

Nano DRIPPER

VP-2401

Instruction manual

1. Safety precautions
2. Name of each part
3. Setup
4. Operation panel description

1. Safety precautions

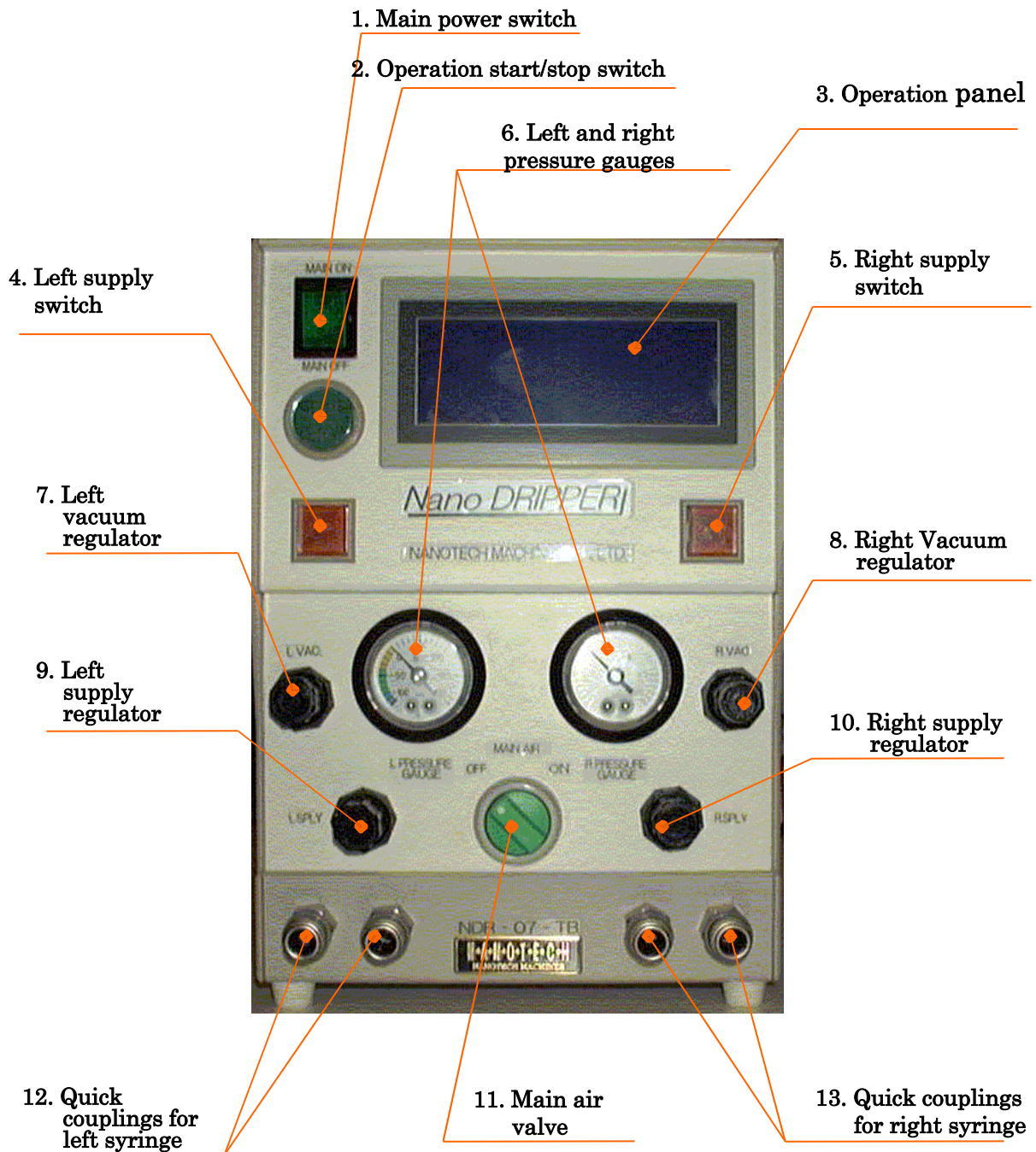
* This device uses high voltage and highly compressed air. Please pay attention to the following precautions in order to ensure the safety of the operator and maintain the function of the device.

- Use this device only for stirring and supplying the polishing liquid.
- Do not attempt to disassemble or modify the main unit of the device.
- Do not apply more voltage or air pressure than specified.
- Please do not use the device in the following conditions:
 1. When the electrical insulation of the main unit is not secured for example because the surroundings of this device are wet.
 2. When the ambient temperature is high (30° C or above) or low (5° C or below).
 3. When there is a large amount of corrosive gas or dust in the surrounding atmosphere.
 4. When there is condensation on the main unit or when it is wet.

2. Name of each part > 2.1. Front part of main unit

2. Name of each part

2.1. Front part of main unit



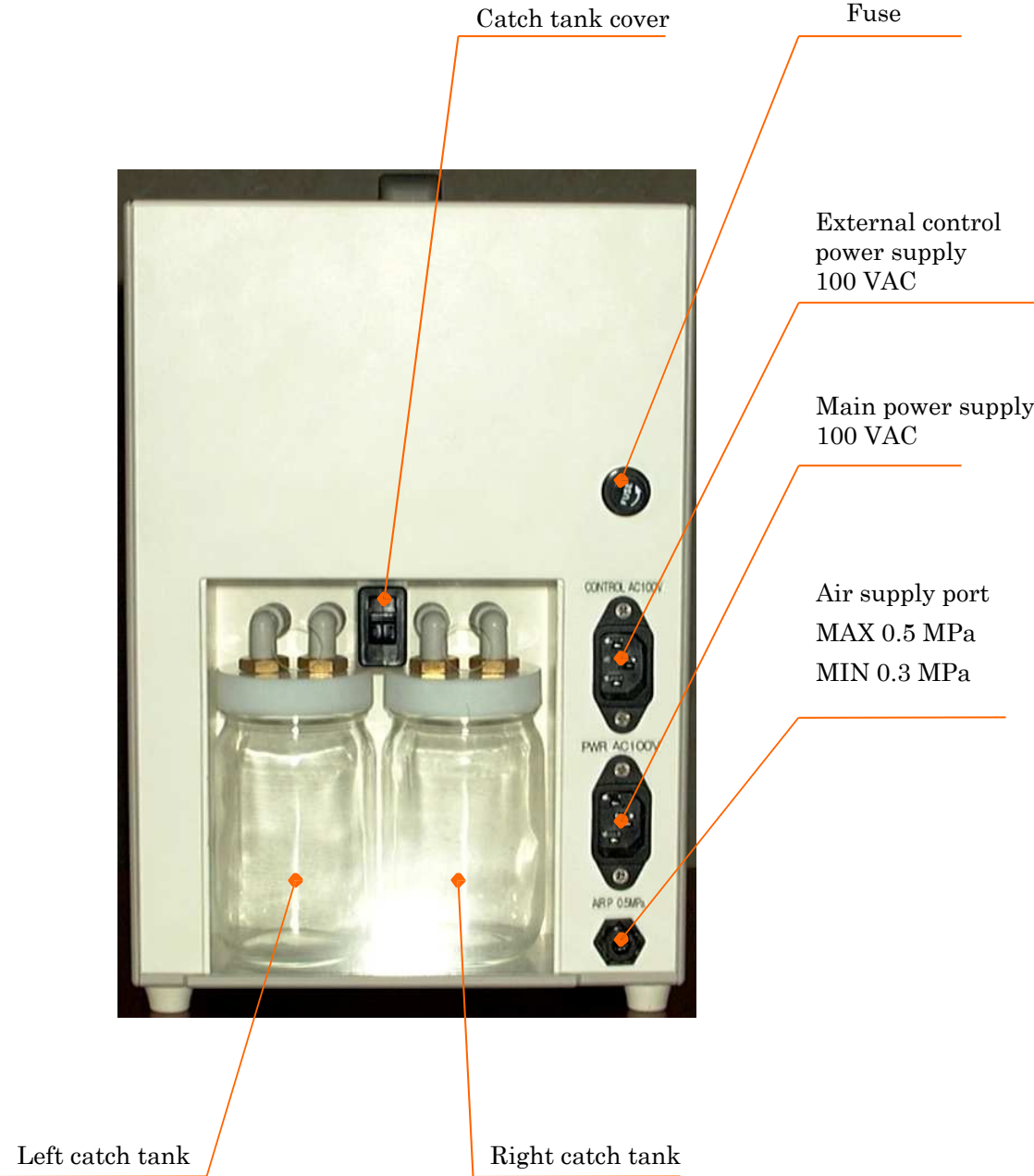
2. Name of each part > 2.1. Front part of main unit

Explanation of each part

1. Main power switch
The switch to turn ON and OFF power supply.
2. Operation start/stop switch
Controls the start and stop of each operation mode during stand-alone operation.
It also functions as an operation indicator when operating with external signals.
3. Control panel
It is a liquid crystal touch panel. Used for switching operation modes and setting recipes.
4. 5. Left and right supply switches
Positive pressure air is manually supplied to each of the left and right syringes.
Also, when supplying, these switches light up and double as an indicator light.
6. Left and right pressure gauges
The left and right pressures are respectively displayed.
7. 8. Left and right vacuum regulators
Respectively adjust the air pressure supplied to the left and right vacuum generators.
9. 10. Left and right supply regulators
Respectively adjust the air pressure for the left and right supplies.
11. Main air valve
The compressed air supplied to the main unit is manually opened and closed.
12. 13. One-touch fittings for left and right syringes
For connection of the left and right syringes. Will be shut off by built-in valve when a syringe is being removed.

2. Name of each part > 2.2. Back of the main unit

2.2. Back of the main unit



2. Name of each part > 2.2. Back of the main unit

Explanation of each part

1. Main power supply
Powers the main unit. Conforms to IEC60320-type sockets.
2. External control power supply
Used to control operation and termination from outside. Not used during stand-alone operation. The supply voltage is 100 VAC. Conforms to IEC60320-type sockets.
3. Fuse
A 5x20 **IEC** miniature glass tube fuse with capacity of 1 A.
4. Air supply port
Supplies **compressed** air. The maximum pressure is 0.5 MPa. The minimum pressure is 0.3 MPa.
5. Catch tank cover
A cover for the **catch** tank storage. By lowering the locking hook, the cover will be unlocked and released upward.
6. 7. Left and right catch tanks
If the polishing liquid is accidentally sucked when using a vacuum, it will be separated from the intake air and stored. Inspect the tanks regularly and discharge the liquid.

3. Setup

This section explains preparation, operation, and shutdown procedures.

As an explanation of a series of operations, let's take an example of stand-alone operation and Left Only mode.

3.1. Preparation for use

3.1.1. Power connection

Connect the AC cord to the main power port on the back of the main unit. When using an external control, connect the AC cord to the external control power port in the same way.

3.1.2. Air hose connection

Connect a $\phi 6$ air hose to the air supply port under the power port.



3. Setup > 3.1. Preparation for use

3.1.3. Syringe connection

Connect the syringe to the one-touch fitting and open the main air valve.



3. Setup > 3.1. Preparation for use

3.1.4. Adjustment of vacuum regulator

Operate the vacuum regulator to adjust the degree of stirring.



3.1.5. Power on

Operate the main power switch to turn ON the main power.



3. Setup > 3.1. Preparation for use

3.1.6. Mode select

The start screen is displayed on the operation panel. (Fig. 1) Touch the flashing "START" touch switch.

The "MODE SELECT" mode selection screen will be displayed. Select the operation mode. (Fig. 2)

- Here, as an example, select "L ONLY" i.e. the Left Only mode. (Fig. 3)

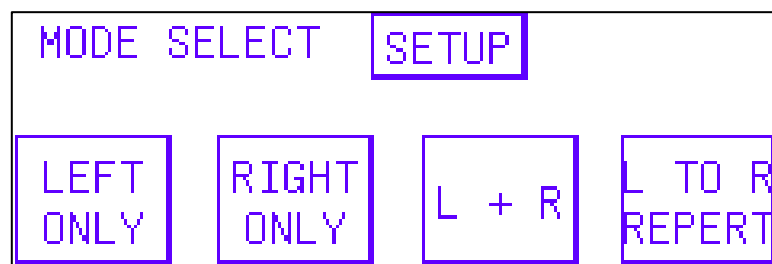
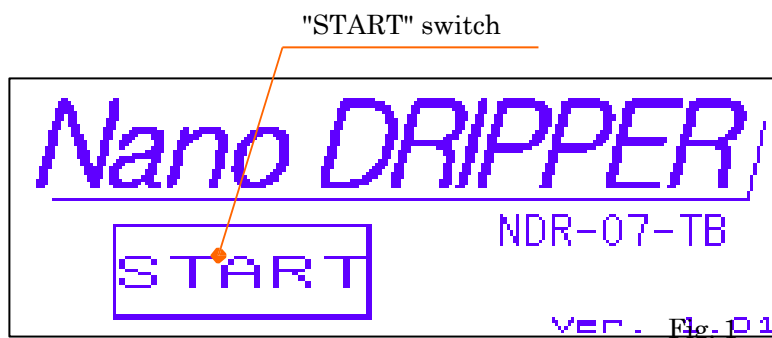


Fig. 2

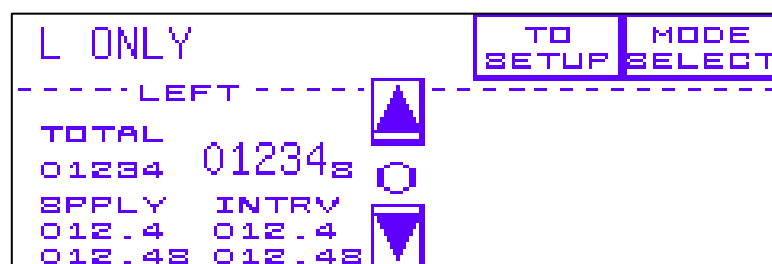
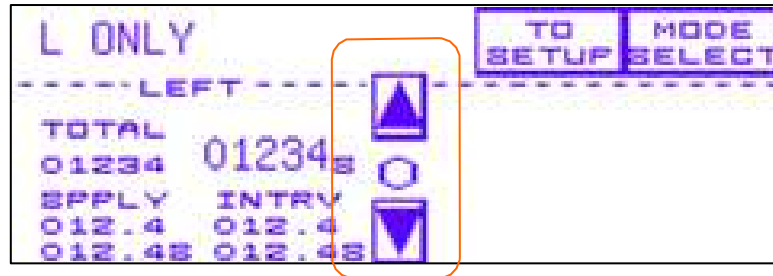


Fig. 3

3. Setup > 3.1. Preparation for use

3.1.7. Recipe selection

Operate the "▲" and "▼" touch switches to select a recipe.



3.1.8. Supply pressure setting

Operate the supply switch to manually supply the polishing liquid. The supply pressure is adjusted by operating the supply regulator according to the state at this time.



3.2. Operation

3.2.1. Operation

Press the operation start/stop switch once to start the operation. The internal timer operates and the operation starts. At the same time, the switch flashes to indicate that the device is in operation. When the time is up, the operation will end and the blinking of the switch will stop. If you want to stop in the middle of operation, press the switch again.



3.3. Shutdown

3.3.1. Power off

Operate the main power switch to turn the power off.

3.3.2. Closing the air valve

Operate the one-touch fitting to remove the syringe. After that, operate the main air valve to stop the air supply.

4. Operation panel description

4.1. Screen list

4.2. Description of each screen

4.2.1. Start screen

This is the title screen. By touching the "START" button, you can go to:

- When stand-alone operation is selected → Screen 2. Mode select
 - When external signal operation is selected → Screen 3. Mode select
- Screen 1.



4.2.2. Mode select screen

"SETUP" button → Moves to Screen 4. Setup.

Screen 2. Stand-alone mode select

"LEFT ONLY" button → Moves to Screen 2-1. Left Only mode.

"RIGHT ONLY" button → Moves to Screen 2-2. Right Only mode.

"L + R" button → Moves to Screen 2-3. Left-Right Simultaneous mode.

"L to R" button → Moves to Screen 2-4. Left-Right Repeat mode.

Screen 3. External mode select

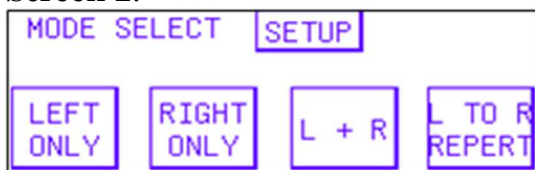
"LEFT ONLY" button → Moves to Screen 3-1. Left Only mode.

"RIGHT ONLY" button → Moves to Screen 3-2. Right Only mode.

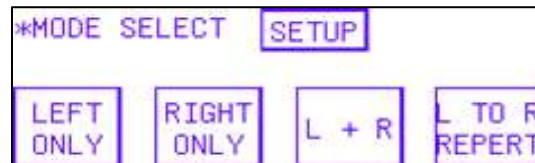
"L + R" button → Moves to 3-3. Left-Right Simultaneous mode.

"L to R" button → Moves to Screen 3-4. Left-Right Repeat mode.

Screen 2.



Screen 3.



4. Operation panel description > 4.2. Description of each screen

4.2.3. Mode screens

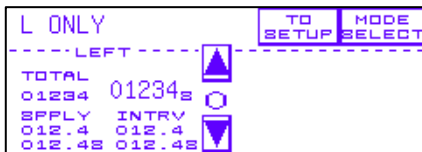
During stand-alone operation with Screen 2-x, the operation time is controlled by an internal timer.

During external signal operation with Screens 3-x, the operation time is controlled by external signals.

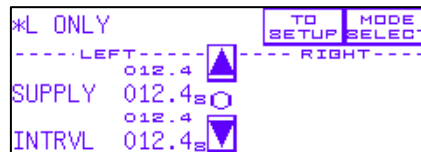
* About common buttons on the screens.

- The "MODE SELECT" button navigates to the mode select screen for stand-alone operation and external signal operation (Screens 2. or 3.) respectively.
- The "▲" button allows selection of the recipe corresponding to each mode in ascending order.
- The "▼" button allows selection in a similar manner, but in descending order.

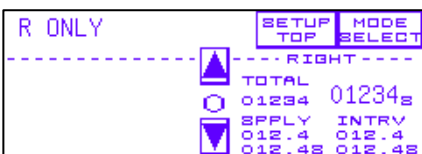
2-1. Left Only mode



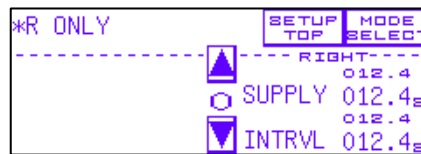
3-1. Left Only mode



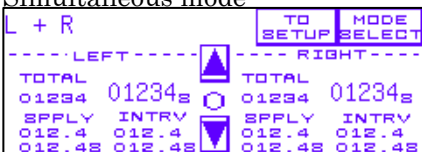
2-2. Right Only mode



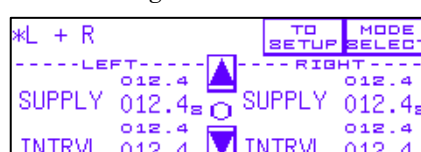
3-2. Right Only mode



2-3. Left-Right Simultaneous mode



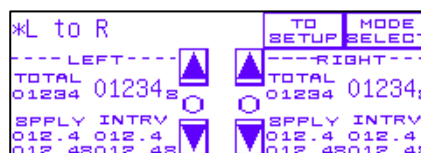
3-3. Left-Right Simultaneous mode



2-4. Left-Right Repeat mode



3-4. Left-Right Repeat mode



2-1. 3-1. Left Only mode

Operates using only the syringe(s) on the left. You can select 3 types of recipes from Screen 4-1-x. Left recipe.

2-2. 3-2. Right Only mode

Operates using only the syringe(s) on the right. You can select 3 types of recipes from Screen 4-2-x. Right recipe.

2-3. 3-3. Left-Right Simultaneous mode

Operates using syringes on the left and right sides at the same time. You can select 3 types of recipes from Screen 4-3-x. Left and Right Simultaneous recipe.

2-4. 3-4. Left-Right Repeat mode

When the left operation timer ends, the right operation timer is activated so that they operate alternately. During stand-alone operation, the number of repetitions is controlled by the counter displayed in Screen 2-4. During operation by external signal, the cycle will be continuously repeated.

4. Operation panel description > 4.2. Description of each screen

4.2.4. Setup

- "LEFT RECIPE" button → Moves to Screen 4-1. Left recipe.
- "RIGHT RECIPE" button → Moves to Screen 4-2. Right recipe.
- "L + R RECIPE" button → Moves to Screen 4-3. Left and Right Simultaneous recipes.
- "L to R SETUP" button → Moves to Screen 4-4. Repeat counter setup.
- "START SELECT" button → Moves to Screen 4-5. Control select.
- "TO MODE SELECT" button → Moves to Screen 2. or 3.

Screen 4. Setup

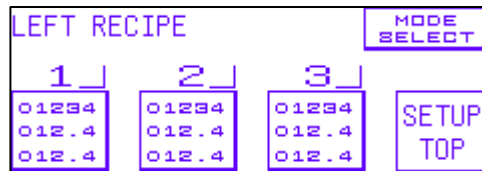


4. Operation panel description > 4.2. Description of each screen

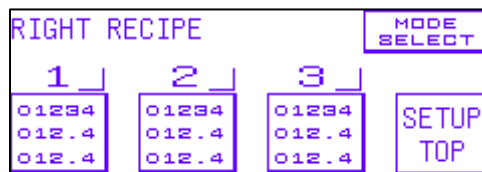
4.2.5. Recipe selection screens

- Buttons common to these screens
 - "MODE SELECT" button → Moves to Screen 2. or 3. Mode select.
 - "SETUP TOP" button → Moves to Screen 4. Setup.
- Screen 4-1. Left recipe
Displays the contents of Left recipes 1-3. You can go to any of the recipe screens 1-3 by touching the button labeled with the corresponding number.
- Screen 4-2. Right recipe
Right recipe can be set in the same way.
- Screen 4-3. Left and Right Simultaneous recipe
Similarly, the Left and Right Simultaneous recipes can be set.

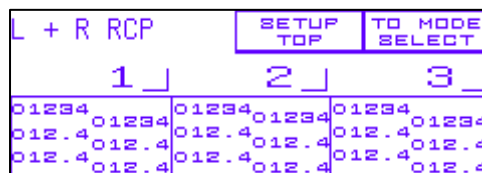
Screen 4-1. Left recipe



Screen 4-2. Right recipe



Screen 4-3. Left and Right Simultaneous recipe



4. Operation panel description > 4.2. Description of each screen

4.2.6. Recipe setting screens

- Items common to these screens

"TO MODE SELECT" button → Moves to Screen 2. or 3. Mode select.
"x RECIPE TOP" button → Moves to applicable recipe selection screen (Screen 4-1, 4-2, or 4-3.)
"TO SETUP" → Moves to Screen 4. Setup.

- Data setting

When you touch each value displayed, the numeric keypad is displayed on the right side of the screen. If you touch the "ENTER" key to set a numerical value, the data will be set and the numeric keypad will disappear from the screen.

- * The set data will be kept even if the power is turned off. However, if left unattended for a long period of time (about 20 days), the data may be erased.

Screen 4-1-1. Left recipe 1

*L RCP.1	TO MODE SELECT
TOTAL: 0123s	
SPLY :012.4s	L RCP TOP
INTV :012.4s	TO SETUP

Screen 4-3-1. Left and Right Simultaneous recipe 1

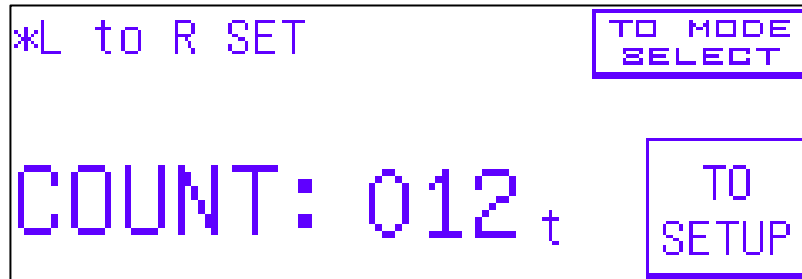
L+R RECIPE 1	SETUP TOP	MODE SELECT
L TOTAL: 0123s	R TOTAL: 0123s	
L SPLAY:012.4s	R SPLAY:012.4s	
L INTRV:012.4s	R INTRV:012.4s	

4. Operation panel description > 4.2. Description of each screen

4.2.7. Repeat counter setting

Used to set the number of repetitions during stand-alone operation. The numerical value setting method and buttons used are the same as those on the recipe setting screens.

Screen 4-4. Repeat counter setup



4.2.8. Control select

Used to select between stand-alone operation (using internal timer) and operation by external signals.

"STAND-ALONE" button → Selects stand-alone operation.

"EXTNAL SIGNAL" button → Selects external signal operation.

Other buttons are the same as those in recipe setting screens.

Screen 4-5. Control select

