

**INSTRUCTION MANUAL**  
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**Digital Disruptor Genie**



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The DIGITAL DISRUPTOR GENIE® is a vigorous mechanical cell disruption device. Applications include cell disruption of yeast, bacteria, plant and animal tissue and cell re-suspension for DNA mini-preps. The DIGITAL DISRUPTOR GENIE may be used in a cold room.

### Cell Disruption Using Glass or Zirconia-Silica Beads

The DIGITAL DISRUPTOR GENIE consists of a VORTEX-GENIE® Mixer base with a unique and patented accessory attached directly to the shaft eccentric of the mixer. The DIGITAL DISRUPTOR GENIE significantly increases the disruption efficiency of the disruption beads, glass or zirconia-silica, because of the unique and patented design of the sample holder.

Twelve sample tubes are placed in the Upper Ring of the attachment and allowed to project through corresponding holes in the "Floating" Ring below. The holes in the "Floating" Ring are smaller than the orbit path of the shaft. Therefore, as each of the twelve tubes travel in an orbit corresponding in size with the orbit path of the shaft, the bottoms of the tubes repeatedly and vigorously collide within the confines of the holes in the "Floating" Ring. This action, in combination with the action of the disruption beads used inside the sample tubes, results in a significant increase in the impact frequency and force. The disruption efficiency is increased dramatically.

### Disruption Bead Selection

Selection of bead size and material is important. Use either glass or zirconia-silica beads. The following guide is for reference only. It is strongly suggested that you use this guide only as a starting point to determine the optimum conditions for the particular cell disruption operation that you wish to perform. The reference to Typical Run Time should result in a yield of 85 - 90% release of the cellular material for each of the conditions noted. Normally, 1 part of glass or zirconia-silica beads to 2 parts of total liquid bio-mass is the minimum condition recommended for effective cell disruption. You can use more beads i.e. 4 parts of beads to 3 parts of bio-mass providing that adequate agitation of the slurry is possible. Generally, the more beads that are used, the faster is the disruption of the cells.

| Type of Cell                        | Bead Size | Bead Material      | Typical Run Time          |
|-------------------------------------|-----------|--------------------|---------------------------|
| Bacteria/Spores                     | 0.1 mm    | Borosilicate glass | 2 to 3 min / full speed   |
|                                     |           | Zirconia-silica    | 1 to 2 min / full speed   |
| Yeast, Mycelia, Microalgae          | 0.5 mm    | Borosilicate glass | 3 to 4 min / full speed   |
| Trypsinized cultures, Cyanobacteria |           | Zirconia-silica    | 1.5 to 2 min / full speed |

### Sample Temperature

During cell disruption, friction inside the sample tubes will generate heat. The DIGITAL DISRUPTOR GENIE is capable of being operated in a cold room or an environmental chamber. In most short runs, 3 minutes or less, it is feasible that if you refrigerate the sample tubes, beads and sample before the disruption run, you will be able to perform the disruption at room temperature. The small size of the micro tubes may allow sufficient heat to dissipate so that sample integrity is not impaired. The operator must make the decision based on the type of beads, the sample content and size and the length of time of the run, in any event, it is advisable to keep the tubes, beads, and sample chilled before each run.

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## OPERATING INSTRUCTIONS

We recommend that you retain your original packaging for 90 days in case you need to return the product for any reason to your distributor or Electron Microscopy Sciences.

- 1.1 Place the DIGITAL DISRUPTOR GENIE® on a sturdy, level work surface.
- 1.2 Connect the power cord to a properly grounded three-pronged receptacle.
- 1.3 Load up to twelve microtubes in the tube holder. Space them evenly if using less than twelve tubes.
- 1.4 Close the cover, making sure that the stem of the tube holder goes into the cap in the cover.
- 1.5 The DIGITAL DISRUPTOR GENIE is now ready for use.

## MODES OF OPERATION

- 2.1 - The DIGITAL DISRUPTOR GENIE has the following modes of operation:
- 2.2 - "TIMED"

Press the UP/DOWN arrow button beneath the TIME window to set the desired cycle time from 1 minute to 99 minutes. Next, set the speed control by pressing the UP/ DOWN arrow beneath the SPEED window to any value between 1000 and 3000 (2850 for 50hz models). A setting of 1000 is the least vigorous mixing and 3000 the most vigorous. Press the START/STOP button to begin the mixing action. The mixer will run until the set time has elapsed. To stop the cycle before the set time has elapsed, press the START/STOP button. To initiate a new timed cycle, press the START/STOP button again.

- 2.3 - "TIMED with SPEED ALARM"

Set the TIME and SPEED as described in 2.1. Press the SPEED ALARM button. The mixer will toggle between SPEED ALARM OFF and ON and the SPEED display will flash. Set the speed control by pressing the UP/DOWN arrow beneath the SPEED window. It is recommended to set the SPEED ALARM a minimum of 100 RPM slower than the mixer speed. Should the mixer not be able to maintain the speed within the ALARM SPEED setting, the mixer will beep.

- 2.4 - "CONTINUOUS"

The "Continuous" mode allows for unattended operation that will continue indefinitely until you stop the cycle by pressing the START/STOP button. To initiate the "Continuous" mode, press the DOWN arrow button beneath the TIME window until the illuminate display reaches "- -". Upon pressing the START/STOP button, the mixer will start and continue to run, unattended, until you once again press the START/STOP button. To restart the cycle, press the START/STOP button again.

- 2.5 - "CONTINUOUS with SPEED ALARM"

Set the "Continuous" TIME as described in 2.3. Set the SPEED as described in 2.1. Set the SPEED ALARM as described in 2.2.

- 2.6 - "SLEEP"

The mixer will automatically go into a "SLEEP" mode if the mixer is plugged in but not used for 10 minutes. The TIME and SPEED illuminated displays will go blank and the ON or OFF illuminated display will blink. Press the START/STOP button to "WAKE UP" the mixer.

CAUTION! Do not lift your DIGITAL DISRUPTOR GENIE® by its head.

CAUTION! Failure to follow operating instructions can compromise the user's safety.

## Care and Handling

Your DIGITAL DISRUPTOR GENIE should be given the care normally required for any electrical appliance. Avoid wetting or unnecessary exposure to fumes. The finish can be washed with water (after unplugging) and soap or detergents, using a cloth or sponge. Keep the unit clean by immediately blotting any spills. Replacement parts are available through your laboratory equipment distributor. Refer to "Parts Assembly List".

CAUTION! Unplug from power before cleaning. Do not immerse.

## SPECIFICATIONS

The DIGITAL DISRUPTOR GENIE is classified as "Installation Category 2"  
Environmental: 0°C – 38°C (32°F-100°F), 95% Humidity max.



Weight: 4.3 Kg (9.5 lbs.) - Cast metal base with vibration damping feet. Base Dimensions (DxWxH):  
165x122x190mm, (6.5x4.8x7.5in.)

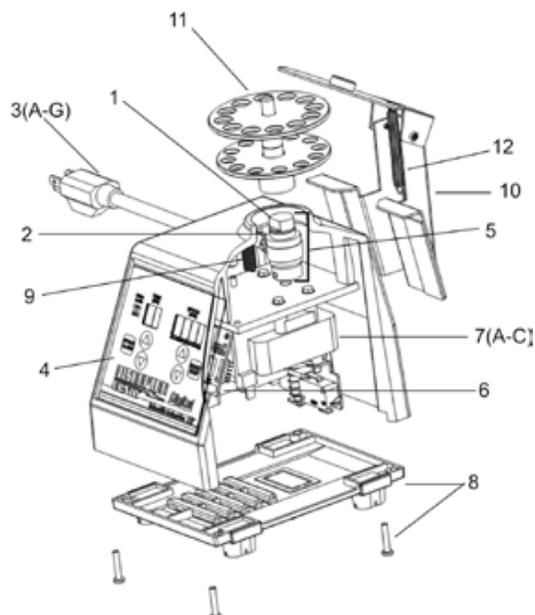
Time Range: 0-99 minutes or continuous

Speed Range: 1000-3000 RPM (2850 RPM for 50hz models)

## PARTS ASSEMBLY LIST

To order parts for the DIGITAL DISRUPTOR GENIE:

Contact your local distributor or visit [www.emsdiasum.com](http://www.emsdiasum.com). Please specify part no., quantity and electric voltage.



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