

INSTRUCTION MANUAL



High Throughput
Homogenizer

Distributed by:
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PACKAGE CONTENTS

High Throughput Homogenizer
90" (229cm) detachable power cord
Instruction manual
Warranty card

WARRANTY

Manufacturer warrants this product to be free from defects in material and workmanship when used under normal conditions for five (5) years. Please complete and return the enclosed warranty card. For your reference, make a note of the serial number, date of purchase and supplier here.

Serial Number: _____

Date of Purchase: _____

Supplier: _____

INTRODUCTION

The Talboys High Throughput Homogenizer is a homogenizer specifically designed for high throughput sample processing in a microplate or vial set format. Animal tissue, seeds, tubers, leaf punches, soil and sediment samples, insects, and microbial cultures can all be effectively homogenized in a 96-well or vial set format. The high speed linear motion of the homogenizer allows for rapid sample processing; in most cases two (2) minutes or less.

Samples are placed in a tube, vial or well with a grinding ball and extraction buffer (seeds can be ground dry), sealed with a cap or press-on mat, placed in the High Throughput Homogenizer, and processed. Homogenized samples can be subsequently handled manually or in automated systems making use of the standard plate format. The High Throughput Homogenizer is suitable for the isolation of protein, DNA, RNA, viruses, and any other biological components released during homogenization. The unit is also useful for pulverizing dry samples for chemical analysis and solubility studies.

INSTALLATION

Upon receiving the Talboys High Throughput Homogenizer, check to ensure that no damage has occurred in shipment. It is important that any damage that occurred in transport is detected at the time of unpacking. If you do find such damage the carrier must be notified immediately.

Turn unit on side to expose the bottom of the unit. Use included 5/32" Allen Key to remove the (4) shoulder bolts which hold the shipping plate to the bottom on the unit. Store the plate, washers and bolts in the plastic bag provided incase the unit must be shipped to another location. **Running the unit with the plate attached can cause permanent damage. Also shipping the unit without the shipping items can also cause permanent damage.**

Clean bench or table top that the High Throughput Homogenizer will be placed on, then remove the protective liner from the padded feet of the unit and place in its permanent position on the bench. Always place the unit on a level, sturdy work surface.

The High Throughput Homogenizer is supplied with a power cord that is inserted into the IEC connector on the back of the unit first, then it can be plugged into a properly grounded outlet. The 120V unit plugs into a 120 volt, 50/60 Hz source. The 230V unit plugs into a 230 volt, 50/60 Hz source.

MAINTENANCE & SERVICING

The High Throughput Homogenizer is built for long, trouble-free, dependable service. No lubrication or other technical user maintenance is required. It needs no user maintenance beyond keeping the surfaces clean. The unit should be given the care normally required for any electrical appliance. Avoid wetting or unnecessary exposure to fumes. **DO NOT** use a cleaning agent or solvent on the front panel which is abrasive or harmful to plastics, nor one which is flammable. Always ensure the power is disconnected from the unit prior to any cleaning. If the unit ever requires service, contact your Talboys representative.

ENVIRONMENTAL CONDITIONS

Operating Conditions: Indoor use only.

Temperature: 5 to 40°C (41 to 104°F)

Humidity: 20% to 85% relative humidity, non-condensing

Altitude: 0 to 6,562 ft (2000 M) above sea level

Non-Operating Storage:

Temperature: -20 to 65°C (-4 to 149°F)

Humidity: 20% to 85% relative humidity, non-condensing

Installation Category II and Pollution Degree 2 in accordance with IEC 664.

EQUIPMENT DISPOSAL

This equipment must not be disposed of with unsorted waste. It is your responsibility to correctly dispose of the equipment at life-cycle-end by handing it over to an authorized facility for separate collection and recycling. It is also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect the persons involved in the disposal and recycling of the equipment from health hazards.



For more information about where you can drop off your waste of equipment, please contact your local dealer from whom you originally purchased this equipment. By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

SAFETY INSTRUCTIONS

Please read the entire instruction manual before operating the High Throughput Homogenizer.



WARNING! DO NOT use the High Throughput Homogenizer in a hazardous atmosphere or with hazardous materials for which the unit was not designed. Also, the user should be aware that the protection provided by the equipment may be impaired if used with accessories not provided or recommended by the manufacturer, or used in a manner not specified by the manufacturer.

This unit is designed for intermittent use only. Always operate unit on a level surface for best performance and maximum safety.

DO NOT lift unit by the lid. **DO NOT** run the unit with the lid open, this will create hazardous conditions. **DO NOT** run the unit without the rubber feet firmly attached.



CAUTION! To avoid electrical shock, completely cut off power to the unit by disconnecting the power cord from the unit or unplugging from the wall outlet. Disconnect unit from the power supply prior to maintenance and servicing. Spills should be removed promptly. **DO NOT** immerse the unit for cleaning.

DO NOT operate the unit if it shows signs of electrical or mechanical damage.

The High Throughput Homogenizer is designed to be operated in dry conditions.



Earth Ground - Protective Conductor Terminal



Alternating Current

STANDARDS & REGULATIONS

Henry Troemner LLC hereby declares under its sole responsibility that the construction of this product conforms in accordance with the following standards:

Safety standards:

IEC 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use. Part: General Requirements.

IEC 61010-2-051 Part II: Particular requirements for laboratory equipment for mixing and stirring.

UL Std. No. 61010-1

CSA/CAN C22.2 No. 0-M91

CSA/CAN C22.2 No. 61010-1-04

Associated EU Directives:

EMC directive 2004/108/EC

LVD directive 2006/95/EC

RoHS directive 2011/65/EU

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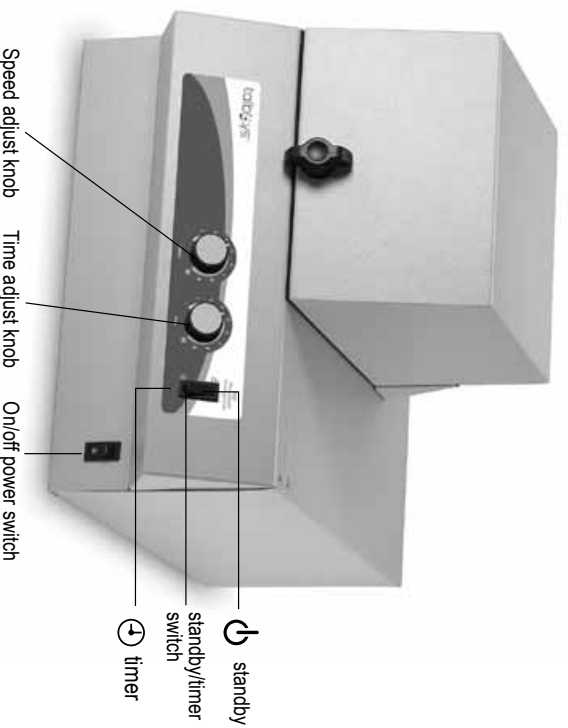
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SPECIFICATIONS

Overall dimensions (L x W x H):	17.5 x 15 x 14.2" (44.5 x 38.1 x 36.1 cm)
Electrical (50/60 Hz):	120 volts AC: 230 volts AC: 6.3 amps, 450 watts 3.1 amps, 450 watts
Fuses:	120 volts, 230 volts, 5mm x 20mm, 6.3 amp slo-blow fuse 5mm x 20mm, 3.1 amp quick acting
Speed range:	0 to 1600rpm 1.2" (3.1cm)
Reciprocal strokes:	1 deep well plate, 4 stacked standard well plates or 1 vial set, 300 gram maximum
Capacity:	1 to 10 minutes
Timer:	on/off power rocker switch, standby/timer rocker
Controls:	speed knob, variable 1 to 10 dial markings, time knob, variable 1 to 10 dial markings
Ship weight:	75lbs (34.1kg)



OPERATING INSTRUCTIONS

IMPORTANT: This unit is designed for intermittent use only.

Before processing any samples, test microwell plates with grinding balls to determine whether they are durable for your homogenizing process.

1. Getting ready:

- Plug the cord into a properly grounded, 3-pronged outlet.
- Press the on/off power switch to on.

2. Loading plate:

- Prepare microwell plate or vial set as suggested under 'Vial Sets' (see below). **DO NOT** overload the grinding vessels.

b. Turn lid latch counter-clockwise to unlock lid. Remove cartridge holder from cartridge assembly by flipping up the latches. Place the microwell plate or vial set in the cartridge with the top of the microplate or vials against the base plate. Set the cartridge holder in place against the bottom of the microwell plate or vial set. Adjust the turning latch hooks by turning clockwise or counter-clockwise so that when the latches are perpendicular to the assembly (pointing at "12" and "6" as if the car-tridge assembly were a clock face) the latch hooks freely clear the hasps by 1 to 2mm. **It is very important that the cartridge holder is NOT to be over tightened.** Lock the cartridge holder in place by flipping and locking down the latches.

- Close lid and turn lid latch clockwise to secure.

3. Setting speed/time:

- Turn the speed knob to the desired speed setting, and then set the time knob to the desired time, 1 to 10 minutes. Most samples will take less than two (2) minutes, refer to 'Vial Sets' (see below). It is necessary to empirically determine the best setting for your specific sample. **Work out the settings before homogenizing irreplaceable samples.**
- Depress the timer position of the spring-loaded rocker switch and release. Depending on the load within the plate, the machine may have several speed points where it may vibrate significantly. If this occurs, simply adjust the speed up or down to eliminate shaking. The unit will run for the selected time and shut off automatically. To repeat for the same time, simply depress the timer switch again.

OPERATING INSTRUCTIONS

- c. To interrupt a timing cycle, press on/off power switch to off. **IMPORTANT:** To completely cut off power to the unit, disconnect the power cord from the unit or unplug from the wall outlet. If your unit does not shut off when the lid is opened, switch the unit off and contact your Talboys representative for repairs.
- d. When the unit is not being used press the on/off power switch to off.

VIAL SETS

Vial sets combine the benefits of the microplate format and the size of vials to provide a tool for higher throughput sample grinding. Three (3) types of vial sets are available, the 24-Well PC Vial Set, 24-Well PE Vial Set, and 5-Well PC Vial Set.

The vial sets are designed for homogenizing hard and fibrous samples (e.g., individual corn kernel). Effective homogenization of samples is very dependent upon the type of sample and size. In all cases, the total volume of the sample and extraction buffer (not necessary for dry grinding of seeds) should only be a fraction of the total volume of the container, whether it is a deep well plate or grinding vial. Overloading of grinding containers leads to inefficient homogenization. A general rule is that the volume of buffer and sample should not exceed 1/10th of the entire volume of the grinding vessel. Samples should generally not exceed 0.5 grams for the 4mL vials while 15mL vials can handle 2 to 3 grams. Each vial contains a large stainless steel grinding ball and cap. The 15mL vials contain two (2) balls. For samples with extraction buffer, make sure the vessels are thoroughly sealed.

IMPORTANT: To prevent unnecessary wear on the High Throughput Homogenizer, microwell plates and vial sets should not exceed 300 grams. A typical deep well plate with balls, sample, and extraction buffer will weigh less than 200 grams.

Grinding ball(s) should be removed prior to adding sample to vial. Once sample is added, load grinding ball(s) on top of sample and cap.

Using vial sets with the High Throughput Homogenizer is essentially the same as using deep well plates. The lid of the boxed vial sets is first removed (it can be attached later for use as a storage box). The vials are filled with no more than 0.5mL of sample and extraction buffer. The amount of head space is very important for efficient sample homogenization. Generally the harder the substance to be ground, the less can be added to each vial. The vial set must be firmly locked into the homogenizer prior to grinding, as described under 'Operating Instructions' (see above).

Grinding times and speeds must be determined empirically, but generally it takes approximately two (2) minutes at 2/3 of top speed. (e.g., 1 corn kernel in a polycarbonate vial with 3/8" grinding ball. Pooled samples, e.g., 15 kernels in a 15mL vial set, may require up to 10 minutes.)

There must be a vial in each corner when homogenizing less than four (4) samples. This can be accomplished by placing an empty vial with the grinding ball(s) removed in the remaining corner(s). Removing the grinding ball(s) will preserve the integrity of the vial to allow it to be used for sample process later.

It is possible to reuse vials, however inspect them carefully. It is common for cracks to develop in the vial or cap following grinding. **DO NOT** use cracked vials and caps.

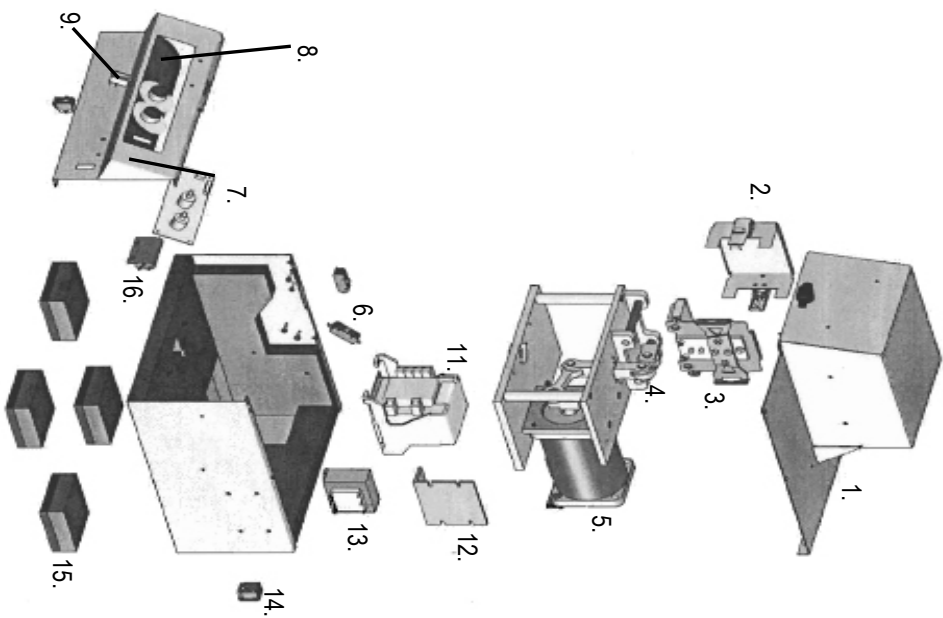
OPERATING TIPS

Many protocols, especially with RNA isolation, call for up to 1mL of extraction buffer with as little as 20mg of tissue. When using 96 deep well plates, this volume is impractical. In such situations, it is suggested that the homogenizing be performed in a smaller volume initially and then the balance of the buffer being added after the homogenization.

The plate holder can accommodate one (1) deep well plate, four (4) stacked standard well plates or one (1) vial set (either 24-well or 5-well format). In all cases, the durability of the sample container should be tested prior to processing samples. Many brands of polypropylene microwell plates are constructed of very thin plastic which may not tolerate full speed with a grinding ball. Most deep well plates are sufficiently durable for standard homogenizing applications.

To move the High Throughput Homogenizer, lift it from one side until the rubber part of each foot on that side separates from the foam part of the foot. Continue lifting on this side until all four (4) feet have separated and the homogenizer is lying completely on its side. Pull the rubber feet off of the counter and reattach them to the foam feet. If rubber feet need to be cleaned, rinse with water. **DO NOT USE SOLVENT.** The homogenizer is now ready to mount in a new location. Never run the homogenizer without the rubber feet firmly attached. If damaged, replacement feet are available from your Talboys representative.

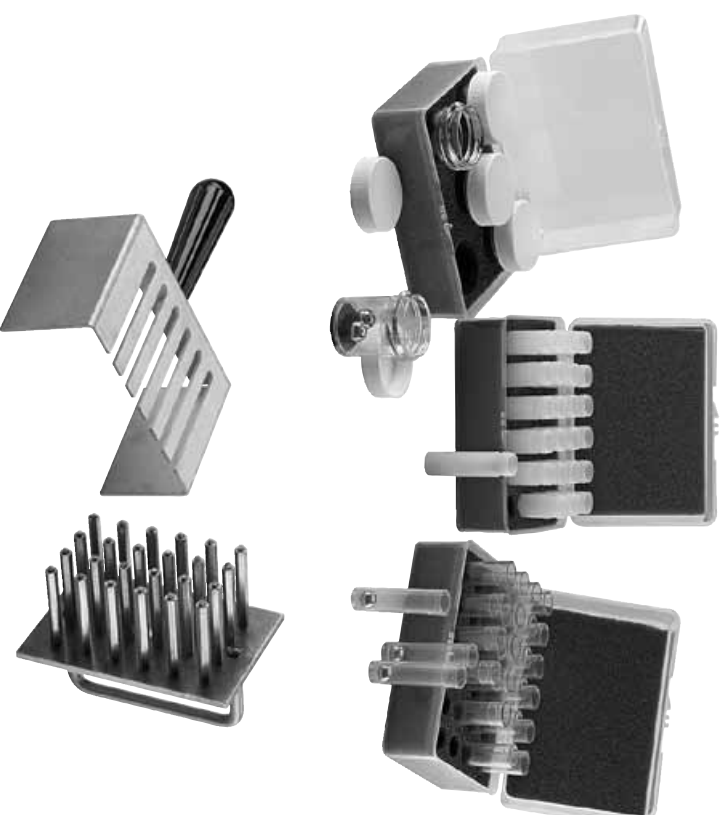
REPLACEMENT PARTS



DESCRIPTION	PART NUMBER
1. Lid bumper	149000-00
2. Cartridge retainer assembly	830104-00
3. Cartridge base assembly	830105-00
4. Link assembly	830108-00
5. Motor 120V/230V	330210-00
6. Cherry switch	345012-00
7. Circuit board	330215-00
8. Front panel overlay	545116-00
9. Timer switch	330213-00
10. On/off switch	380008-00
11. Transformer, 230V only	330232-00
12. Motor control	330211-00
13. Transformer	330230-00
14. Power entry module	386122-00
15. Foot assembly	830107-00
16. Line Filter, 230V Only	387022-00
Detachable 90" (229cm) power cord:	
120V:	330100-00
230V:	330070-00
Euro plug:	330101-00
UK:	330102-00
Swiss plug:	330103-00
Fuse, 120V	330217-00
Fuse, 230V	330218-00
Wire harness assembly, 120V only:	830106-00

ACCESSORIES - VIAL SETS

DESCRIPTION	PART NUMBER
24-Well Vial Set, 4mL Screw Cap Polycarbonate Vials Each vial includes one (1) 3/8" stainless steel grinding ball and threaded unlined cap. (sold as case of 10)	930135
Same as above with PTFE Lined Cap.	903152
24-Well Vial Set, 4mL Screw Cap Polyethylene Vials Each vial includes one (1) 3/8" stainless steel grinding ball and threaded unlined cap. (sold as case of 10)	930136
Same as above with PTFE Lined Cap.	903153
5-Well Vial Set, 15mL Polycarbonate Vials Each vial includes two (2) 7/16" stainless steel grinding balls. Vials include threaded cap. (sold as case of 10)	930137
Bulk Pack, 240 4mL Polycarbonate Vials and Unlined Lids (only)	930147
Bulk Pack, 240 4mL Polycarbonate Vials and PTFE Lined Lids (only)	930154
Bulk Pack, 240 4mL Polyethylene Vials and Unlined Lids (only)	930148
Bulk Pack, 240 4mL Polyethylene Vials and PTFE Lined Lids (only)	930155
Bulk Pack, (1000) 3/8" Stainless Steel Grinding Balls	930156
Bulk Pack, (5000) 5/32" Stainless Steel Grinding Balls	930151
Magnet Pipette Tips, pack of Twelve (12) (call for details)	930149
Microplate Ball Dispenser for 5/32" Grinding Balls	930150
24-pin Grinding Ball Removal Magnet	930138
Magnet Stand and Grinding Ball Separator	930139



Manufactured by:

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