

LabGEN 700

GENERAL LABORATORY HOMOGENIZER

OWNER'S MANUAL



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WARRANTY INFORMATION

This manual is a guide for the use of the LabGEN 700 General Laboratory Homogenizer and accessories.

Data herein has been verified and validated. It is believed adequate for the intended use of the instrument. If the instrument or procedures are used for purposes over and above the capabilities specified herein, confirmation of the validity and suitability should be obtained, otherwise Cole-Parmer does not guarantee results and assumes no obligation or liability. This publication is not a license to operate under, or a recommendation to infringe upon, any process patents.

Notes, cautions, and warnings within the text of this manual are used to emphasize important and critical instructions.

This Cole-Parmer product is warranted to be free from defects in material and workmanship for a period of ONE YEAR from the date of delivery. Cole-Parmer will repair or replace and return free of charge any part which is returned to its factory within said period, transportation prepaid by user, and which is found upon inspection to have been defective in materials or workmanship. For the first 90 days, both parts and service are without charge. For the balance of the period, parts will be provided but service will be charged at established labor rates. This warranty does not include normal wear from use; it does not apply to any instrument or parts which have been altered by anyone other than an employee of Cole-Parmer nor to any instrument which has been damaged through accident, negligence, failure to follow operating instructions, the use of electric currents or circuits other than those specified on the plate affixed to the instrument, misuse, or abuse. Cole-Parmer reserves the right to change, alter, modify, or improve any of its instruments without any obligation whatever to make corresponding changes to any instrument previously sold or shipped.

THE FORGOING OBLIGATION IS IN LIEU OF ALL OBLIGATIONS AND LIABILITIES INCLUDING NEGLIGENCE AND ALL WARRANTIES OF MERCHANTABILITY OR OTHERWISE, EXPRESSED OR IMPLIED IN FACT OR BY LAW, AND STATE OUR ENTIRE AND EXCLUSIVE LIABILITY AND BUYERS EXCLUSIVE REMEDY FOR ANY CLAIM OF DAMAGES IN CONNECTION WITH THE SALE OR FURNISHING OF GOODS OR PARTS, THEIR DESIGN, SUITABILITY FOR USE, INSTALLATION, OR OPERATION. COLE-PARMER WILL IN NO EVENT BE LIABLE FOR ANY SPECIAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, AND THEIR LIABILITY UNDER NO CIRCUMSTANCES WILL EXCEED THE CONTRACT PRICE FOR THE GOODS FOR WHICH LIABILITY IS CLAIMED.

IMPORTANT SAFEGUARDS

-READ ALL INSTRUCTIONS BEFORE USING.

-SAVE THIS OWNER'S MANUAL.

The LabGEN 700 has been engineered for economical functionality as well as safety; however, basic safety precautions and common sense must always be demonstrated when using any electrical product. Do not attempt to modify any part of the LabGEN 700. If you experience problems with or have questions about your LabGEN 700, contact your authorized dealer or call Cole-Parmer at 1-800-323-4340 or 1-847-549-7600.

DANGER

-DO NOT allow the machine to be submerged in any liquid.

-DO NOT use in any setting other than an indoor laboratory.

-DO NOT plug power cord into an incorrect outlet.

WARNING

To reduce the risk of burns, electrocution, fire, or injury:

-Use this product only for its intended purpose as described in this booklet. Do not use attachments not recommended by the manufacturer.

-DO NOT operate the product if it is damaged in any way.

-Keep this product away from heated surfaces.

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SECTION I. OMNI LabGEN 700 GENERAL LAB HOMOGENIZER

The LabGEN 700 General Laboratory Homogenizer is a variable speed, handheld or post-mounted homogenizer. It combines 700 watt, 28,000rpm motor with a choice of autoclavable, rotor-stator generator probes of various diameters.

I.1 SPECIFICATIONS

Motor Speed:	5,000-28,000rpm
W/ external speed control:	0-28,000rpm
Capacity:	0.03mL-10L
Height (motor only):	22cm (8.5in)
Weight (motor only):	1.6kg (56oz)
Electrical Requirements:	115V, 60Hz or 220V, 50Hz
Standards Approval/Compliance:	
220V:	CE Certified

I.2 PARTS AND ACCESSORIES

Prior to operation, please remove all parts from the shipping container and inspect for damaged or missing parts. If any parts are found to be damaged or missing, please contact Cole-Parmer at 1-800-323-4340.

The LabGEN 700 consists of the following:

<u>Description</u>	<u>Part Number</u>	<u>Quantity</u>
Motor Drive Unit		1
(115V)	GLH-01	
(220V)	GLH-02	
Thumbscrew Assembly	GLH11547	1
Tool Kit	T1001	1
Instruction Manual	H258-GLH	1

Also available, but not supplied with the instrument:

<u>Description</u>	<u>Part Number</u>
Stand Assembly*	04727-88

*The stand assembly includes a base plate, 24" post, cross rod, and post clamp.

SECTION I. OMNI LabGEN 700 GENERAL LAB HOMOGENIZER**I.3 VARIABLE SPEED OPERATION**

The speed of the LabGEN 700 may be regulated by means of a variable rotary switch located at the top of the unit. Speed settings below are approximate, and are based on running a 35mm probe in water. Actual speed will vary with probe size and sample processed.

<u>Speed Setting</u>	<u>Approximate Speed</u>
1	4,000
2	5,000
3	7,500
4	10,000
5	13,500
6	28,000

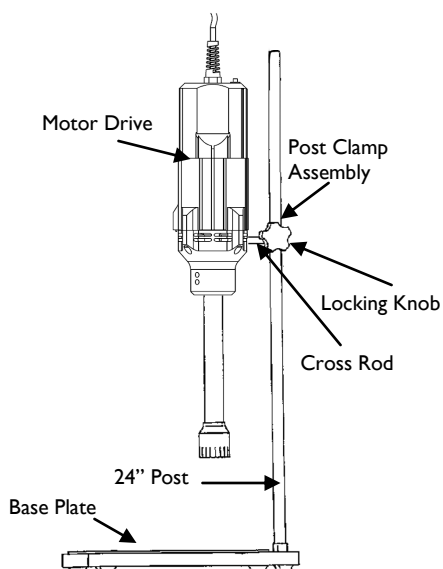


SECTION I. OMNI LabGEN 700 GENERAL LAB HOMOGENIZER

I.4 STAND-MOUNTING THE LabGEN 700 (Optional)

To mount the LabGEN 700 to the stand assembly, refer to the figure and follow these steps:

- 1) Secure the 24" post by twisting it into the base plate until securely tightened.
- 2) Loosen the locking knob and slide the post clamp assembly down over the end of the post until the clamp is at the desired height and lock in place.
- 3) Twist the cross rod into the back of the motor housing until tight.
- 4) Loosen the second knob on the post clamp assembly and insert the cross rod with motor attached (approximately 1" of the cross rod should protrude from the back of the post clamp).
- 5) Lock in place.



SECTION 2. MOTOR MAINTENANCE

2.1 MOTOR DRIVE UNIT

The Motor drive housing should be wiped off after use, especially when concentrated and potentially damaging liquids are used during processing. Never use solvents to clean unit or accessories.

2.2 BRUSH MAINTENANCE

If the performance of your LabGEN 700 begins to deteriorate in any of the following ways:

- The operations speed begins to decline
- The unit stalls intermittently
- The unit stops working all together

It probably requires a new set of brushes. The average brush life for the LabGEN 700 is 150 hours. For service, or brush replacement, please contact Cole-Parmer at 1-800-323-4340.

2.3 MOTOR BEARINGS

The LabGEN 700 motor is equipped with sealed ball bearings. Under normal use they require no additional lubrication.

2.4 STORAGE

The unique design of the LabGEN 700 allows the handheld unit to stand vertically on a bench-top or shelf so that it can be stored in less than eight square inches of space.

WARNING: Keep all housings in place and in working order.

WARNING: Remove all tools from the generator probe before turning the motor on.

WARNING: DO NOT use the motor in a dangerous environment.

WARNING: Disconnect the motor before servicing, and when changing the generator probe.

SECTION 2. MOTOR MAINTENANCE

WARNING: DO NOT modify the plug or cord that is provided. If the plug will not fit the outlet, have the proper outlet installed by a qualified electrician.

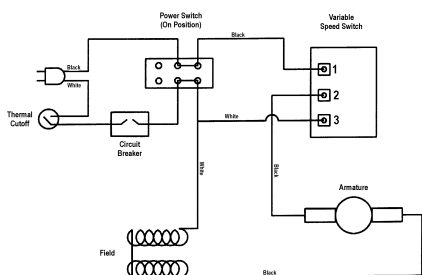
WARNING: Reduce the risk of unintentional starting; make sure the speed switch is in the OFF position before plugging in the motor.

WARNING: Damaged or worn power cords should be repaired or replaced immediately by a qualified electrician.

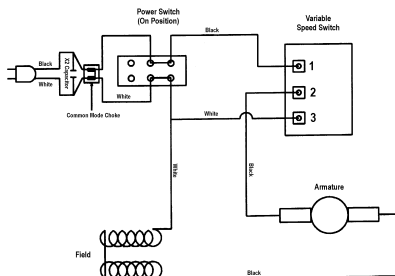
WARNING: Improper connection of the equipment can result in a risk of electric shock.

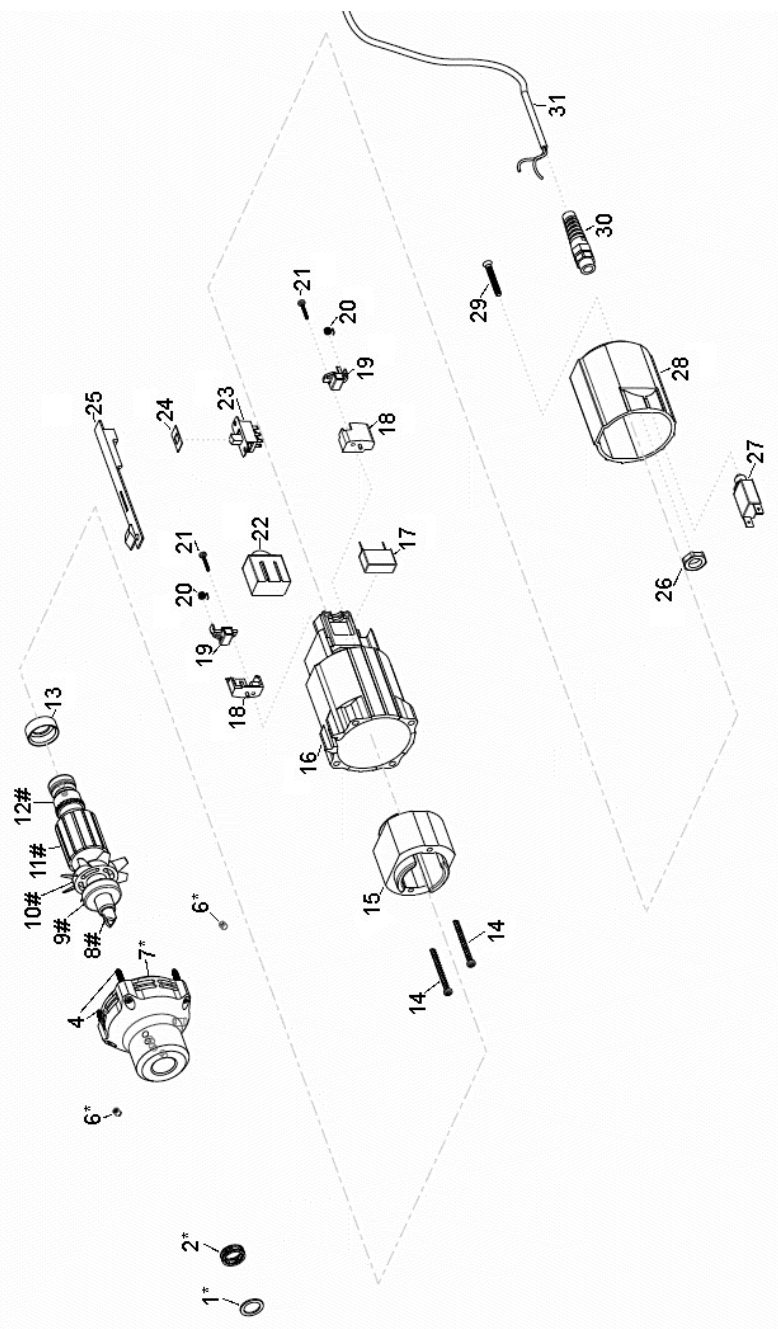
2.5 WIRING DIAGRAMS

115V LabGEN 700



220V LabGEN 700



SECTION 2. MOTOR MAINTENANCE**2.6 EXPLOSION DRAWING**

SECTION 2. MOTOR MAINTENANCE

**Table of Replacement Parts for the
LabGEN 700**

#	Description	115V	220V
1*	aluminum washer	63802	63802
2*	wave spring	HI1543	HI1543
3*	aluminum washer	63802	63802
4	self tapping screw, mod	65901-1	65901-1
6*	set screw 10-32 x 1/4	5903	5903
7*	lower coupling	GLH-04-01	GLH-04-01
8#	glh drive connect	GLHI155L	GLHI155L
9#	collet nut	50005	50005
10#	ss bearing, GLH/5100	50002	50002
11#	armature	GLHI1521	GLH2209
12#	commutator bearing	GLHI15221	GLHI15221
13	bearing mount	GLHI15220	GLHI15220
14	ss screw	GLHI15222	GLHI15222
15	field assembly	GLHI1530	GLH2210
16	motor housing	GLHI15218	GLHI15218
17	filter assembly(230V only)	N/A	GLH2201
18	base brush holder	GLHI15213	GLHI15213
19	Armature brush	GLHI15217	GLH2211
20	spring for brush	GLHI15216	GLHI15216
21	screw	GLHI15215	GLHI15215
22	vs switch	GLHI15210	GLHI15210-220
23	switch	GLHI1525	GLHI1525
24	dust shield	GLHI1526	GLHI1526
25	switch/button slide	GLHI1527	GLHI1527
26	sealcon strain relief nut	GLHI1514	GLHI1514
27	4A circuit breaker (115V only)	GLH2207	N/A
28	motor housing cap - painted	GLHI1524	GLHI1524
29	ss screw	GLHI1523	GLHI1523
30	sealcon strain relief	GLHI1513	GLHI1513
31	powercord	FGLHI151	FGLHI151

* Part also included in assembly number GLHI154L-ASY

Part also included in assembly number GLHI169 (115V) or GLH2269 (230V)

SECTION 3. ROTOR-STATOR GENERATOR PROBES

3.1 INSTALLING ROTOR-STATOR GENERATOR PROBES

Rotor-stator generator probes are easily installed to the LabGEN 700 motor by means of a quarter-turn bayonet mount. Simply push the generator probe into the motor housing as far as possible, turn clockwise, and release. Remove the blue protective cap from the tip of the generator probe and the LabGEN 700 is ready to operate.

CAUTION: Replace the blue protective cap on the end of the generator probe when the generator probe is not being used.

WARNING: The tip of a saw tooth generator probe is sharp.

3.2 THEORY OF OPERATION

The rotor shaft is coupled directly to the drive motor, via the drive pin. When attached to the Homogenizer motor, the rotor shaft can spin up to 28,000rpm. This assembly makes up the rotor portion of the rotor-stator generator probe. The tube and collar assembly is attached to the motor housing, but does not spin. This is the stator portion of the rotor-stator generator probe. As the rotor knife spins within the tube and collar assembly, it creates a pumping action, pulling the sample into the open end of the generator probe and forcing the sample out through the windows in the tube. The interaction of the rotor knife with these windows sets up a shearing action, reducing the particle size of the sample. The speed differential between the rapidly moving portion and the relatively stationary portion of the sample sets up a second force called cavitation which pulls the sample apart, further reducing the particle size.

The processing efficiency can be affected by:

- Amount of material processed vs. size and speed of the generator probe.
- Container geometry and size (round vessels encourage swirling, while fluted or cornered vessels disrupt flow patterns for more effective mixing/processing).
- Processing speed vs. optimal speed.
- Size and type of material and flow characteristics (material particles must be small enough to be carried into the generator head for optimal processing).

SECTION 3. ROTOR-STATOR GENERATOR PROBES

The upper hole of the tube and collar assembly should be left unblocked to allow the sample to circulate through the generator probe.

NOTE: For optimal sample recovery during processing, reduce the motor speed and completely remove the generator probe from the sample. Then turn off the motor drive unit.

WARNING: The tip of the saw tooth generator probe is sharp.

3.3 OPERATION

Insert the generator probe into the LabGEN 700 motor and remove the blue protective cap from the end of the generator probe. The depth of the generator probe in the sample vessel can significantly affect flow patterns within the vessel. This also affects processing efficiency. As a rule of thumb, the generator probe usually operates most efficiently at a depth of $1/3$ (to $1/2$) of the liquid height. Heavy sediments may require deeper immersion, and this processing depth can be optimized by observing flow patterns and related processing results. While processing, liquid can circulate through the two holes at the bottom of the generator probe. The top hole should not be immersed in the sample. Blocking the upper hole could result in liquid being drawn into the lower motor bearing.

CAUTION: When using glass-filled Teflon lower bearings, do not operate the unit for extended periods of time without immersing the bottom of the generator probe in liquid or the sample being processed in order to avoid premature failure of the lower bearing.

WARNING: Reduce the risk of unintentional starting; make sure that the variable speed switch is in the OFF position prior to plugging in the unit.

WARNING: DO NOT process pathogenic material in an open container, since aerosols created during normal processing could be inhaled by the operator. Please call for assistance in processing pathogens or other material which require sealed enclosures.

SECTION 4. TROUBLESHOOTING

Do not attempt to service the LabGEN 700 in a manner other than those discussed in this manual. For any issue that is unsuccessfully corrected using this guide, please contact your authorized dealer or call Cole-Parmer at 1-800-323-4340.

PROBLEM	CORRECTIVE ACTION
The LabGEN 700 is plugged in and turned on but is not functioning.	-Check power cord connectors -Check wall socket for power to the outlet
Motor is turned ON and makes a makes a “buzzing” sound, but is not working.	-Check that the brushes are not worn and are correctly installed. Replace if necessary. (see Section 2.2)
Motor unit operating speed declines, stalls intermittently, or stops completely	-Check that the brushes are not worn and are correctly installed. Replace if necessary. (see Section 2.2)
Teflon bearing wears quickly	-Fluid level may be too low in the tube. -Immerse the probe deeper into the fluid.
Excessive splashing in sample tube	-Fluid level too low for tube size

SECTION 5. SERVICE

5.1 ASSISTANCE

Should this product ever require service, please contact Cole-Parmer at 1-800-323-4340.

5.2 DECONTAMINATION

Should an instrument or component that has been used with radioactive or pathogenic material require factory or field service, comply with the following procedure to ensure the safety of service personnel:

- Clean the parts to be serviced of all encrusted material and decontaminate them. There must be no radioactivity detectable by survey equipment.
- Obtain a Decontamination Certificate from Cole-Parmer. Complete the certificate and attach to the instrument or parts being returned.

If no Decontamination Certificate is attached, and a potential radioactive or biological hazard is detected or suspected by Cole-Parmer, the equipment will not be serviced until proper decontamination and certification is complete. The sender will be contacted for instructions as to the disposition of the equipment. Disposition costs will be borne by the sender.

WARNING: It is a violation of federal law to transport biologically hazardous or radioactive materials without proper packaging, labeling, and appropriate warnings.



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Patents Pending

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