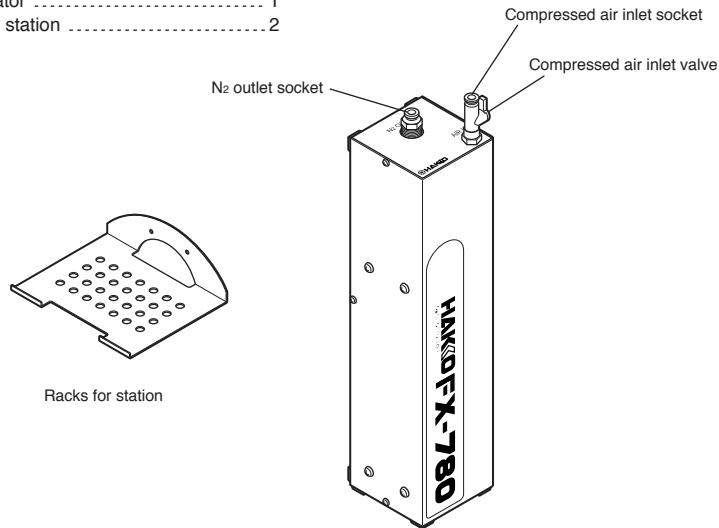


1. PACKING LIST AND PART NAMES

Please check to make sure that all items listed below are included in the package.

- N₂ generator 1
- Racks for station 2



2. SPECIFICATIONS

Name	HAKKO FX-780
Product number	FX780-01
Air supply pressure	0.3 ~ 0.7MPa
Concentration of generated N ₂	99.9% (Max.)
Amount of generated N ₂	1.5ℓ/min. (When compressed air of 0.5MPa is supplied at 25°C(77°F), the concentration of generated nitrogen is 98%.)
External dimensions (w/o sockets and valve)	73 (W) × 282 (H) × 71 (L) mm / 2.9 x 11.1 x 2.8 (in.)
Weight (w/o racks)	Approx. 1.5 kg (3.3lb.)

*Specifications and design are subject to change without notice.

3. SAFETY INSTRUCTIONS

⚠ WARNING

Warnings, cautions and notes are placed at critical points in this manual to direct the operator's attention to significant items. They are defined as follows:

⚠ **WARNING:** Failure to comply with a WARNING may result in serious injury or death.

⚠ **CAUTION :** Failure to comply with a CAUTION may result in injury to the operator, or damage to the items involved. Two examples are given below.

● Be sure to comply with the following WARNINGS and CAUTIONS for your safety.

⚠ CAUTION

This N₂ generator uses membrane technology, which generates the nitrogen gas from externally-supplied compressed air.

● Cautions for handling the product

- Carefully handle the product, avoiding impact, such as a blow or dropping.
- Avoid rapid heating or cooling.
- Do not disassemble or modify the main body.
- Store the product indoors avoiding high temperature and humidity environments.

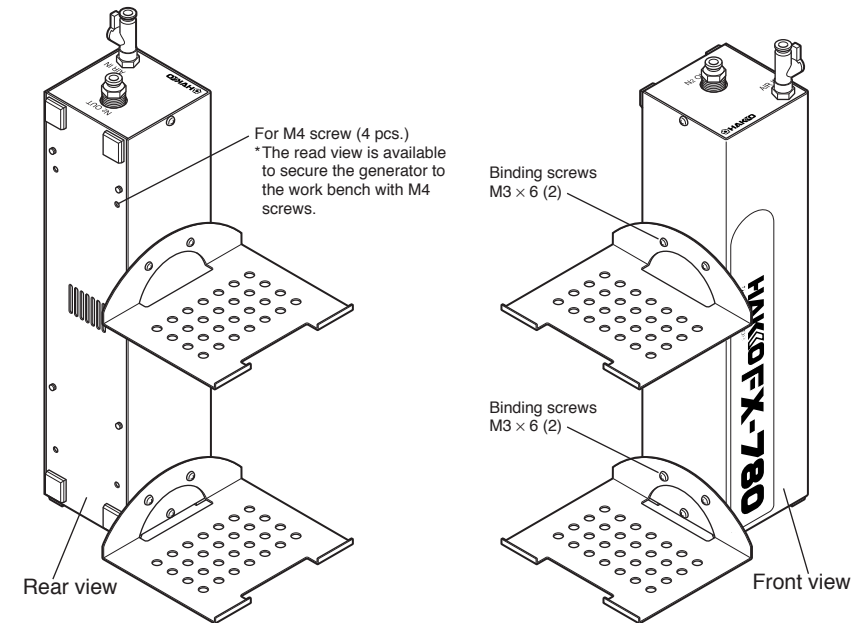
● Cautions for using the product

1. Follow the instructions below when using the product. The nitrogen gas can cause oxygen deprivation.
 - Use in a well-ventilated area.
 - Regularly check nitrogen gas discharge piping for leaks.
2. Be sure to note the following points when installing the product. Highly-concentrated nitrogen gas is discharged from the product into the surrounding area.
 - Keep away from flame and flammables.
 - Ventilate the work area when in use.
3. The product is intended to generate the highly-concentrated nitrogen gas from compressed air. Never use it for other than the intended application.

4. OPERATION

2. An example of setting-up

When the HAKKO FX-791 (N₂ station) is used as the nitrogen gas flow rate controller, the entire apparatus can be set up as shown in the figure below.

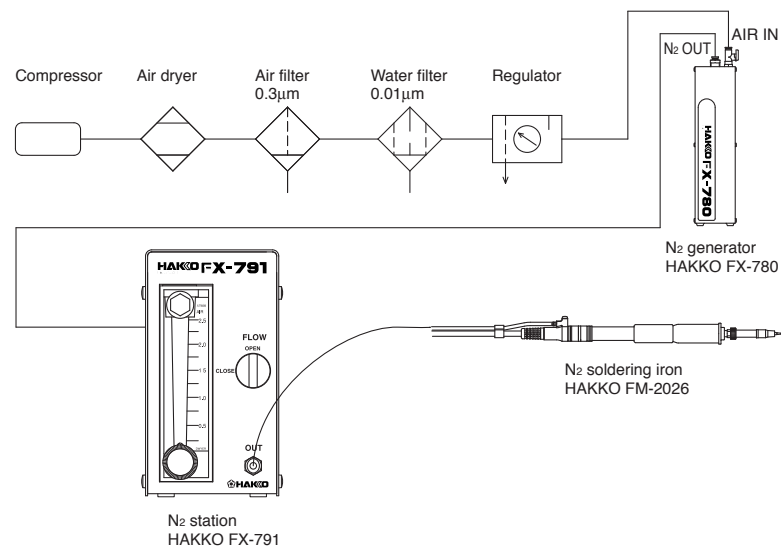


*Secure the racks on the HAKKO FX-780 using M3 screws.

4. OPERATION

1. Connection

See the schematic diagram below for connection. To start discharging nitrogen gas, open the air IN valve and supply compressed air to the N₂ generator (HAKKO FX-780).

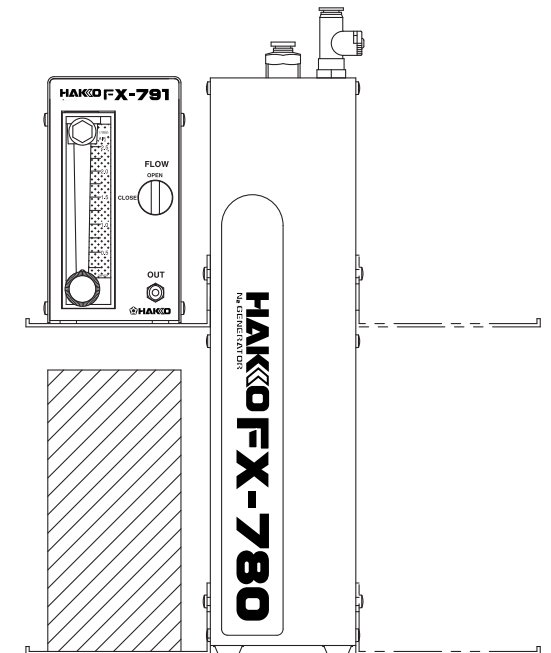


<Schematic diagram>

⚠ CAUTION

When using the HAKKO FX-791, place it on the upper rack and the HAKKO soldering station on the lower rack (diagonally shaded area). The HAKKO FX-791 and HAKKO soldering station can also be placed on the right side of the HAKKO FX-780.

If the soldering station is not placed on the lower rack the HAKKO FX-780 can become unstable and topple over. Always place the soldering station on the lower rack when operating.



4. OPERATION

3. Adjustment of the flow rate

The flow rate of nitrogen gas is adjusted through the flow rate control valve shown in the schematic diagram.

The determination of the concentration of nitrogen gas generated by the HAKKO FX-780 depends on the pressure of supplied compressed air and the amount of discharged nitrogen gas. See the table below for detailed information.

		Concentration of N ₂
Amount of discharged N ₂ remains constant.	Pressure of supplied compressed air is high.	High
	Pressure of supplied compressed air is low.	Low
Pressure of supplied compressed air remains constant	Discharged nitrogen gas is small in amount.	High
	Discharged nitrogen gas is large in amount.	Low

Determine the pressure of supplied compressed air and the amount of discharged nitrogen gas according to the HAKKO FX-780 performance table.

⚠ CAUTION

When using the HAKKO FX-791, the pressure of the HAKKO FX-780 will increase when the valve is closed. Close the compressed air IN valve of the HAKKO FX-780 to shut down the supply of compressed air if the flow control valve remains closed for a long period of time during operating.

4. End of the operation

Close the compressed air IN valve of the HAKKO FX-780.

Open the valves on the side where the gas is discharged, including the flow rate control valve.

⚠ CAUTION

When the N₂ generator is not used for a prolonged period of time, stop supplying compressed air to the HAKKO FX-780 and open the valves on the side where the gas is discharged.

● Compressed air

1. Requirements on compressed air supplied to the HAKKO FX-780

Pressure of supplied compressed air	0.3 ~ 0.7MPa
Amount of compressed air needed to be supplied	10//min. or more
Temperature of the supplied compressed air	5 ~ 50°C (41~ 122°F)
Maximum operating temperature	60°C (140°F)

2. Conditions of supplied compressed air

- Clean, dry air with a relative humidity of 80% or lower
- Air filter Pore size of the filter should not exceed 0.3μm.
- Water filter Pore size of the filter should not exceed 0.01μm.
- The air supply shall not contain any of the following:
 - Hydrocarbons
 - Any corrosive gases (strong acid gases, such as hydrogen sulfide, sulfurous acid gas, hydrogen chloride and fluorine)
 - Strongly alkaline gases (such as amines, ammonia and caustic soda)

5. TROUBLESHOOTING

- Nitrogen gas is not discharged.

CHECK : Is each component properly connected?

ACTION : Verify that air is supplied to the HAKKO FX-780 per the schematic diagram.

CHECK : Is the dust or air filter dirty?

ACTION : Clean or replace the dirty filter.

CHECK : Do the regulator and valves function properly?

ACTION : Repair or replace the nonfunctioning valve(s).

⚠ CAUTION

If nitrogen gas is not discharged even with a properly-compressed air supplied, the supplied air may be contaminated with dust or moisture. In such a case, the internal module of the HAKKO FX-780 needs to be replaced by the manufacturer. Module replacement is also required if the amount of discharged nitrogen gas is small or completely zero due to supply of one of the aggressive gases mentioned in "Conditions of supplied compressed air" above.

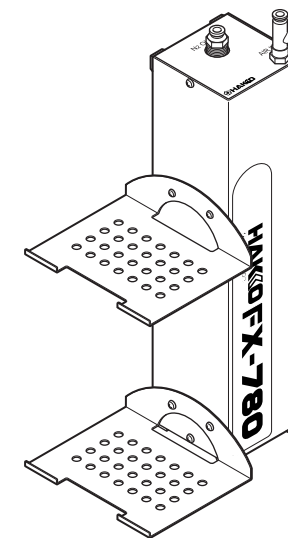
6. MAINTENANCE

- Check if the air dryer, air filter, water filter, regulator and valves function properly.
- Check piping for leaks.

7. PARTS LIST

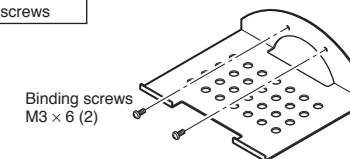
● N₂ generator

Part No.	Part Name	Specifications
FX780-01	HAKKO FX-780	With racks



● Optional parts

Part No.	Part Name	Specifications
B3024	Rack for station	With screws



8. HAKKO FX-780 PERFORMANCE TABLE

Supplied air pressure (MPa)	Concentration of N ₂ (%)	Generated nitrogen (l/min. at 25°C (77°F))								
		99.9	99.5	99.0	98.0	97.0	96.0	95.0	90.0	
0.3	Amount of generated N ₂	0.15	0.37	0.48	0.66	0.88	1.1	1.3	2.6	
0.4	Amount of generated N ₂	0.24	0.57	0.77	1.1	1.4	1.7	2.0	4.4	
0.5	Amount of generated N ₂	0.35	0.75	1.1	1.5	1.9	2.2	2.9	5.9	
0.6	Amount of generated N ₂	0.48	0.97	1.3	1.8	2.4	3.1	3.5	7.5	
0.7	Amount of generated N ₂	0.55	1.2	1.6	2.2	3.1	3.7	4.2	9.2	

Generated nitrogen l/min. at 25°C (77°F)



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