

OMNI GLH

GENERAL LABORATORY HOMOGENIZER USER MANUAL



OMNI
INTERNATIONAL™
The Homogenizer Company™

REV. D
H258-GLH

WARRANTY INFORMATION

This manual is a guide for the use of the Omni GLH, 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 Omni International 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 Omni International product is warranted to be free from defects in material and workmanship for a period of ONE YEAR from the date of delivery. Omni International 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. 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 Omni International 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. Omni International 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.

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IMPORTANT SAFEGUARDS

- READ ALL INSTRUCTIONS BEFORE USING.
- SAVE THIS OWNER'S MANUAL.

The Omni GLH 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 Omni GLH. If you experience problems with or have questions about your Omni GLH, contact your authorized dealer or call Omni International at 800-776-4431 or 770-421-0058.

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 1 — OMNI GLH, GENERAL LAB HOMOGENIZER

The Omni GLH, General Laboratory Homogenizer is a variable speed, handheld or post-mounted homogenizer. It combines 700 watt, 28,000 rpm motor with a choice of autoclavable, rotor-stator generator probes of various diameters. The GLH can also be used with OMNI Tip plastic probes (A1000SB adapter required).

1.1 SPECIFICATIONS

Motor Speed: 5,000-28,000 rpm

W/ external speed control: 0 - 28,000 rpm

Capacity: 0.03 mL-10 L

Height (motor only): 22 cm (8.5 in)

Weight (motor only): 1.6 kg (56 oz)

Electrical Requirements: 115V, 60 Hz or 220 V, 50 Hz

Standards Approval/Compliance:

220V: CE Certified

1.2 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 Omni International at 1-800-776-4431.

The Omni GLH consists of the following:

Description	Part Number	Quantity
Motor Drive Unit (115V)	GLH-01	
Motor Drive Unit (220V)	GLH-02	
Cross Rod	S00040	1
Clamp	FS1002	1
Tool Kit	T1001	1
Instruction Manual	H258-GLH	1

Also available, but not supplied with the instrument:

Description	Part Number
Stand Assembly*	S1000
External Speed Control (115V)	SC115
External Speed Control (220V)	SC220
Vessel Restraint Disk	LT-750

* The stand assembly includes a base plate and a 24" post.

1.3 VARIABLE SPEED OPERATION

The speed of the Omni GLH 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.

Speed Setting	Approximate Speed
1	4,000
2	5,000
3	7,500
4	10,000
5	13,500
6	25,000

1.4 EXTERNAL SPEED CONTROL

For greater precision, range (0–28,000 rpm), or remote operation (such as for fume hood or cold room applications) the optional external speed control is recommended. To operate the Omni GLH with the external speed control:

1. Make certain that both the external speed control and the Omni GLH are in the OFF position.
2. Plug the speed control into an external power source.
3. Plug the Omni GLH into the rear of the speed control unit.
4. Set the speed control knob on the Omni GLH to 6 (the maximum setting).

The Omni GLH can now be operated via the external speed control dial.

Select the optimal speed for each different combination of sample and generator for best processing results.

The table on page 7 is a good approximation guide for operating speed.

SECTION 1 — OMNI GLH, GENERAL LAB HOMOGENIZER

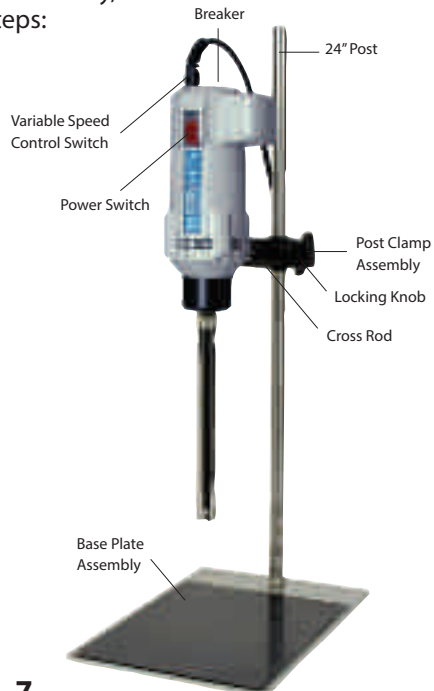
The table was constructed by running a 35mm generator probe in water. At no load, top motor speed is higher. Load, increasing viscosity, size of generator probe, line voltage, and the type of sample may all affect top speed of the motor.

Speed Setting	With Speed Control
1	700
2	3,000
3	6,000
4	9,000
5	12,000
6	14,000
7	17,000
8	20,000
9	24,000
10	28,000

1.5 STAND-MOUNTING THE OMNI GLH (Optional)

To mount the Omni GLH to the stand assembly, refer to the figure and follow these steps:

1. Secure the 24" post by twisting it into the base plate and locking jam nut at the base of the post.
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 Omni GLH 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 Omni GLH is 150 hours. For service, or brush replacement, please contact Omni International at 1-800-776-4431.

2.3 MOTOR BEARINGS

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

2.4 STORAGE

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

2.5 PLUG REQUIREMENTS

This instrument is equipped with an electric cord and housing which is double insulated. The unit must be plugged into a polarized outlet that is properly installed and grounded in accordance with all local codes and ordinances.

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.

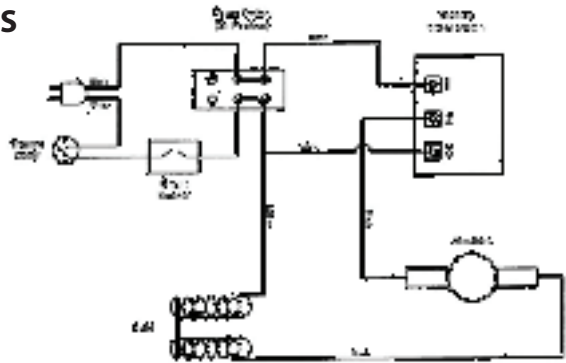
WARNING: Reduce the risk of unintentional starting; make sure the speed switch is in the OFF position before plugging in the motor.

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

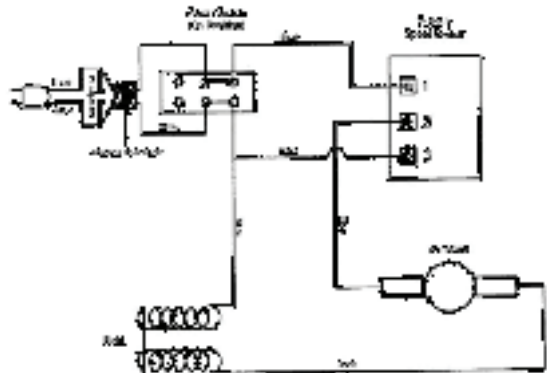
WARNING: Improper connection of the equipment can result in a risk of electric shock.

2.6 WIRING DIAGRAMS

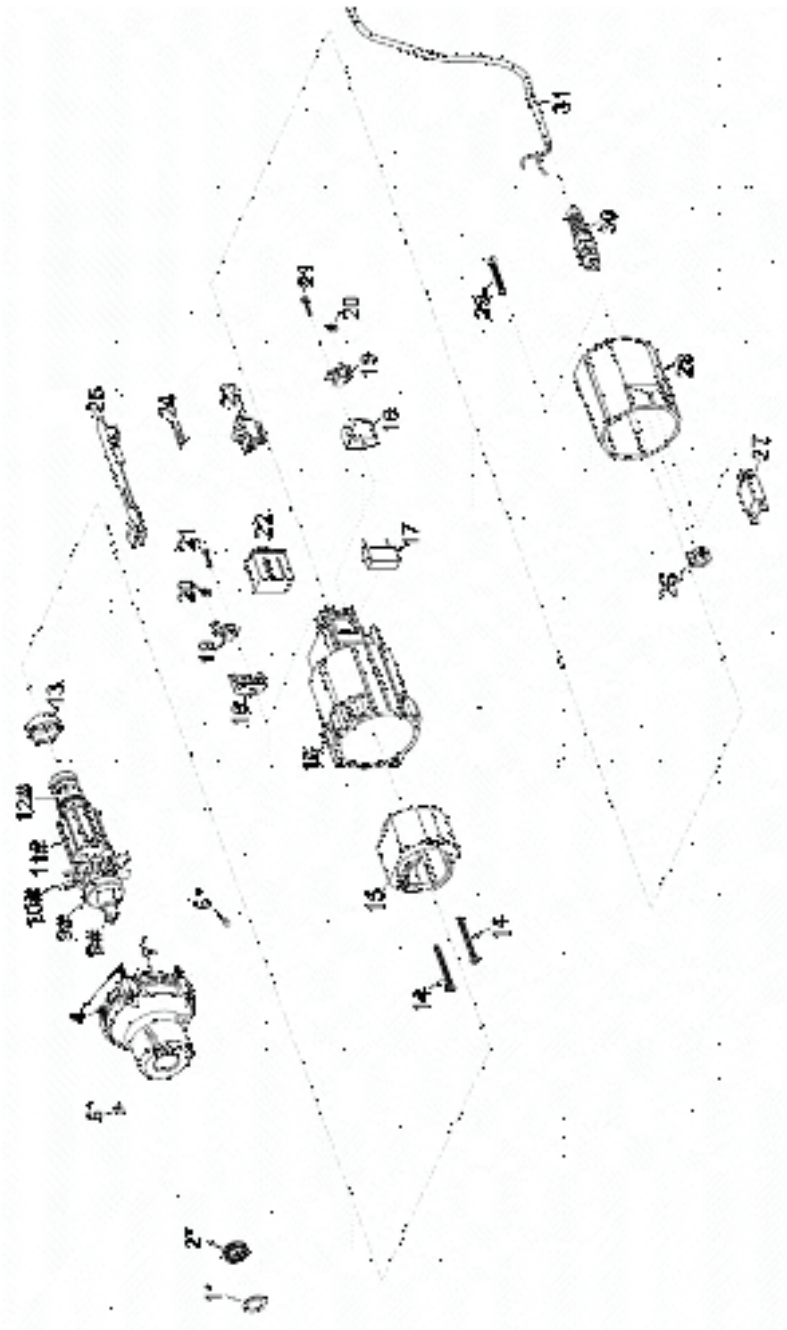
115V OMNI GLH



220V OMNI GLH



2.7 EXPLOSION DRAWING



SECTION 2 — MOTOR MAINTENANCE

2.8 TABLE OF REPLACEMENT PARTS FOR THE OMI GLH

NO.	DESCRIPTION	115V	220V
1*	Aluminum Washer	63802	63802
2*	Wave Spring	H11543	H11543
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	GLH1155L	GLH1155L
9**	Collect Nut	50005	50005
10**	SS Bearing, GLH/5100	50002	50002
11**	Armature	GLH-07-01	GLH-07-01
12**	Commutator Bearing	GLH115221	GLH115221
13	Bearing Mount	GLH115220	GLH115220
14	SS Screw	GLH115222	GLH115222
15	Field Assembly	GLH11530	GLH2210
16	Motor Housing	GLH115218	GLH115218
17	Filter Assembly (230V only)	N/A	GLH2201
18	Base Brush Holder	GLH115213	GLH115213
19	Armature Brush	GLH115217	GLH2211
20	Spring for Brush	GLH115216	GLH115216
21	Screw	GLH115215	GLH115215
22	VS Switch	GLH115210	GLH115210-220
23	Switch	GLH11525	GLH11525
24	Dust Shield	GLH11526	GLH11526
25	Switch/Button Slide	GLH11527	GLH11527
26	Sealcon Strain Relief Nut	GLH11514	GLH11514
27	4A Circuit Breaker (115V only)	GLH2207	N/A
28	Motor Housing Cap- Painted	GLH11524	GLH11524
29	SS Screw	GLH11523	GLH11523
30	Sealcon Strain Relief	GLH11513	GLH11513
31	Powercord	FGLH1151	FGLH1151

*Part also included in assembly number GLH1154-ASY

**Part also included in assembly number GLH1169 (115V) or GLH2269 (230V)

3.1 INSTALLING ROTOR-STATOR GENERATOR PROBES

Rotor-stator generator probes are easily installed to the Omni GLH 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 Omni GLH 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 of the sample sets up a second force called cavitation 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).

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

3.3 OPERATION

Insert the generator probe into the Omni GLH 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: Do not operate the unit 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.

4.1 ASSISTANCE

Should this product ever require service, please contact Omni International at 1-800-776-4431.

4.2 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 Omni International. 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 Omni International, 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.

SECTION 5 — TROUBLESHOOTING

Do not attempt to service the Omni GLH 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 Omni International at 1-800-776-4431.

PROBLEM	CORRECTIVE ACTION
The Omni GLH is plugged in and turned on but is not functioning.	<ul style="list-style-type: none">- Check power cord connectors- Check wall socket for power to the outlet
Motor is turned ON and makes a “buzzing” sound, but is not working.	<ul style="list-style-type: none">- 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	<ul style="list-style-type: none">- Check that the brushes are not worn and are correctly installed. Replace if necessary. (see Section 2.2)
Excessive noise during normal operation	<ul style="list-style-type: none">- Check the condition of the PTFE bearing and replace if needed (see Section 3.5).
Excessive noise during run-in of a new bearing	<ul style="list-style-type: none">- Turn the Omni GLH OFF and return to step B of Section 3.5
Teflon bearing wears quickly	<ul style="list-style-type: none">- Fluid level may be too low in the tube.- Immerse the probe deeper into the fluid.
Excessive splashing in sample tube	<ul style="list-style-type: none">- Fluid level too low for tube size
Motor won't start or shuts off while processing	<ul style="list-style-type: none">- Press down on the breaker (115v only)

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