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THERMO SAVANT FASTPREP FP120 INSTRUCTION MANUAL





FastPrep® FP120 Cell Disrupter INSTRUCTION MANUAL

Applies to FP100, FP120, and FP220 Models

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1.0 DESCRIPTION

The FastPrep® FP120 is a high-speed, benchtop reciprocating device for efficient disruption of cell membranes. The unit is designed for use with the FastPrep® Extraction Kits (Qbiogene, www.qbiogene.com). These kits are available for a wide variety of extraction and purification applications. The FastPrep® sample holder has the capacity to process 12 FastPrep® sample tubes simultaneously. We do not recommend using any tubes other than those supplied with the FastPrep® Kits.

The front control panel of the FastPrep® Instrument includes a digital display and two control switches. Speed (4.0-6.5 m/sec) and run time (1-45 seconds) are fully programmable. The microprocessor measures and displays time and speed during each programmed run.

For information on FastPrep® kits, other kits for use with the FastPrep® Instrument and their various applications, call Qbiogene at 800-424-6101 (North America) or +33 (0) 388-675-425 (Europe) or visit the FastPrep® Users Resource Group at http://www.qbiogene.com.

2.0 INSTALLATION

Unpacking. Carefully remove the FastPrep® Instrument and accessories from the shipping carton. Compare the packing list to the box contents. If there is a discrepancy, call Qbiogene, Inc.

Inspection. Inspect the unit for any damage that may have occurred during shipment. Should there be damage, report it to the carrier and contact Qbiogene immediately. Save the packaging material in the event a return is necessary.

Set-up. To assure safe operation and best results, read this manual in its entirety before operating the FastPrep® Instrument.

The FastPrep® Instrument comes fully assembled, requiring very little set-up. Install the system on a clean, dry, level, stable surface within 4 feet (1.2m) of a compatible electrical outlet.

Allow 1-2 inches (3-5 cm) of space around the FastPrep® Instrument for proper motor ventilation.

This unit is “FOR INDOOR USE ONLY”. Avoid operating in areas of excessive humidity or extremes of temperature.

IMPORTANT: Remove motor locking plate prior to use as per instructions included with the unit.

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2.0 INSTALLATION (cont'd)

Connecting the power

WARNING: Before connecting the FastPrep® Instrument to an outlet. Make sure that the voltage, frequency, and amperage are compatible with the requirements indicated on the label on the instrument rear panel. If there are any questions, please consult an electrician.

As a safety feature, this unit is equipped with a three-prong grounded plug that fits a grounding-type power outlet. Consult an electrician to replace the outlet if necessary. Do not defeat this safety feature by modifying the plug. Make sure the power switch, located on the rear panel, is **OFF**. Connecting the power cord to the instrument (power fixture is on the rear panel) and plug it into a compatible outlet.

Note: A safety latch prevents the FastPrep® FP120 lid from opening when the main power switch, located on the rear panel, is **OFF**. Before switching power ON, make sure that the unit is properly set up, connected to a suitable power source, and the **RUN/OFF/CHANGE** switch on the front control panel is turned **OFF** (see Figure 1. Below). Once the main power is **ON**, press **COVER (SPEED/TIME/COVER** switch) to release the lid.

3.0 OPERATING INSTRUCTIONS

3.1 PREPARING THE FASTPREP® FP120 FOR OPERATING

Turn the main power switch **ON**. This switch is located on the rear panel of the instrument. When switched **ON**, factory-set default values automatically program FastPrep to operate at speed 4.0 m/sec and run time 20 seconds (to override these values, see section 3.2 below).

3.2 CONTROL PANEL

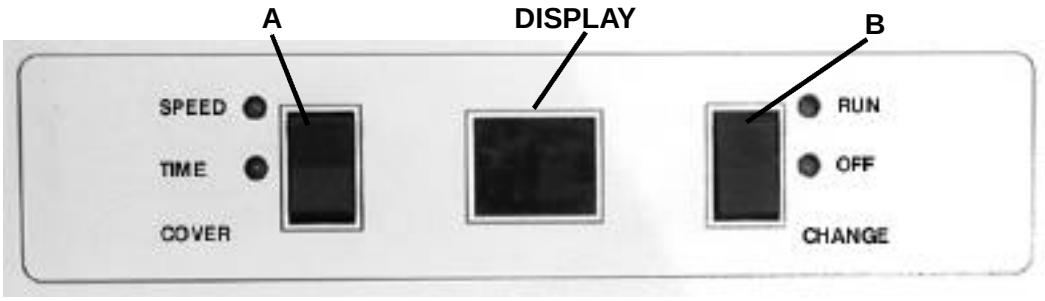


Figure 1. FastPrep® FP120 Control Panel

There are two rocker switches on the instrument front panel (Figure 1). The **RUN/OFF/CHANGE** switch on the right (switch B) allows the user to choose **RUN,** for operation (cellular disruption) or **CHANGE,** to program the desired operating parameters (speed or time). Setting the switch to the **OFF** (center) position opens the lid after a run is completed. The **OFF** position can also be used, if necessary, to terminate a run that is in progress.

Note: Run settings cannot be changed once the run is in progress.

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3.3 PROGRAMMING A RUN

Note: For application protocols, refer to extraction kit instructions supplied by Qbiogene.

A. Select desired speed. The units displayed are in meters/second. See Appendix 2 on page 10 for explanation of FastPrep® instrument speed settings.

Set switch **A** (SPEED/TIME/COVER) to SPEED position.

Press and hold **CHANGE** on switch **B** (RUN/OFF/CHANGE) to scroll to the desired speed setting. When the switch is released, it returns to the **OFF** position.

Note: While setting run speed, the display counts forward in increments of 0.5 m/sec within the operating range of 4.0-6.5 m/sec.

B. Select desired time of run. The units displayed are seconds.

Set switch **A** (SPEED/TIME/COVER) to **TIME** position.

Press and hold **CHANGE** on switch **B** (RUN/OFF/CHANGE) until the desired time setting is shown on the display. The longer **CHANGE** is held, the faster the increments are displayed. When the switch is released, it returns to the **OFF** position.

Note: While setting run time, the display counts forward in increments of 1 second within the operating range of 1-45 seconds.

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3.4 LOADING THE SAMPLES

The main power must be **ON** to open the FastPrep® FP120 cover. Unlock and open cover by setting switch **A** (SPEED/TIME/COVER) to **COVER** position.

Loosen the three knobs that secure the spoke plate by turning the knobs counter-clockwise (see Figure 1 p. 6).

Using the rotation knob, rotate the spoke plate clockwise to expose the sample cavities.

WARNING: Before inserting sample tubes, always make sure that their screw caps are tight.

Load sample tubes into the sample holder. Whenever possible, position the tubes symmetrically. The FastPrep® Instrument is designed to be used exclusively with the FastPrep® kits and reagents. These can be purchased from Qbiogene at 800-424-6101 (North America) or +33 (0) 388-675-425 (Europe).

Use of non-approved reagents may result in damage to the FastPrep® Instrument, leakage of content and instrument contamination. Also, unapproved reagents may cause sample tubes to burst in downstream processing.

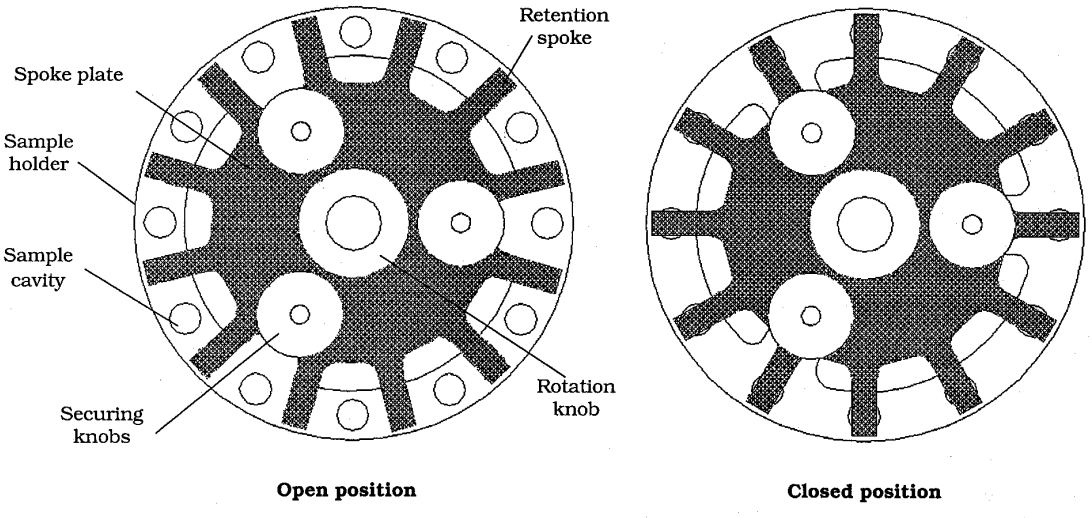


Figure 2. FastPrep® FP120 sample holder showing both open and closed positions

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3.5 SECURING THE SAMPLES

When all samples are loaded, rotate the spoke plate by turning the rotation knob counterclockwise so that the retention spokes are centered above each sample tube cap. **Hand-tighten the three securing knobs while pushing down on the rotation knob.**

WARNING: Samples must be secured properly before running the FastPrep® Instrument. Overtightening of FastPrep® knobs may result in damage to FastPrep® spokeplate and FastPrep® knobs.

Close and lock cover of FastPrep® FP120.

3.6 RUNNING THE UNIT

Start run by setting switch **B** (RUN/OFF/CHANGE) to **RUN**.

If display flashes **"CC"**, the cover is not properly secured. Firmly press down cover to lock. (As a safety feature, the FastPrep® Instrument will not operate when cover is not properly locked.)

To display speed during the run, set switch **A** (SPEED/TIME/COVER) to **SPEED**.
To display time remaining in the run, set switch **A** (SPEED/TIME/COVER) to **TIME**.

Note: When **SPEED** is selected on switch **A, "AA"** is displayed during motor acceleration. When the motor reaches its preset speed, the set speed value is displayed. If the set speed is not reached within 10 seconds of starting a run, an error message appears **(E.3.)**, and the run is automatically aborted. During motor deceleration at the end of a run, **"dd"** is displayed. If the motor does not decelerate to a complete stop within 10 seconds, error message **E.4.** appears. **Call Qbiogene immediately if an error code appears.**

At the end of a run, the motor brakes to a stop automatically, and the display reads **"EE"** to indicate that the run has ended. Set switch **B** (RUN/OFF/CHANGE) to **OFF** to unlock the cover (the **"EE"** display stays on for 2 seconds, then returns to the preset value). Open cover and remove sample tubes.

Warning: Use caution when removing samples; sample holder may become hot after the run.

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4.0 SPECIFICATIONS

Controls:	Programmable run time and speed; large LED readout
Time:	Range: 1-45 sec Programmable in 1 sec increments
Speed:	Range: 4.0-6.5m/sec Programmable in 0.5 m/sec increments
Acceleration:	< 2 seconds to maximum speed
Deceleration:	< 2 seconds to maximum speed
Construction:	Anodized aluminum sample holder Polypropylene sample retention “spoke” plate Chemical-resistant painted surfaces
Dimensions: (W x D x H)	11 in x 15.75 in x 12 in 28.0 cm x 40.0 cm x 30.5 cm
Weight:	36 lbs 16.3 kg
Power: Requirements:	120 V AC, 60 Hz, 8 A 240 V AC, 50 Hz, 8 A
Safety:	Designed to international safety standards
Registration:	ISO 9001-1987. Registered by QMI (Quality Management Institute). Certificate number 001080.

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5.0 WARRANTY & LIABILITY

This FastPrep® Instrument product is warranted against defects in material and workmanship for one year after the date of delivery to the original purchaser. This warranty is limited to defective materials and workmanship, and does not cover incidental or consequential damages.

Qbiogene will repair free of charge any apparatus covered by this warranty. If a new component fails to work, we will replace it, absorb all charges, and continue the one-year warranty period. Warranty work is subject to our inspection of the unit. No instruments, equipment, or accessories will be accepted without a Return Material Authorization (RMA) number issued by Qbiogene. Costs of shipping the unit are not covered under warranty. The warranty obliges you to follow the precautions in this manual.

When returning apparatus that may contain hazardous materials, you must pack and label them following U.S. Department of Transportation (DOT) regulations applying to transportation of hazardous materials. Your shipping documents must also meet DOT regulations. All returned units must be decontaminated.

Use of this equipment in manners other than those specified in this manual may jeopardize personal safety. Under no circumstances shall Qbiogene be liable for damages due to the improper handling, abuse, or unauthorized repair of its products. Qbiogene assumes no liability, express or implied, for use of this equipment.

Use of non-approved kits and reagents with the FastPrep® Instrument is not covered under this warranty.

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APPENDIX 1 MAINTENANCE & CLEANING

Maintenance. The FastPrep® Instrument requires no scheduled maintenance. Clean surfaces immediately after contact with sample solutions or reagents.

Cleaning. The FastPrep® Instrument should be cleaned if reagents or sample solutions spill on or inside the unit. If a sample tube leaks during a run, the solution will be sprayed on the inside cover. Always clean up any spray or spills immediately using a damp paper towel. **Always wear gloves when cleaning.**

The components of the FastPrep® Instrument are chemically resistant and compatible with most cleaning solutions.

The spoke plate can be removed for a thorough cleaning. To remove the spoke plate, unscrew and remove the three knobs by gently pulling up on the knobs and turning counterclockwise until they come completely free from the unit. Carefully remove the three knobs, remove the spoke plate, and then remove the three washers and three springs under each knob. Clean spoke plate with damp cloth or paper towel. Reassemble instrument in reverse order.

APPENDIX 2 AN EXPLANATION OF FASTPREP® INSTRUMENT SPEED SETTINGS

The cell disruption process during a FastPrep® Instrument run is caused by the collision of matrix and sample within the FastPrep® Instrument sample tube. The rate of collision and energy of impact (both of which determine the effectiveness of the disruption process) are a function of the FastPrep® Instrument speed settings and specific gravity of the bead material used. The FastPrep® Instrument speed settings in meters per second refer to the maximum vertical velocity achieved by a sample tube during reciprocating motion. The rate of collision is proportional to speed, while the energy of impact is proportional to the square of the speed. For example, a 50% increase in the FastPrep® Instrument speed setting increases the rate of collision by 50%, and at the same time increases the energy of impact by 125%.

The FastPrep® Instrument has been specifically designed to allow operation within an ideal range of parameters for disrupting membranes from a wide variety of cell types. When used with cell-specific protocols and kits (Qbiogene, www.qbiogene.com), cell membrane disruption and nucleic acid yield is maximized.

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APPENDIX 3 EMERGENCY INTERLOCK OVERRIDE

If a general electrical power failure should occur while the FastPrep® Instrument is in use, the cover will remain locked. The cover may also remain locked if an error code appears in the display. In such an emergency, access to samples may be gained by means of the emergency interlock override.

1. Unplug power from electrical unit.

2. Release vacuum under suction cup feet.

3. Slide the FastPrep® Instrument forward until the emergency interlock override handle is visible underneath, situated toward the front. The override mechanism is a flat metal handle with release cord wound around, attached to the undersurface by two Phillips head screws.

4. Remove the screws.

5. Holding the metal handle, pull down on cord until the safety interlock releases. There will be an audible click, and the cord will release.

6. Remove samples.

7. Rewind release cord around handle.

8. Replace screws, reattaching handle to undersurface of the FastPrep® Instrument.

9. Slide the FastPrep® Instrument back to its previous location.

10. Reconnect power cord.

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