Cole-Parmer®

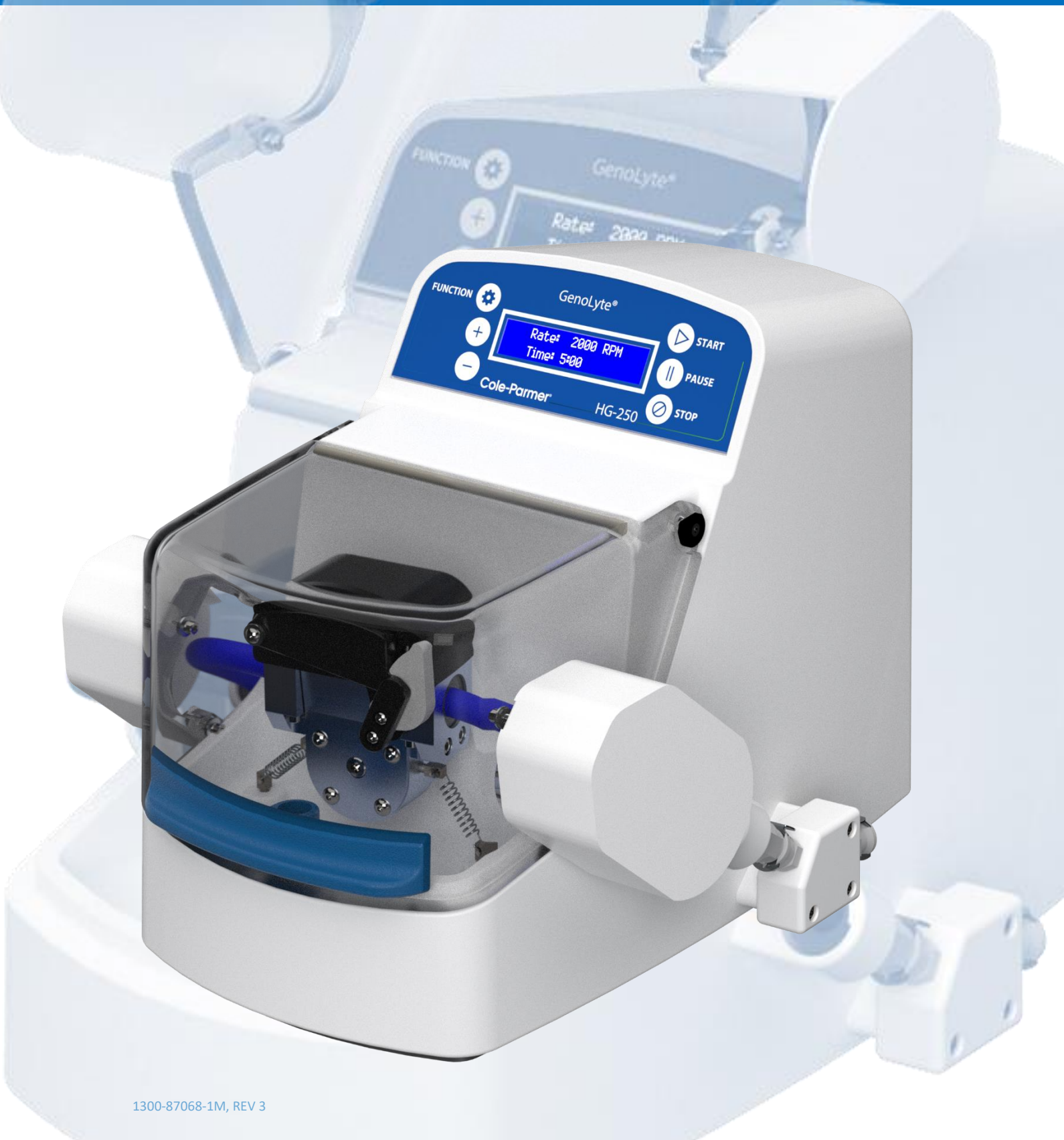
HG-250 GenoLyte®

Tissue and Cell Lyser for Biological Applications

Operation Manual

For 115V/230V (41010-94)

For Product Information



1300-87068-1M, REV 3

SPEX SamplePrep is now part of Cole-Parmer®.
The Cole-Parmer® HG-250 GenoLyte was formerly known as SPEX 1200C GenoLyte.

Over the years, we've acquired many high-quality and reputable brands. After many years of continual growth, we realize our brands are all as brilliant as each other. Rather than have a portfolio of complementary brands, we felt consolidating them under one world-class brand name enabled us to offer a single and significant brand experience. Through one brand we can speak in one voice through our team of experts who provide support in product selection, usage and troubleshooting to empower laboratories to run efficiently throughout the world.

Same Great Quality!
One World-Class Brand Name!

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1.0 INTRODUCTION

The HG-250 Chilled GenoLyte® is an efficient, compact laboratory homogenizer that uses a circulating-chiller (not included) to maintain sample temperature between 0 to 10°C while effectively disrupting cellular materials by horizontally oscillating 2 mL vials. Sample materials that can be prepared include seeds, stems, roots, leaves, and animal tissue.

This motion allows the mill to be used to prepare sample tissue for extractions of nucleic acid, proteins, and other constituents by agitating the tissue, steel balls or beads, and a lysis agent together in each vial.

The isolation of nucleic acids from intact samples requires mechanically disrupting the samples, followed by the extraction and subsequent purification of the nucleic acid. Mechanical tissue disruption is often performed manually with a mortar and pestle, an approach that is not practical for day-to-day screening since manual grinding of tissues is slow, and re-use of mortars and pestles may lead to cross-contamination. Alternatively, nucleic acids can be isolated in a vial using balls or beads that mechanically disrupt the sample. Conventional isolation methodologies can then be used to extract the nucleic acids from the homogenate.

The features include: modern design, quick-connect cooling setup, operating commands through a digital timer, large clear lid for visibility of sample loading area, safety interlock, and the clamp orientation makes it easy to load/unload samples.

Operation is simple: the vials are secured in the sample cooling chamber, and the lid closed. The controls are checked for the proper running time, rate, and the START button pushed. When the run is complete, the lid is lifted and the vials are removed.

NOTE: PLEASE DO NOT OPERATE THE HG-250 GENOLYTE® UNTIL YOU HAVE READ THESE INSTRUCTIONS AND ARE FAMILIAR WITH ITS CONTROLS AND CLAMP MECHANISM. THE HG-250 CHILLED GENOLYTE® IS INTENDED FOR USE ONLY BY QUALIFIED AND TRAINED PERSONNEL.

2.0 SPECIFICATIONS

Type of Mill:	Homogenizer, Bead Beater (temperature controlled by external chiller)
Chiller: (Sold Separately)	Minimum Temperature Run Setting: - 5°C (23°F) Maximum Temperature Run Setting: 10°C (50°F)
Compatible Chiller (Recommended)	Cole-Parmer Polystat Standard (20873-47) Cole-Parmer Polystat Digital (10124-00)
Display:	Digital
Homogenizing Mechanism:	Grinding balls of stainless steel, silica, or zirconia.
Dimensions	15 in. (38 cm) long x 11.5 in. (29.2 cm) wide x 11 in. (30 cm) high.
Weight:	24 lbs. (10.9 kg) with external power supply.
Capacity:	Three 2 mL vials (accommodates most standard 2 mL vials)
Clamp Speed:	Fixed Speeds (rpm): 2000, 2500, 3000.
Electrical Specifications:	CE approved. 115V/230V, 60/50Hz.
Circuit Breaker:	Same as ON/OFF Switch.
Power Cord:	3-prong grounded plug supplied or 2-prong European plug supplied. **Operator is responsible for supplying alternate line cord/plug.**
Safety Features:	Interlock prevents mill from running if lid is open.
Run Timer:	Maximum 5 minutes.
Motor:	1/7 HP. Maximum speed 4200 rpm.
Environment:	For indoor use only at a maximum altitude of 6600 ft. (2000 m). Operate at ambient conditions between 40°F (5°C) and 104°F (40°C), with maximum relative humidity 80% below 88°F (31°C) decreasing linearly to 50% at 104°F (40°C). Main supply voltage fluctuations up to 10% of nominal voltage (115 or 230 volts AC RMS). Pollution degree 1: none or only dry, conductive pollution occurs.

3.0 UNPACKING

Inspect the exterior of the packing box and report any visible damage to the carrier. Remove all packing documents from the exterior of the box, and save them for your records. Open the top of the shipping box. Remove the packing material and accessories, and gently lift out the HG-250 Chilled GenoLyte® Homogenizer. Visually check the unit for any damage that may have occurred during shipping. Open the lid, remove packing from around the clamp mechanism. **Tilt the cabinet, and remove the two shipping bolts on the bottom.** They hold the floating baseplate to the cabinet for shipping. Check the packing list to see that there are no parts missing, and inspect the accessories. We recommend storing the packaging materials in the event there is a need to return the unit for warranty service or repairs.

2 mL vials are necessary for processing samples but must be purchased separately. The full range of preloaded 2 mL vials for the HG-250 Chilled GenoLyte® is described in our catalog, GenoLyte Accessories Manual or Cole-Parmer.com.

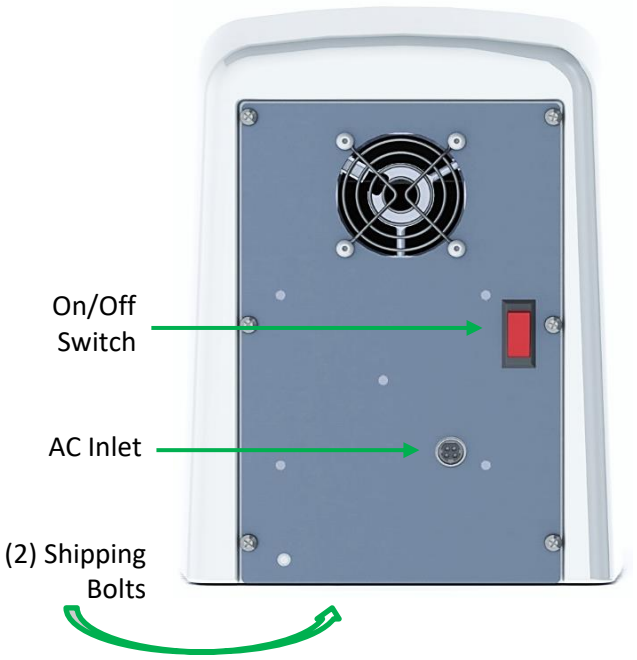


Figure 1 - Back View

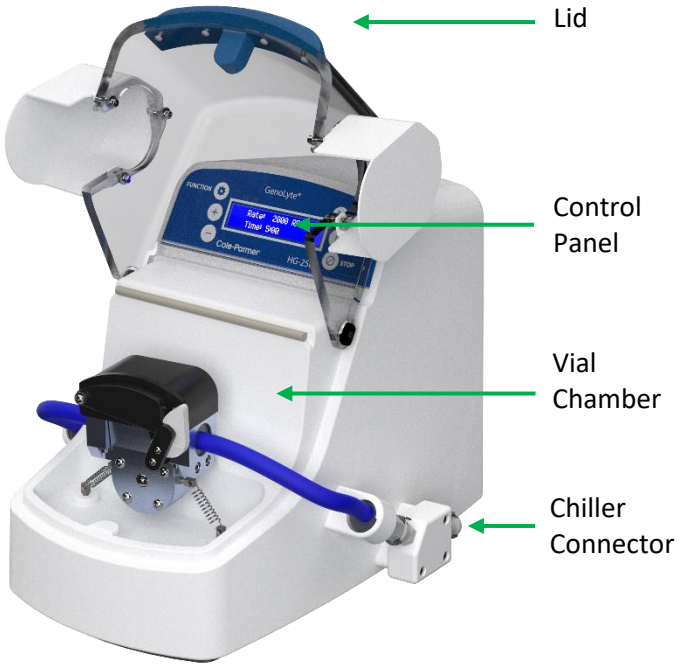


Figure 2 - Front View

NOTE: ***Before operating, remove the shipping bolt from the bottom of the HG-250 Chilled GenoLyte; otherwise the mill may be damaged. The screws should be replaced if the unit is ever to be shipped or transported.***

4.0 SETTING UP

The HG-250 Chilled GenoLyte® weighs 24 pounds (10.9 Kg). The lid opens from the front with the handle in the center. The chiller quick-connectors are located on left and right of unit (Figure 2). The AC Inlet and On/Off switch are located on the back of the cabinet, as shown in Figure 1. The control panel is fixed to the front side of the unit (Figure 2).

4.1 Electrical Connection

The detachable power cord should be plugged firmly into its inlet, then into an electrical outlet. Make sure that the electrical outlet is easily accessible in case it becomes necessary to unplug the unit. For 115V/60HZ use, a 3-prong outlet. The 230V/50HZ power cord has a standard European 2-prong plug, but modification by the user may be necessary to meet local electrical codes.

4.2 Cabinet Set-Up

To open the lid, grasp the white handle and raise the lid to its full upright position. Allow the lid to rest against the cabinet in its open position. To close, grasp the white handle and lower the lid until it is fully closed.

4.3 Standard Safety Features

Clamp Locking Tab: The clamp arm is fastened down to firmly fit against the vial lids in the vial chamber (holder). The clamp arm is pressed downward by user until it clasps the locking tab (Figure 3). Vial holder only accepts 2 mL vials. When removing the vials, first unclasp the locking tab from the clamp arm.

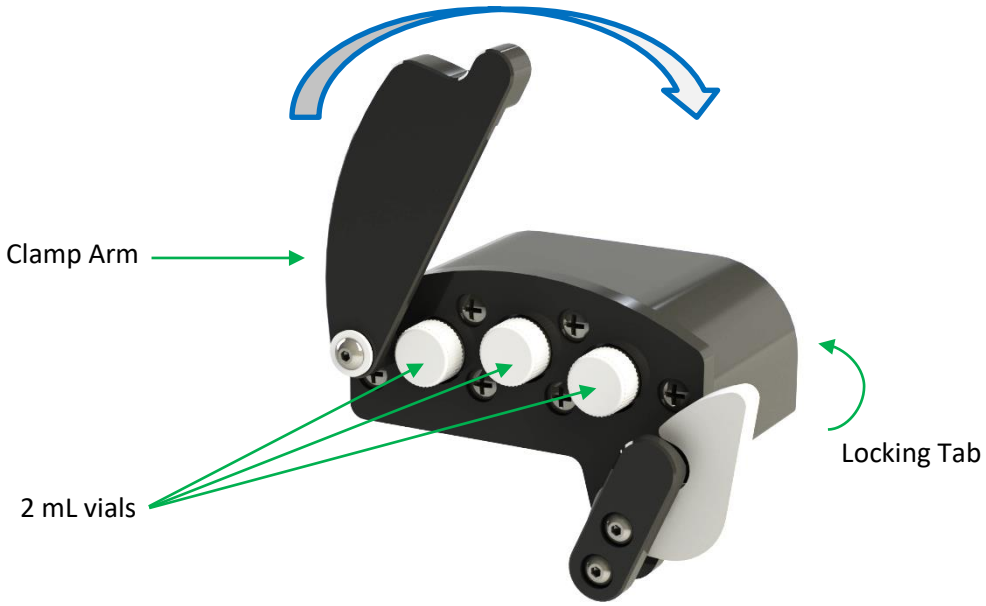


Figure 3 - The Clamp (Locking Tab)

4.4 CE Safety Features

CE directives require that electricity to the motor and timer be interrupted whenever the lid is open, and that the clamp must stop completely before the lid is opened.

Safety Interlock: If the RUN button is pressed while the lid is open, the HG-250 Chilled GenoLyte will not start. During operation, if the lid is opened, the motor will immediately stop, and movement of the clamp mechanism will cease.

4.5 General Safety

Caution: Every effort has been made to ensure the HG-250 Chilled GenoLyte operates at a moderate noise level. The intensity of noise is directly impacted by the type of grinding vial, type of balls, run speed (e.g. 3000 rpm) and sample hardness. Ear protection is recommended.

5.0 OPERATION

NOTE: Never run the HG-250 Chilled GenoLyte Homogenizer with the clamp arm unfastened or not properly secured. Damage and leakage will result.

5.1 Control Panel

5.1.1 Run Parameter

- Time - Can be set in 5-second increments. Maximum runtime is 5.00 min.
- Rate - Run speeds are fixed at 2000 rpm, 2500 rpm, 3000 rpm.
- Rest - Runtime is inactive between cycles and can be set in 15 second increments up to 5 minutes.
- Cycles - 1 to 5 (the number of runtimes).

5.2 Changing Settings

Step 1. To set a programmed run push the FUNCTION button to select the Runtime, Rate, Rest, and Cycles**.** Press the plus button (**+**) to increase the selected parameter or press the minus button (**-**) to decrease the parameter.

Step 2. To exit the Function programming screen push the STOP button.

Step 3. Push the START button to begin a programmed run. The timer counts down in 1-second increments, showing the time left in the run. When the timer reaches zero and the motor shuts off, the timer will display RUN COMPLETE. The safety interlock switch prevents the unit from running if lid is open.

5.2 Changing Settings (Cont'd)

Step 4. To pause the mill during a run and retain the timer setting, push the PAUSE button. The motor will shut off and PAUSED will appear on the display. To resume the run, close lid and push START; the timer will briefly display the exact number of seconds left in the run and then continue to count down in 1-second increments. To abort the run, push STOP; RUN COMPLETE will be displayed.

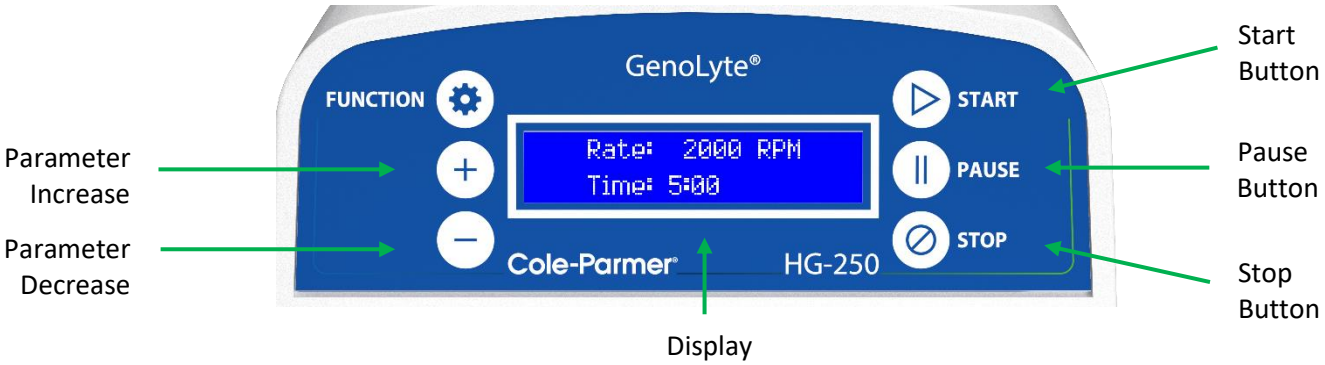


Figure 6 - Control Panel

6.0 HOMOGENIZATION

Depending on the sample (e.g. plant, tissue) and amount of material used for the extraction process, vials with one large or several smaller balls may be more efficient.

In the GenoLyte Accessories Manual, 2 mL vials preloaded with grinding media are listed with a brief description for suggested sample types. The samples can be ground dry or with the addition of a lysis buffer.

6.1 Temperature Controlled Homogenization

(See manufacturer's operation manual on how to fill and run chiller.)
The vial cooling chamber (or inside the vial) temperature is typically 1 to 1.5°C higher than the chiller temperature. For example, setting the chiller temperature to 0°C will result in the vial chamber temperature being 1 to 1.5°C (the vial will acclimate to this temperature in approx. 5 seconds).

Note: The grinding media (steel balls, ceramic) will generate some frictional during homogenization. To control temperature spiking, program a run in cycles with rest (pause) feature (Section 5.0). Keeping runtimes short (e.g. 30 sec), in combination with two or three cycles, and 15 second rest periods will maintain the vial temperature range within 3 to 4 degrees of the chiller setting.

6.1 Temperature Controlled Homogenization (Cont'd)

6.2 Chiller Setting Reference Table 1 (Guidelines for HG-250 Chilled GenoLyte Run Protocol)

CHILLER SETTING	RUNTIME	RATE	REST	CYCLE	VIAL TEMPERATURE (during run)
-3°C (26.6°F)	40 seconds	3000 rpm	15 seconds	2	0° to 4°C
-1°C (30.2°F)	35 seconds	3000 rpm	15 seconds	2	3° to 8°C
1°C (33.8°F)	30 seconds	3000 rpm	15 seconds	3	4° to 8°C
3°C (37.4°F)	30 seconds	3000 rpm	15 seconds	3	6° to 10°C

Note: The vials acclimate to the chiller temperature in approximately 5 seconds.

Tip: To improve homogenization and maintain vial temperature increase the number cycles (1 - 5), keeping the other run parameters (runtime, rate, rest) the same as listed in Table 1.

Some experimentation with grinding media based on sample type is necessary to optimize homogenization. The Reference Table 6.3 provides a general description of vial sets for certain sample types. For tough samples use 2310 (2 mL) Reinforced Tube (Table 2.).

Table 2. (Accessories)

	**2310 (2 mL) Reinforced Tube** Reinforced polypropylene, Self- standing 2 mL microfuge tube with screw-on polyethylene cap. The nominal outer diameter measures 25/64 in. x 1 27/32 in. long (10 mm x 47 mm). Grinding load per tube 60 - 120 mg; mixing load 1 mL. Sold in package of 200.
	**2151 Grinding Balls, nominal diameter 4/32 in. (3 mm)** Made of 440C stainless steel. Used with reinforced polypropylene tube (#2310). Sold in package of 100.
	**2154 Grinding Balls, nominal diameter ¼ in. (6.35 mm)** Made of 440C stainless steel. Used with reinforced polypropylene tube (#2310).
	**2186 Zirconia Grinding Balls, nominal diameter 15/64 in. (6 mm)** Made of zirconia. Used with reinforced polypropylene tube (#2310). Sold in package of 1,000.
	**2302-30 (3 mm) Zirconium Beads** Acid washed zirconium beads, 300 g bottle.

6.3 Pre-Loaded Disruption Tubes Reference Table 3

VPN	2 ML VIAL SET	DETAILS
2301-100MB	100 µm Silica Beads (1200 mg)	Economical bead for disrupting bacteria.
2302-1400AW	1.4 mm Zirconia Beads	Suitable for small tissue samples and biomass.
2303-MM1	Garnet & ZrO2 Satellites	General Sample Shredding.
2303-MM2	800 micron & 1.4 mm Zirconia Beads	Mycelium & Soft Leaves.
2303-MM3	100 micron Si, 1.4 mm Zr, & 4 mm Si	Biofilms & Plant Tissues.
2304-100AW	100 µm Silica Beads (600 mg)	Suitable for Bacteria.
2302-100AW2	100 µm Zirconia Beads (600 mg)	Zirconium beads are of higher density; excellent for bacterial disruption.
2304-400AW	400 µm Silica Beads	Size is ideal for yeasts such as Saccharomyces.
2304-800AW	800 µm Silica Beads	Size is suitable for molds and pollen.
2302-1000AW	1.0 mm Zirconia Beads	Beads are suitable to disrupt finer soils.
2302-1700AW	1.7 mm Zirconia Beads	Effective for larger tissue samples and fine plant materials.
2305-2800SS	2.8 mm Stainless Steel Grinding Balls	Most dense of all the grinding media, popular for their moderate cost. Good for tissues.
2302-3000AW	3.0 mm Zirconia Beads	Good for larger tissue samples. Excellent chemical resistance to organics.
2302-6000AW	6 mm Ceria Stabilized Zirconia Beads	Ideal for grinding tough plant samples.
2302-200AW	200 µm Zirconium Beads	Suitable for bacteria and small yeast (e.g. Pichia).

7.0 CHILLER CONNECTION

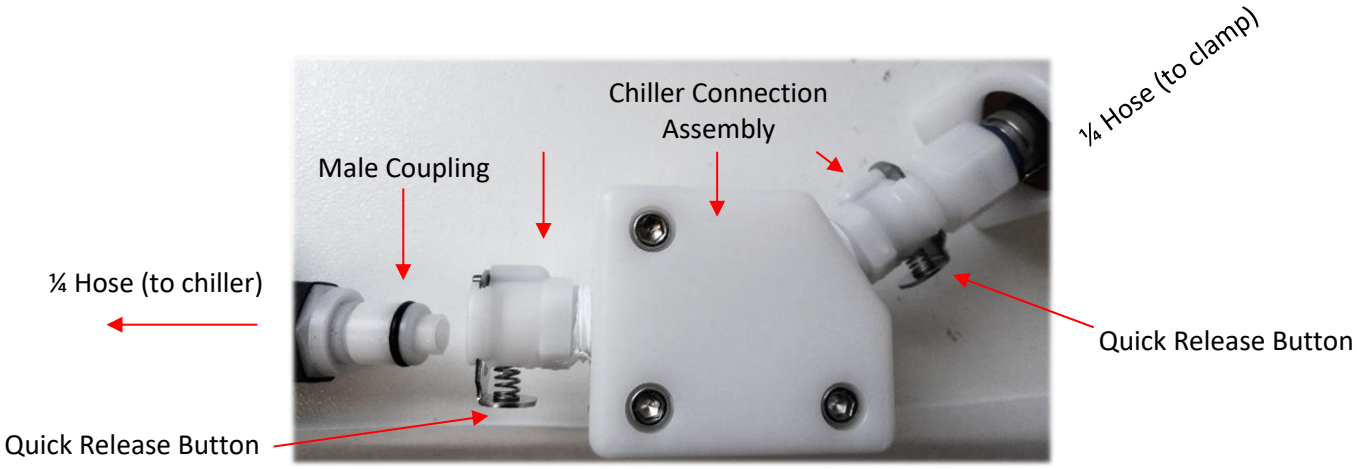


Figure 7 - Chiller Connection (left side view)

7.1 Description

The chiller connection assembly is attached to the HG-250, fitted with two female valved coupling body for the inlet and outlet chiller ports, as shown in Figure 7. Each female coupling body has a quick release mechanism to detach male valved coupling (hose). To attach hose by inserting male valve into female coupling until it snaps in place, locking the two pieces together.

Connecting to the chiller, two (¼ in. ID) 42 in. flexible hoses are attached to the barb-side male valved coupling. The inlet port to the chiller is attached to the right side of the HG-250 Chilled GenoLyte (right chiller connection) and the left chiller connection is attached to the outlet port from the chiller. The two (¼ in. ID) 42 in. specially designed chiller hoses fitted with a male valved coupling (# HG-250-10) can be purchased from Cole-Parmer.

8.0 ERROR MESSAGES

8.1 Lid Error

If the lid interlock fails while the HG-250 Chilled GenoLyte is running, the unit will stop running and the screen will display a “LID OPEN” message. The timer will maintain the time remaining in the run. To restart, close the lid and press the START button to finish the run. To end the run and reset the timer, press the STOP button. The “LID OPEN” message will disappear once the lid is closed.

8.2 Run Fault

If a “RUN FAULT” message appears on the display screen, this indicates the HG-250 Chilled GenoLyte is not operating within an acceptable range of the set rate. Press the STOP button to discontinue operation and contact Cole-Parmer service technician (732-623-0465) for assistance.

9.0 MAINTENANCE

NOTE: Always unplug the HG-250 Chilled GenoLyte before any cleanup or maintenance work.

The HG-250 Chilled GenoLyte® has been designed to provide trouble-free operation over a long period of time. To assure proper performance, the most important factor is cleanliness. Any spills should be wiped up immediately.

The cabinet is made primarily of painted plastic. The lid is a clear formed polycarbonate. The interior as well as the exterior surfaces of the unit are designed to be easily cleaned in case of a sample spill. To maintain the overall appearance of the unit, periodically wipe the exterior and interior of the HG-250 Chilled GenoLyte with a mild window cleaner or similar product (use a soft non-abrasive cotton cloth).

10.0 WARRANTY

Cole-Parmer® guarantees its products against defects in materials or workmanship for three years from the date of original shipment. Repairs, replacements, or parts are guaranteed for 30 days or for the remaining original warranty period (whichever is greater) for the item that was repaired or replaced. Items not produced by Cole-Parmer® carry the manufacturer's warranty only.

The warranty excludes wear parts. These are parts that wear out through use and must be replaced periodically for proper operation. The HG-250 Chilled GenoLyte wear parts include the following which can be changed by the user.

21609 Spadebolt
52160 Spring
50157 Vibration Mount

In the event that these or other parts require service, please contact Cole-Parmer to arrange a return shipment.

The customer pays return freight for warranty claims. If the warranty claim is valid, Cole-Parmer® will pay return freight to the customer. However, Cole-Parmer® reserves the right to judge whether a malfunction during the warranty period is due to defects in materials or workmanship, or to wear, negligence, or misuse.

10.1 Product Specifications

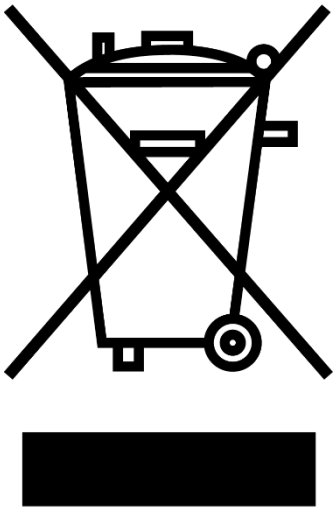
Every effort has been made to provide complete and accurate product operation and information in this manual. However, since specifications are subject to change without notice, changes may be made from time to time to improve the performance of the product.

10.2 To Arrange A Return Shipment

We want you to be satisfied with your purchase from Cole-Parmer®. Please bring any problem to our attention, but please DO NOT RETURN any item before contacting us for a Return Authorization Number and instructions. Unauthorized returns will be refused. The cost for all return transportation is the responsibility of the customer. Credit for returned merchandise will be issued only after goods have been received and inspected. Returned goods are subject to a 25% restocking charge.

11.0 INSTRUMENT DISPOSAL

In accordance to the EU Directive 2012/19/EU covering Waste Electrical and Electronic Equipment, all equipment with the disposal symbol must not be disposed of with general waste. (See Figure 8)



Disposal Label is located on the back of unit.

Figure 8 - Disposal Symbol

Throughout the European Community, guidelines regarding disposal regulations may vary from territory to territory. Please contact the national legislation or local authority for more information on proper disposal of all equipment with this symbol.

12.0 CONTACT US

Repair Service
Phone: 1.732.623.0465

Cole-Parmer
65 Liberty St
Metuchen, NJ 08840
US

Attn: Service and Repair
Please include RA Number on the shipping label.

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