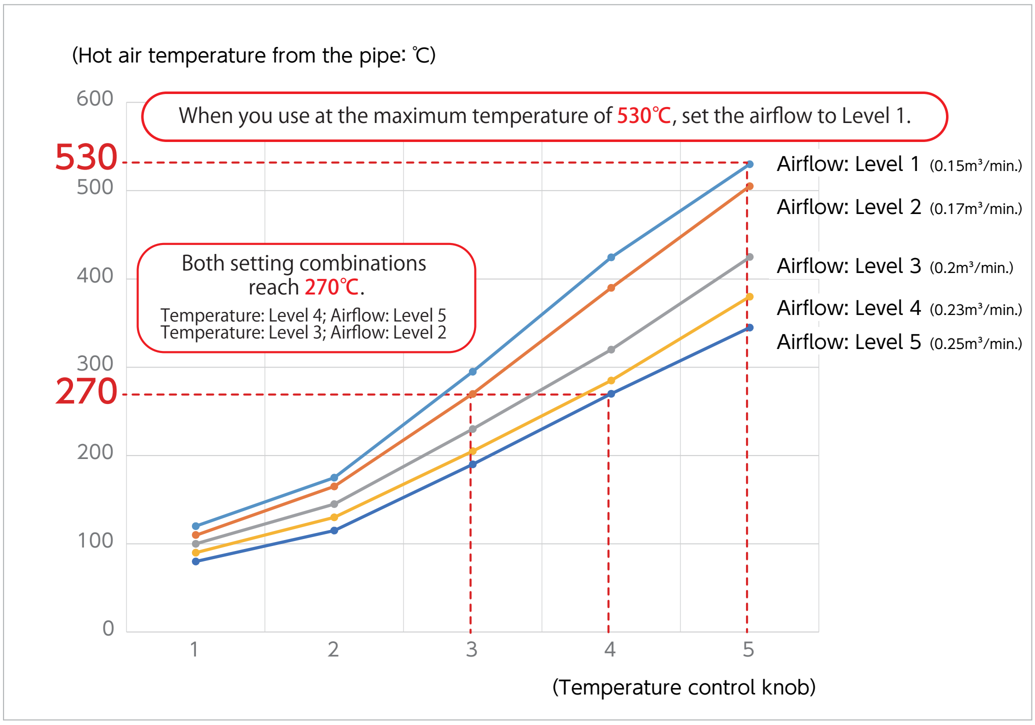
By using FV-310 Heating Gun, and an optional nozzle, everyone can shrink waterproof heat-shrink tube, which is difficult work, quickly, beautifully and equally.

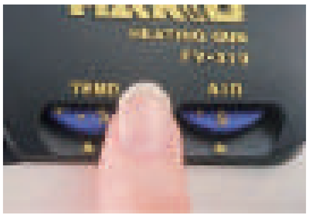
Using the optional nozzle shown below, the hot air from the nozzle flows along the hook-shaped baffle, so that the entire section of heat-shrink tube is shrunk quickly.



For further details,
please scan here.

Temperature distribution chart





Although there is a click feeling, adjustment is stepless. Temperature and airflow suitable for the work can be set.

* This chart is for 220-240 V. For the chart for 100-110 V, please visit our website.
* The temperature and airflow volume are reference values; these values are not guaranteed.

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Specifications and design are subject to change without notice.