



Automatic Fraction Collector

NAFC-100

Index

Sr.no	Title	Page no
1.	Safety Measures	2
2.	Introduction	3
3.	Features	3
4.	Specifications	3
5.	Applications	3
6.	Instrument Introduction	4
7.	Operations	6

1. Safety Measures

Precautions:

- The instrument must adopt the standard three-core power socket, which shall be reliably grounded and safe.
- Place the **"leakage alarm panel"** in the square frame in the fluid pan below the pipette mouth during use, penetrate the wire through the middle hole of the fluid pan, insert the plug into the **"alarm control"** socket of the instrument back panel, and activate the leakage alarm.
- In case of leakage failure and alarm during collection (the nixie tube displays **"Err1"**), turn off the power supply. After leakage troubleshooting, the power supply can be turned on again.
- Press the **"reset"** key, and the pipette month returns to the first tube (the "second" nixie tube displays half of 0). Adjust the pipette mouth again, and guarantee that the pipette mouth is at the central position of the first tube. To enter automatic collection immediately, press the **"operation"** key.
- Do not unplug the safety valve, alarm control plug, and so on during normal use. They can be unplugged after the power supply is turned off.
- The number of the test tube plate must be maintained consistent with the instrument number (upper right of the back panel), which cannot be wrongly matched or replaced.
- Pay attention to the proper safekeeping of the instrument.
- Place the instrument in a dry and ventilated place without corrosive gas.

2. Introduction

Automatic Fraction Collector NAFC-100 is designed for efficient collection of chromatography fluid component separated by chromatographic instruments. It is an automated system which ensures error free operation with no manual interference. It is featured with automatic reset function and low noise levels that enhances stability of the system.

3. Features

- Safe and reliable round turntable design
- Collection system is constructed with ABS plastic material that imparts high resistance and excellent durability
- Equipped with 4 inch LCD display that is effectively controlled by microcontroller
- Automatic leakage alarm systems with pallet design watertight seal to prevent any mishaps
- It provides high degree of protection against moisture and dust particles

4. Specifications

Model No.	NAFC-100
Tube quantity	100
Maximum capacity	12ml
Time set	1 second to 24 hours
Display	LED
Working environment conditions	Temperature 0-40°C, Humidity <85%
Power supply	110/220V 50Hz
Dimensions	260×370×300 mm
Net Weight	8.5 kg

5. Applications

It is widely used as a complementary accessory with chromatography instruments in scientific research, Medical, Institutes and universities for educational purpose and in factories, mines, food testing and environmental laboratories and other relevant department as an analytical tool.

6. Instrument Introduction

Instrument structure:

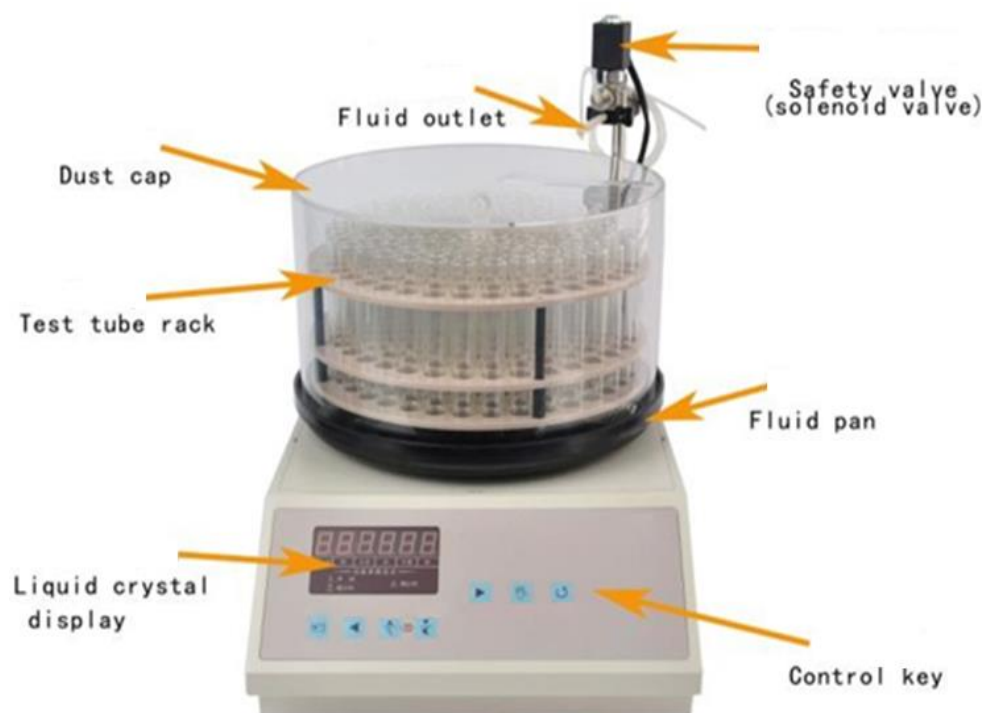


Figure-1

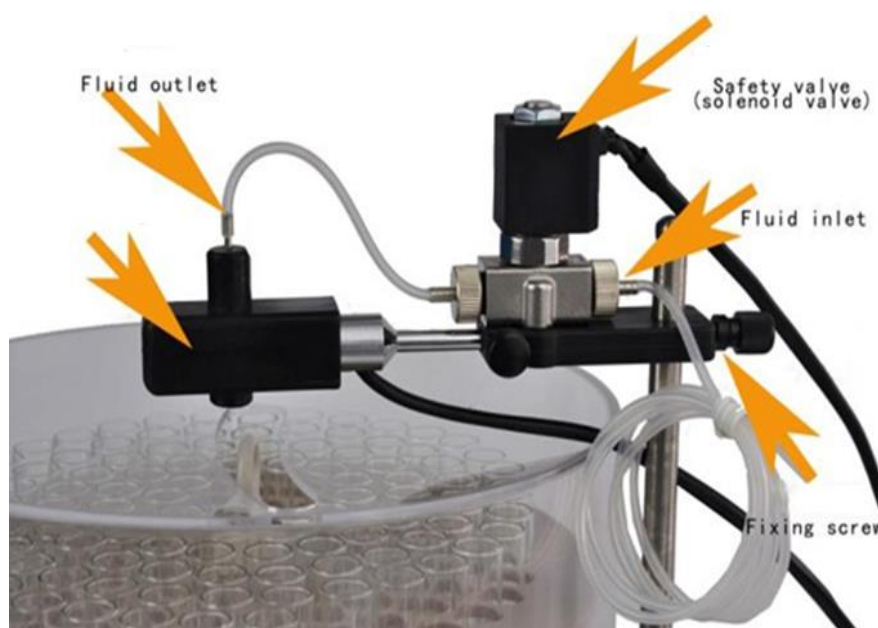


Figure-2

Automatic Fraction Collector NAFC-100

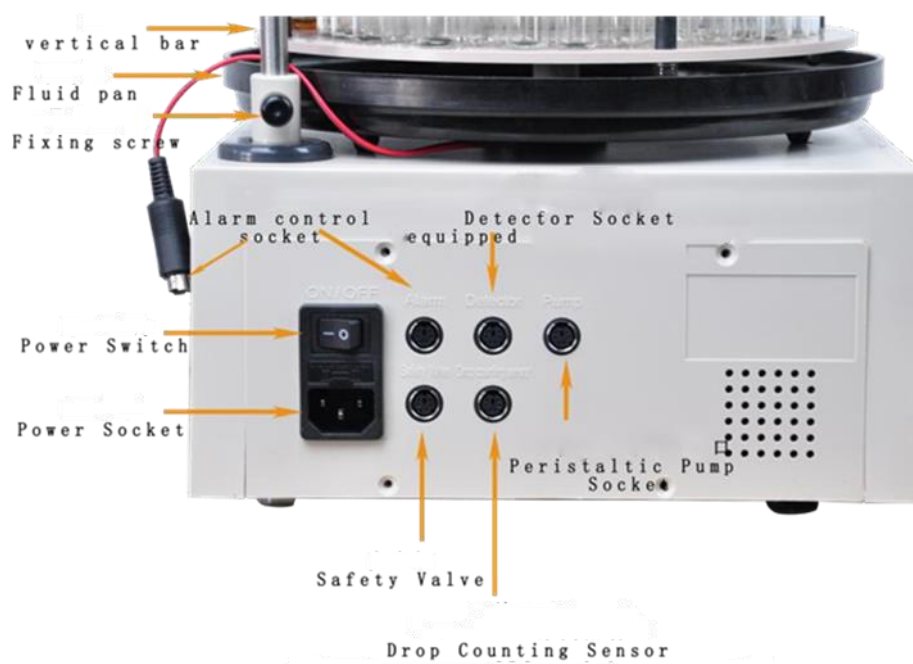


Figure-3

7. Operations

7.1 Control Panel Description

7.1.1 Instructions for front panel key functions

- 1) **"Function" key:** Set the operation function. Change sequence: Manual → forward timing → backward timing → drop counting (for specific symbol, refer to "function parameter definition" of the panel). The key cannot be directly pressed after resetting, and the key can be activated after pressing the **"operation"** key.
- 2)  **key:** Select the position for the position setting. The selection sequence starts from the first on the right.
- 3)  **key:** At the parameter setting state (when the position flashes), press the key to progressively increase the value; at the operating state, press the key to consult the set parameter.
- 4)  **key:** At the parameter setting state (when the position flashes), when the alarm is sent, press the key to release the alarm sound.

At the parameter setting state, press the  key and  key simultaneously for zero clearing of the original value.
- 5) **"Operation" key:** After function parameter setting, press the key to transfer the instrument from parameter setting to the actual normal operation state.
- 6) **"Manual" key:** When the function setting is "S", i.e., manual function, press the **"operation"** key and then the **"manual"** key, conduct step-by-step operation of the test tube plate, and press and hold it to conduct rapid step-by-step positioning operation. Press the **"reset"** key, and then press the **"operation"** and **"manual"** keys for automatic tube counting.
- 7) **"Reset" key:** After the operation state is entered, press the key so that the pipette mouth rapidly returns above the first test tube of the test tube plate.

7.1.2 Instructions for the back panel insert key

- 1) **"Drop counting sensor" socket:** It is used to insert the **"drop counting sensor"** and input the drop counting signal.
- 2) **"Safety valve" socket:** It is used to insert the **"safety valve"**.
- 3) **"Constant flow pump" socket:** It is used to insert the connection line of the pump of the model, realizing linkage output control of the pump.
- 4) **"Power" socket:** Used to connect the main power.

7.2 Usage method

7.2.1 Preparation work

Connect the power cord, vertical bar, safety valve, leakage alarm panel, and so on according to the following requirements.

- 1) Insert the round plug of the power cord plug into the **"power"** socket of the instrument back panel and insert the three-core plug at the other end into the AC220V three-core power socket.

- 2) Insert the "**vertical bar**" into the fixing seat of "**vertical bar**" at the right rear corner of the instrument, and meanwhile tighten the fixing screw.
- 3) Install the "**safety valve**" at the upper part of the "**vertical bar**". The height shall be realized that the pipette mouth in the "**drop counting sensor**" before the "**safety valve**" (or the pipette mouth in the cross rod) is slightly higher than the test tube mouth by 2 to 5mm. Meanwhile, insert the connecting plug (four-core) into the "**safety valve**" socket of the instrument back panel.
- 4) Place the "**leakage alarm panel**" into the square frame of the fluid pan (black bakelite disc). Meanwhile, penetrate the connecting wire connector shrinkage pool through the middle shrinkage pool of the fluid pan from top to bottom, and insert it into the "**alarm control**" socket of the instrument back panel. The "**fluid pan**" shall be placed at the position where the three legs below the "**fluid pan**" are placed into three concave gears at the host panel, and the "**leakage alarm panel**" is below the pipette mount of the "**drop counting sensor**".

7.2.2 Positioning

- 1) Positioning after the power supply is turned on
 - After the power supply is turned on, the initial function is at the manual state, and the nixie tube displays "S-----". Press the "**operation**" key and "**reset**" key, and the instrument is automatically reset when the second nixie tube displays half of 0.
 - Manually align the pipette month with the central position of the first test tube at the starting point of the test tube plate (first test tube at the outer ring) and fix their respective fixing screws after alignment.
Note: The position of the pipette mouth cannot be moved during collection.
- 2) Positioning during collection
 - One can directly press the "**reset**" key before relocation during collection, and the instrument will be automatically reset.
 - Repeat step (2), Positioning during collection.

7.3 Functions and parameter setting

7.3.1 Manual setting and operation

After the power supply is turned on, the initial function is the manual function state, the nixie tube displays "S-----" (press the "**function**" key to change the function setting). Press the "**operation**" key and then the "**manual**" key to conduct a manual piping operation (press it once for moving a pipe; hold it for continuous piping).

7.3.2 Timing setting

1) Forward timing setting

At standby (function setting) or during operation, press the "**function**" key to enable the parameter position of the nixie tube displays, and the decimal point "❄" flashes.

Note: Press the "**function**" key once, and the nixie tube function parameter display change sequence is: S → decimal point "❄" flashes → decimal point "●" does not flash.

When the function parameter position displays the decimal point '☼', it flashes, i.e., forward timing function setting. Input the required timing parameters through "" and "", and ".

2) Backward timing settings

When the function parameter position displays, the decimal point '●' flashes, i.e., backward timing function setting. Input the required timing parameters through "", "", and ".

7.4 Automatic collection

7.4.1 Forward timing collection

After forward timing function and parameter setting, press the "**operation**" key to enter forward timing collection until the terminal point (last tube) sends an alarm (the nixie tube displays "**STOP**"). Press the "**alarm**" key to release the alarm sound. Press the "**reset**" key to release the alarm sound and reset it to the first test tube (it shall be relocated after resetting, i.e., repeat step (2), Positioning during collection).

7.4.2 Backward timing collection

After backward timing function and parameter setting, press the "**operation**" key to enter backward timing collection until the terminal point (last tube) sends an alarm (the nixie tube displays "**STOP**"). Press the "**alarm**" key to release the alarm sound. Press the "**reset**" key to release the alarm sound and reset it to the first test tube (it shall be relocated after resetting, i.e., repeat step (2), Positioning during collection).

7.4.3 Fixed drop collection

After fixing the drop function and parameter settings, press the "**operation**" key to enter fixed drop collection until the terminal point (last tube) sends an alarm (the nixie tube displays "**STOP**"). Press the "**alarm**" key to release the alarm sound. Press the "**reset**" key to release the alarm sound and reset it to the first test tube (it shall be relocated after resetting, i.e., repeat step (2), Positioning during collection). If a liquid interruption (8 minutes later) alarm occurs during fixed drop collection (the nixie tube displays "**Err2**"), add liquid to automatically release the alarm, and continue fixed drop collection.

To stop collection or terminate the current function and enter other functions during collection, directly press the "**function**" key to enter the standby state, i.e., enter function and parameter setting; In case of leakage failure and alarm during collection (the nixie tube displays "**Err1**"), turn off the power supply, and restart the power supply after the leakage failure is eliminated.

7.5 Operation example (collection with forward timing 6'38")

7.5.1 Connect the power supply

Press the power switch on the back panel of the machine, the nixie tube indicates "S-----", and the instrument is in the manual function state.

7.5.2 Positioning

Press the "**operation**" key and the "**reset**" key, and the instrument is automatically reset. The "**second**" nixie tube displays half of 0. Manually align the pipette month with the central position of the first test tube at the starting point of the test tube plate (first test tube at the outer ring) and fix their respective fixing screws after alignment. The position of the pipette mouth cannot be moved during collection!

7.5.3 Set the timing period (forward timing 6'38")

Press the "**operation**" key (the nixie tube displays "**S0001**"), and then press the "**function**" key, so that the "**parameter**" nixie tube displays "the hour decimal point '❄' flashes, press "", "", "" keys respectively to realize that the "**minute**" position of the nixie tube displays "**6**", "**ten seconds**" position displays "**3**", and "**second**" position displays "**8**".

7.5.4 Instrument operation

Press the "**operation**" key, and the instrument enters automatic operation with forward timing of 6'38" (automatic tube change after timing of 6'38"). The alarm is sent after it operates to the final tube (the nixie tube displays "**STOP**").