

NEXT >>> ADVANCE

OPERATOR'S MANUAL



THE FREEDOM ROCKER™ DX

Congratulations!

You are now the proud owner of the Next Advance Freedom Rocker™ DX, the programmable version for versatility and deluxe functionality! We're sure that once you use it, you won't want to process your samples by hand again.

Please thoroughly read this operator's manual explaining this instrument's proper operation and care. This manual can also be viewed with via web browser at this address:

http://www.nextadvance.com/manuals/FreedomRockerDX_manual.pdf.

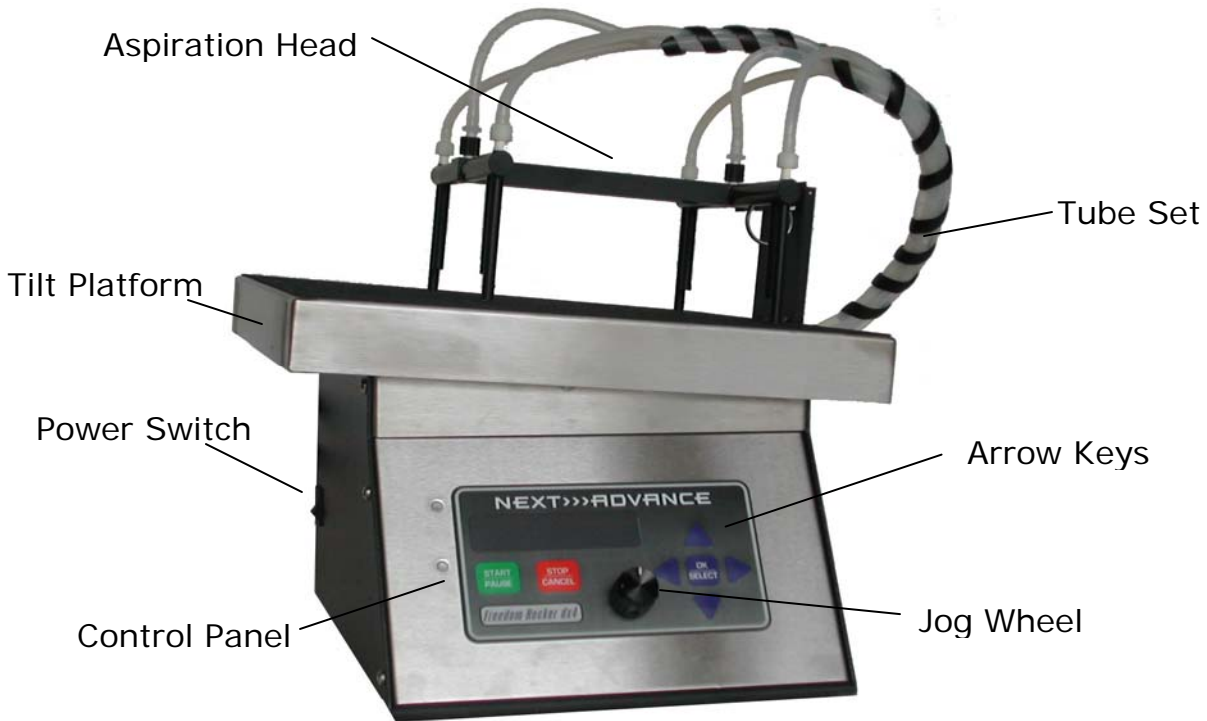
OPERATOR'S MANUAL FOR THE FREEDOM ROCKER™ DX

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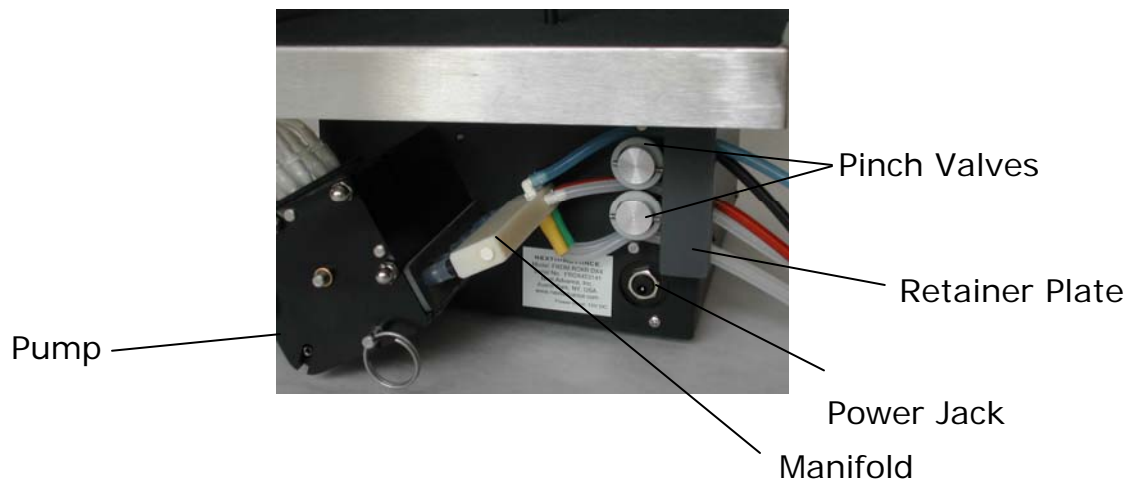
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ANATOMY OF THE FREEDOM ROCKER™ DX



FRONT



REAR

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SETTING UP YOUR FREEDOM ROCKER

Step 1: Power Up

Place the instrument on a level surface, such as a lab bench. **ENSURE THAT POWER CONNECTIONS ARE SAFELY AWAY FROM WET AREAS!** Plug the 12VDC power supply into a wall outlet then connect the other end into the power jack located on the rear panel. Turn on the power switch.

Step 2: Plumbing

Determine the appropriate mode of waste disposal for your application FIRST! Waste hoses should be directed to an appropriate waste container or sink drain. If the waste will flow directly into a sink, cut the tubing to the desired length, then secure it to assure it does not drain onto the bench or floor.

Next, we'll connect the tubing to the buffer/reagent and the waste/recovery containers.

White → buffer container

Blue → reagent container

Yellow → reagent container

Red → waste container/sink

Black → recovery container

Green → recovery container

If tubing is too long for your configuration, the fittings can be removed from the end of the tubing which can be cut shorter, followed by reconnection of the fitting. Note that the caps of the buffer/reagent containers must have a piece of tubing attached to the inside of the

cap in order to draw liquid from the bottom of the container.

Loosen caps on the containers before using the instrument so that air pressure or vacuum doesn't build up as the pump runs.

Position the sample tray(s) on the rocking platform. Next, place the aspiration head in the tray(s) with the aspiration tubes resting in the recess or the trench at the perimeter of the bottom of the tray(s). **HINT:** If the aspiration tips do not rest in the indentation at the bottom of the tray(s), samples will not be washed effectively

Step 3: Quick Rinse

Before the first use, rinse out the trays and containers. Also, thoroughly flush the tubing and aspiration head. You can do this using the manual fill and drain features of the instrument. (Refer to the "Manual Mode" operation section.)

AUTOMATIC AND MANUAL MODES OF OPERATION

The Freedom Rocker™ has two modes of operation: Manual and Automatic. Manual Mode has three types of operations: Fill, Rock, and Drain. In Automatic Mode the Freedom Rocker™ follows a programmed set of steps. Each step is similar to a step in a protocol, as shown in Table 1 on page 7. For example, if step 2 in the protocol were three 10 minute washes, then step 2 in the program would be three repetitions of Fill, Rock for 10 minutes, and Drain operations.

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Top Level Menu

When the instrument is first powered on, you are at the top level menus. There are five options:

Manual

Edit Auto Steps

Alert

Save Program

Recall Program

From the top menu, press the up or down arrow keys to scroll through the selections. Pushing the right arrow enters a menu option, while the left arrow takes you "up" a level in the menu.

Manual mode is for a single operation: **Fill**, **Rock**, or **Drain**.

Edit Auto Steps is for setting and viewing Automatic (program) mode parameters.

The **Alert** option will enable or disable beeping when the program finishes. Use the jog wheel to select the alert mode.



Save Program allows the user to store Automatic mode parameters in one of three memory spaces. Use the jog wheel to choose the program number.

Recall Program loads one of the saved programs into the current memory space to run.

Manual Mode

Manual Mode has 3 types of operations: **Fill**, **Rock**, and **Drain**.



When **Filling**, the user must specify which fill source (i.e. which buffer or reagent container: White, Blue, or Yellow) and the volume (mL) per tray. **Rocking** requires the user to dial in the speed (as a percentage of full speed) and duration (hr:min). **Drain** must also stipulate which container to pump to (Red, Black, or Green) and the volume (mL) per tray. Adjust flashing parameters with the jog wheel.

To ensure complete washing during its operation, the **Drain** operation is designed to remove more liquid than the **Fill** operation dispenses. Note also that the platform always comes to rest with the right side tilted downward to allow for complete aspiration during a **Drain**.

The active selection when you press **OK** or **START** determines which operation occurs. Pressing **STOP** will cancel an operation in manual mode.

Note: If the cursor is blinking next to the Fill parameters, pressing **START** will cause the instrument to dispense. The analogous behavior applies to **Drain**. If the cursor is blinking next to the **Rocking** speed when you push **START** or **OK**, then

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Rocking commences with a count-up timer. If the cursor were blinking next to the countdown timer value, then **Rocking** would commence with a count-down timer.

The **Rocking** speed may be adjusted "on-the-fly", using the jog wheel. The minimum speed is 30% and the maximum is 100%.

Automatic Mode, Step 1

In Automatic Mode, the Freedom Rocker™ follows a programmed set of steps. Each step is similar to a step in a protocol. Select **Edit Auto Steps** from the top menu.



Press the right arrow and use the jog wheel to select the number of steps in your protocol. (This value can be revised later.) Then push the down arrow once to go to the first step (or push it repeatedly to cycle through the steps). Then as in manual mode, push the right arrow to proceed to select the values of the salient parameters.

The first step in any Automatic mode program only specifies four parameters: **Rocking** speed, **Rocking** duration, **Drain** volume and **Drain** container. The right arrow will allow you to scroll through these parameters. Use the jog wheel to change the settings. The 4 parameters are now set for

step 1. Push the left arrow to go up a level. You will see the step number displayed.

Auto Mode, Steps 2 and Up

You can move to the next step number by pressing the down key. Subsequent steps specify more parameters: the parameters in step 1 plus the number of repetitions, whether a clearing rinse is desired, the **Fill** volume, and **Fill** source. Next cycle through the parameters with the right arrow. Step 2 and the rest of the steps can have a clearing rinse and multiple repetitions.

Clearing Rinse

The clearing rinse precedes each fill operation for optimal washing or to clear the tube set before a different reagent is used. The default condition is with the clearing rinse present. For example, before dispensing a reagent (up to 50 mL per tray), the clearing rinse is set to clear the tube set of any buffer remaining from the prior step. For more than a 50 mL dispense/aspirate step, the clearing rinse will dispense enough buffer to rinse the bottom of the trays and greatly reduce the amount of residual reagent from the previous step. In most all cases it is beneficial to incorporate the clearing rinse. For MD models, please note that the clearing rinse is disabled when "tubes" is selected as the fill source.

Multiple Repetitions

The multiple repetitions feature enables you to do a series of similar

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Table 1. Sample Program - overnight Western antibody staining and washing

No. of Steps (up to 9)	7
------------------------	---

STEP	REPS	CLEARING RINSE (yes or no)	FILL		ROCK		DRAIN TO (red, black, or green)	Description
			FROM (white, blue, y'low)	VOLUME (0 to 600 ml)	TIME (hr:min, from :00 to 90:00)	SPEED (30 to 100)		
1	(1 to 9)	(yes or no)	(white, blue, y'low)	(0 to 600 ml)	(hr:min, from :00 to 90:00)	(30 to 100)	(red, black, or green)	
1				100	2:00	30	red	blocker in trays
2	3	yes	white	100	:20	80	red	3X 20 min wash
3	1	yes	blue	30	7:00	30	black	10 mL Ab (use 50 mL tube, clearing rinse) and recover
4	3	no	white	100	:05	100	red	3X 5 min wash
5	2	yes	white	200	:30	80	red	2x 30 min wash
6	1	no	yellow	50	1:30	30	green	50 mL secondary Ab, recover
7	3	yes	white	100	:30	80	red	3X 30 min wash
8								not used
9								not used

rinses. For example, to do a series of 3 rinses, set the number of repetitions to 3.

Dispensing Antibodies

To dispense small quantities, e.g. 10 mL of antibodies or other precious reagents, fill up the 50 mL tube as the source container, loosen the cap, and set the fill volume to 30 mL and set the clearing rinse on. The clearing rinse is preset to empty the tubing of the last reagent/buffer. Setting the dispense to 30 mL makes sure that enough air is pumped through the tubing after the 50 mL of antibody, so that the antibody is pumped through the tubing and into the trays.

For example, to dispense 10 mL to each of the trays, fill the source container with 50 mL and set the fill volume to 30 mL. The clearing rinse will use up approximately 4 mL (not recoverable). The rest of the antibody solution will then be

dispensed into the trays. Allow a little extra since some trays might receive 1 mL more than others.

Multi-Dispense

In multi-dispense models, the four tubes which sit atop the dispense heads are the tubes which you can fill to allow multi-dispense. To fill from these tubes, simply select "tubes" as the fill source. The entire volume contained in these tubes will be dispensed; up to 20mL (do not overfill the tubes as the additional volume may not be dispensed). Please note that the clearing rinse option will be automatically set to off and the volume selection will be disabled when the tubes are selected as the fill source.

Run or Save Program

Once you have set the parameters for all the steps you want in your program you can save the program or just run it.

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To run the program without saving it, just push **START**. To save this program, push the left arrow key until you are at the top level, then push the up or down arrow keys until you are at **Save Program**. Then rotate the knob to select the desired program number. You can then begin the program by pushing **START**.

While the program is running, parameters can be changed by pressing **PAUSE**, editing the program parameters, and then pressing **START/PAUSE** again. These changes will affect future operations, but not the operation in progress. However, you can change the current rocking speed by rotating the jog wheel.

When the program has finished, a beeping sound will occur (if the audible alert is enabled). Buffer or reagent will remain in the tray (the last drain does not occur) and the platform will continue to rock so that the sample does not dry out. To run the instrument again, simply press **START** once more.

CHANGING BOTTLES

It is easy to disconnect the tubing from the bottles. First tighten the cap to ensure that no liquid will spill when you carry the bottle. (There is a valve in the One>Click™ bottle caps that remains closed when the tubing is not connected to prevent spills.) Next, press on the metal button of the fitting at the end of the tubing, as shown in the figure below, and simply pull the fitting away from the bottle cap.



To disconnect the tubing from the cap, press the metal tab (arrow).

To reconnect, simply slide the fitting at the end of the tubing over the fitting on the One>Click™ bottle cap. You will hear a click when the connection is made. Don't forget to loosen the cap before running the Freedom Rocker™.

CHANGING TUBE SETS

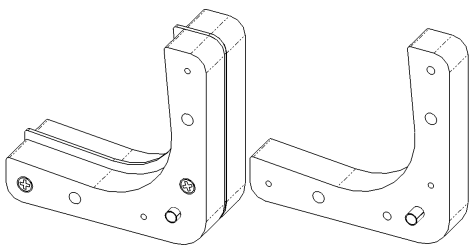
It is easy to remove and/or replace the tube set—no tools are required. The fittings at the ends of the tube set are quick release and only two quick release pins (with ring tabs) retain boomerang-shaped backers which sit behind the tubes so the tubes can be compressed by the pump.

When installing or removing tubing, to open the pinch valves to remove or insert a particular tube, manually run **Fill** or **Drain** with the volume set to 0 mL. Repeat for all three positions.



Quick release pin with a ring tab

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Boomerang shaped backers, one wide and one narrow.

Removing the Tube Set

First, detach the tube set from the aspiration head by disconnecting the luer lock fittings. Now detach the tube set from the buffer, waste, and reagent containers by disconnecting the quick-connect fittings from the bottles by pressing the metal clips on the fittings, as explained in "Changing Bottles"

Turn the instrument around so that the rear of the FREEDOM ROCKER™ is facing you and the entire instrument rests on a level surface. To remove the tubing from the pinch valve, use Manual Mode and have the instrument **FILL** or **DRAIN** a volume of 0 ml to the container with the matching color to the tubing you want to insert or remove. **DO NOT ROTATE THE PINCH VALVES BY HAND.** You must also pivot the tubing retainer plate out of the way to remove the tubing. The retainer plate hangs in place under gravity, so you can simply push it to the side.

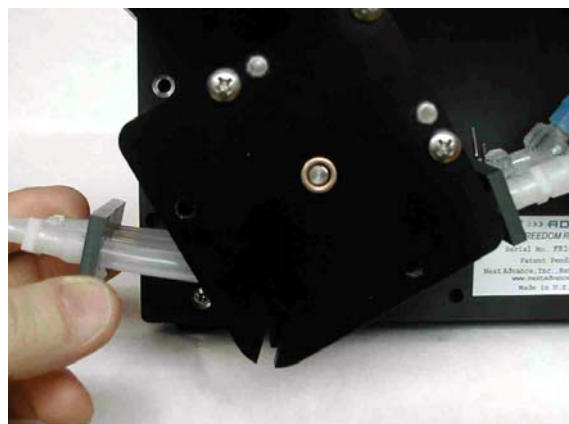
It helps to pull gently on the tubing so that it stretches and becomes narrower.



The wide boomerang-shaped backer drops out when the quick release pins are pulled halfway out.

Next, pull the two pins with the ring tabs halfway out, as shown in the figure below. The wide boomerang-shaped backer will drop out, as shown in the figure. Next, remove the pins all the way out and the narrow backer will also drop out. Lift up the FREEDOM ROCKER™ if necessary to completely remove the backers from the pump head.

Finally, remove the tubing from the pump head by gripping the gray spacer blocks, as shown in the following figure.



Pull lightly on the two tubing spacer blocks (gray) to remove the tubing from the pump head.

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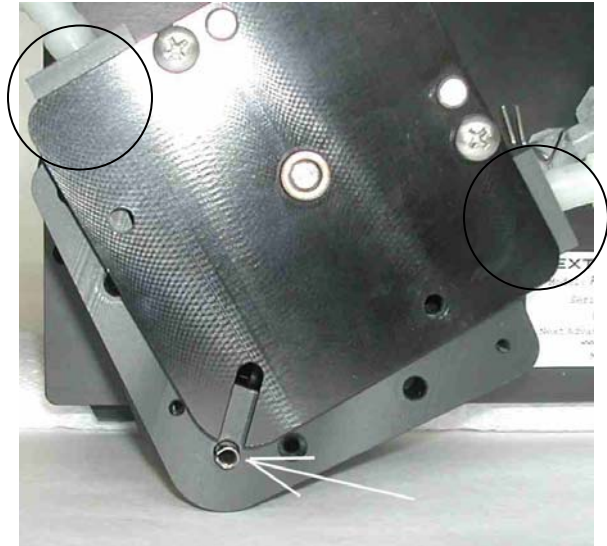
Installing the Tube Set

Place the rear of the instrument so that it faces you. The end of the tube set with the luer lock fittings should be on the left, the end which connects to the bottles on the right. Line up the tube set so that the end of the manifold with the tubing running to the containers is nearer the rear panel.

Place the pairs of tubes on the rollers. The rectangular spacer blocks holding the tubes at the correct spacing should fit nicely on the pump head. Notice how the gray blocks in the top left and top right in the following figure rest on the sloping sides of the pump head.

Of the two black boomerang-shaped backer pieces, the thinner one should be installed first, and more to the rear of the instrument (closer to you). Notice that the pin (see arrow in the figure above) protruding from both sides fits in the slot at the bottom corner of the pump head.

When placing the backer into position, squeeze it against the tubing so that its holes line up. Once the backer is in position, push the two quick release pins part way into the pump head—enough to capture the narrow backer but not too much to interfere with the wide backer sliding into place.

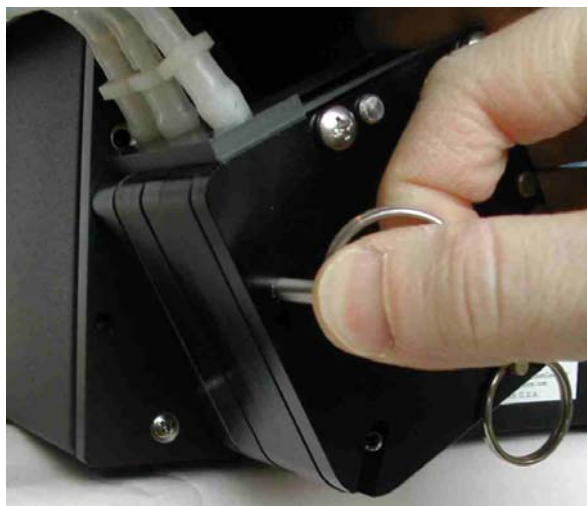


The two spacer blocks (circled) should rest on the sloping sides of the pump head and the pins in the backers (white arrow) need to slide into the slot at the bottom of the pump head.

Next, place the wide backer behind the tubes on the wide roller, with the protruding pin pointing towards the narrow backer. If the backer does not seem to fit, check that the ring-tabbed pins are not in too far and interfering with the backer. If they are, simply slide the pins out until they do not protrude into the wide roller section. While squeezing the backer against the tubing, firmly push the ring-tabbed pins in all the way, i.e. until the rings touch the pump head.

Once the wide backer is in position, push the pins in all the way, until the rings touch the pump head.

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The quick release pins must be firmly pushed through the holes until the rings are against the metal housing.

Route the tubing past the cams as shown in the photo below. Use the Freedom Rocker in manual mode to rotate the cams by setting the fill volume to 0 mL and running FILL with the white, blue, and yellow sources.



Then, connect the luer lock fittings to the aspiration head and the other ends onto the One>Click™ caps on the bottles.

ASPIRATION HEADS

The aspiration head can be swung out of the way when accessing the trays.



The quick release pin (white arrow) holds the aspiration head to the hinge.

Replacement

To switch aspiration/dispense heads, first disconnect the tubing from the head by undoing the luer lock fittings. Then simply remove the quick release pin by pulling on the ring. Next, place the desired aspiration head on the platform, line up its transverse hole with that in the pivot block, and replace the quick release pin. Finally, reconnect the luer lock fittings.

Sanitizing

To sanitize the tube set or the aspiration head, use a standard sanitizing solution, e.g. 5% bleach or 30% ethanol, followed by thorough rinsing with distilled water. Please note that the tube set and the aspiration head should not be autoclaved because the temperature is too high for some of the plastic parts.

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CHANGING FROM 4-TRAY to 2-TRAY OPERATION (Freedom Rocker DX4 and DX4-MD only)

The tubing manifold has a small knob. Turn the knob clockwise, push it inwards, then turn it counterclockwise to lock it in 2-tray operation. To return to 4-tray mode, turn the knob clockwise, pull it outwards, then turn counterclockwise to lock it in place.

OTHER TRAYS AND BOTTLES

A list of commonly requested trays and bottles is available on our website and price list. If these do not fit your needs, please contact customer service by phone or at support@nextadvance.com and we may be able to provide you with a custom solution.

TROUBLESHOOTING

In addition to those given below, there is a thorough list of troubleshooting tips at <http://www.nextadvance.com/FAQs/FAQs-Freedom-Rocker.htm>.

If nothing happens, all the lights are off and the display is blank, check that the power is properly connected. If the wall transformer is plugged in all the way and the power line is plugged into the instrument, then either the wall outlet or the wall transformer is bad. Plug something else into the same wall outlet. Does it work? If so, then the power supply is probably bad. Contact us for a replacement.

If liquid is not dispensed immediately after the pump is turned on, the tubing was probably empty and needed to be primed. If this is the case, the problem should not occur as long as the tubing does not fill up again with air.

If liquid is not dispensed or aspirated, the caps are probably tightly screwed onto the bottles and air is not able to enter or leave the bottles and equalize the pressure. Loosen the caps on the bottles. If not caught early, this could lead to tubing popping off a fitting or leakage at a fitting.

SUPPORT

A thorough list of FAQs is at <http://www.nextadvance.com/FAQs/FAQs-Freedom-Rocker.htm>.

If you cannot find a good answer there, please contact customer service by email at support@nextadvance.com or by telephone.

SPECIFICATIONS

The following values are nominal values. Actual values may vary slightly.

Size: 12 in. wide x 13.7 in. deep x 10.5 in. high (DX4); 10 in wide x 13.7 in. deep x 10.5 in. high (DX2).

Weight: 15 lbs.

Dispense Flow Rate: 7.5 mL/s (model DX2); 12.8 mL/s (model DX4)

Rocking Speed: 0 to 35 cycles per minute

Power: 12VDC, 3.7 Amp min. (DX4); 3.0 Amp min. (DX2)

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WARRANTY

Next Advance warrants its Products against defects in materials and workmanship for time periods which vary according to the Product. Within these time periods, Next Advance will replace or repair, without charge to the original purchaser, any part which is defective.

Freedom Rocker Two years

The warranty is void if the Product is defective due to product accident, product modification, exposure to radiation other than for sterilization, connection to an improper electrical supply, lack of proper maintenance, contamination, improper installation or misuse. The warranty shall also not apply to defects arising from fire, flood, lightning or other conditions unrelated to correct operation of the Product.

Next Advance's liability is limited, at the company's election, to (1) refund of the original purchaser's purchase price for the Product (2) repair of the Product, or (3) replacement of the Product or defective parts. Evidence of purchase by the original purchaser is required. Next Advance may also request documentation of proper maintenance, if applicable.

Next Advance makes no other warranty, express or implied, with respect to its Products. NEXT ADVANCE MAKES NO WARRANTY RESPECTING THE MERCHANTABILITY OF THE

PRODUCTS OR THEIR SUITABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE OR USE. Next Advance shall not be liable for, indirect, special, incidental or consequential damages of any nature. Any recovery for any claim shall be limited to the original purchase price for the product.

Operator's Responsibility

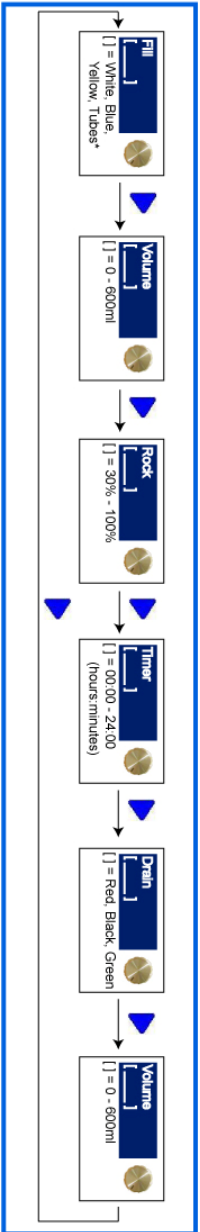
Provide proof of purchase and provide normal care and maintenance.

CONTACT US

Up to date contact information is on our website, www.nextadvance.com.

Freedom Rocker Menu Flow Chart

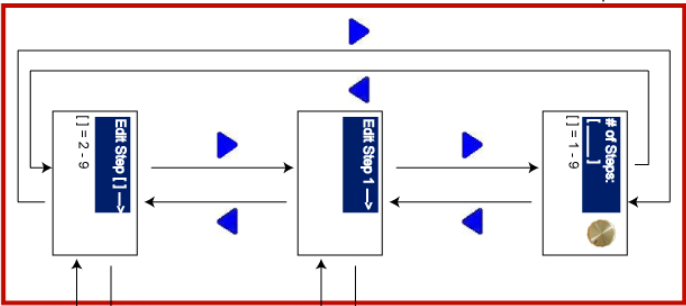
Manual Run Settings Menu



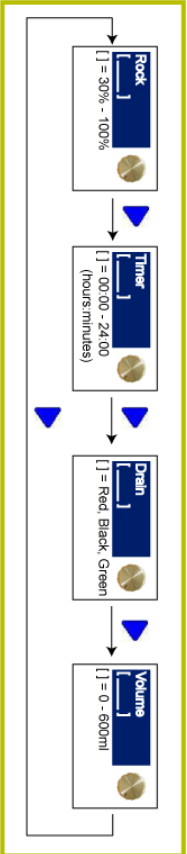
Notes

- The "Tubes" selection in the Fill menu only appears in multi-dispense models. This setting drains from the syringes on the dispense head.
- The two "volume" settings in the Manual Run Settings Menu both specify fill volume, and changing one will change both.
- At any point you may press "start" to begin the run. Pressing it again will pause the run. If you are in the Automatic Settings Menu or the Programming Menus, pressing start will run the automatic program. If you are in the Manual Run Settings Menu, pressing start will run the manual program.
- Pressing stop during the run will stop the run and return you to your previous position in the menu.
- Turning the knob during the run will change the rocking speed for that step.

Automatic Run Settings Menu



Program Step #1



Program Step #2-9

