

Glas-Col, LLC

General Sales Policy

How To Order

Contact Authorized distributor **Clarkson Laboratory & Supply Inc.** They will offer valuable assistance in your selections, delivery and service after the sale.

New Accounts

With approved credit, new direct accounts will be opened for order amounts of \$100 net or more.

Terms Of Payment

Upon approved credit, billing terms are Net 30 days. Otherwise, arrangements may be made for Visa, MasterCard, American Express, advance payment. Invoices are payable in U.S. funds drawn on a U.S. bank.

Shipping Terms

Prices are Ex-Works Terre Haute, Indiana.

Minimum Order

Clarkson has a \$50.00 minimum order for new customers.

Method Of Shipment

Unless specified by the purchaser, all orders will be shipped via the safest and most economical method based on the nature of the merchandise, the size, and the weight of the package. There is no packaging charge for domestic shipments.

Order Cancellation

Order cancellation charges will be assessed against cancelled orders for special custom-designed and modified standard products. The amount of this charge will be based on the production status of the order at the time of cancellation.

Returned Goods

Prior approval and a Returned Goods Authorization number must be obtained from Glas-Col before any products may be returned. This number must be included on shipping labels and documents.

Products that have been contaminated must be preceded by a Material Safety Data Sheet on the contaminating materials. **Products that have been contaminated with hazardous materials will not be accepted.**

Restock

Current models of catalog items returned for credit are subject to Glas-Col's inspection and a restocking charge of 15% of the original purchase price. Items superseded by current models cannot be returned for credit. Special, custom-designed items or catalog items modified for special voltage, wattage, dimensions, etc., will not be accepted for credit.

When restock is necessary due to a Glas-Col error in fulfilling an order, full credit will be given immediately upon receipt of the merchandise in question.

Purchaser should not deduct credit until merchandise is received, inspected, and a credit memo issued by Glas-Col.

Inspection/Repair Service

A repair service is maintained at Glas-Col's plant. Repairs are made as a customer service. Resale discounts are not applicable to repair orders. Repairs will not be made on items deemed to be contaminated with potentially hazardous materials. Refer to "Returned Goods" in the Policy before returning items for inspection or repair.

Warranty

Glas-Col warrants products of its manufacture to be free from defects in material and workmanship for one year, unless otherwise stated, and agrees to repair or replace without charge any products found defective upon examination at the factory. With proper care and operation, Glas-Col's products will give long and efficient service. Chemical spillage, overheating, overloading and general misuse will greatly reduce the service life. Glas-Col is not responsible for damage to apparatus due to improper installation or through attempts to operate the apparatus beyond its rated capacity, intentional or otherwise. Normally expendable parts are not covered by this warranty.

APART FROM SUCH WRITTEN STATEMENT OF WARRANTY, THERE ARE NO WARRANTIES, EXPRESSED, IMPLIED OR STATUTORY, WHICH EXTEND BEYOND THE DESCRIPTION OF THE PRODUCTS ON THE FACE HEREOF.

Communication:

For your convenience, Glas-Col can be contacted at:
PHONE (1) (812) 235-6167

FAX (1) (812) 234-6975

TOLL-FREE (800) Glas-Col (U.S. Only)

E-MAIL pinnacle@glascol.com

Internet <http://www.glascol.com>

Glas-Col products are intended only for legal and legitimate purposes in commercial laboratory and industrial settings.

Table of Contents

Heating & Controls

Aluminum Housed Mantles	4
Series TM - Low Wattage	4
Series TM Mantle/Control Package	7
Series STM - High Wattage	7
StirMantle	8
Stirring Bars	8
StirControl II	8
Large Capacity StirMantle	8
Metal Container Mantles	9
Series M - Compact, Low Wattage	10
Series M Supports	10
Combo Mantles	12
Elements	13
Combo Control	13
Safety Accessories	14
Poncho Safety Shields	14
Splash Guards	15
InsulEze® Insulation Kits	16
Fabric Mantles	17
Series O	17
Series O Supports	18
Micro Mantles	22
Heating/Insulating Tops	22
Series O Mantle/Control Package	23
Premier Mantles	24
Elements	24
Liners	24
Dry Block Heater	25
Aluminum Blocks	25
Custom Mantles	25
Tapes and Cords	27
Grounded Heating Tapes	27
Heating Tapes	27
Heating Cords	28
Controls/Instruments	29
Controls	29
Thermocouples	30
Low Profile Controls	33
Custom Controls	34
Digital Thermometers	35

Homogenizers

Variable Speed Motor Drives	37
Tubes & Pestles	38
Accessories	40
Chucks	40
Flexible Drive	40
Lab Stand	40
Nail Homogenizer	41
Pneumatic Egg Punch	41

Rotators

Rugged Rotator	43
Heads	43
Small Tube Rotator	45
Mini Rotator	45
Tissue Culture Head	45
Dry Powder Rotator	45

Shakers

Bench-Top Shaker	47
Holders	47
Universal Mounting Platform	49
Large Finger Clamp	49
Mid-Range 3-D Shaker	50
Holders	50
3-D Floor Shaker	51
Holders	51
WS180° Shaker	52
Accessories	52
Snorkel Stoppers	52
Pressure Release Valves	52
VentSep Separatory Funnels	53
Separatory Funnels	53

Stirrers

Stirring Systems	55
Stir-Testers	56
G.K.H. Stirring Guide	58
Viscosity Reference Chart	59
Accessories	60
Propellers	60
Paddles	60
Flexible Shafts	60
Glass and Teflon Stirring Assembly	60
Chucks	61
Lab Stands	61
Clamps	61
Miscellaneous Accessories	61
Component Selection Chart	62
Upward Flow Stirrer	63
Upward Flow Attachments	63

Vortexers

Multi-Pulse Vortexer	65
Cartridges	65
Large Capacity Mixer	66
Cartridges	66
Volumetric Flask Mixer	67
Touch Vortexer	67
Pulse Vortex Mixer	67
Digital Pulse Mixer	68
Digital Pulse Mixer Heated	68
Labnetix	68

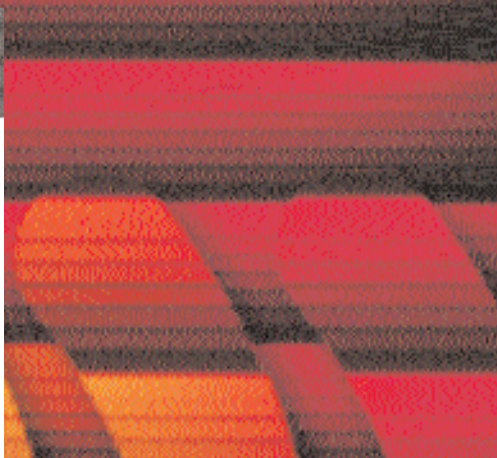
Evaporators

Evaporator/Concentrator	70
Evaporator System	70
Digital Pulse Mixer	71
Labnetix	71

CE Certified Products

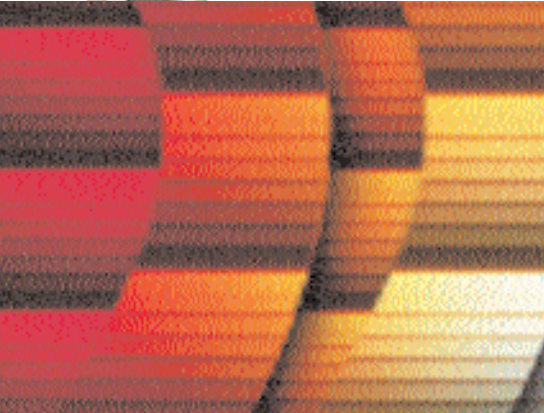
For information on available CE products call 1-800-452-7265 or visit us at www.glascol.com.

Heating & Controls



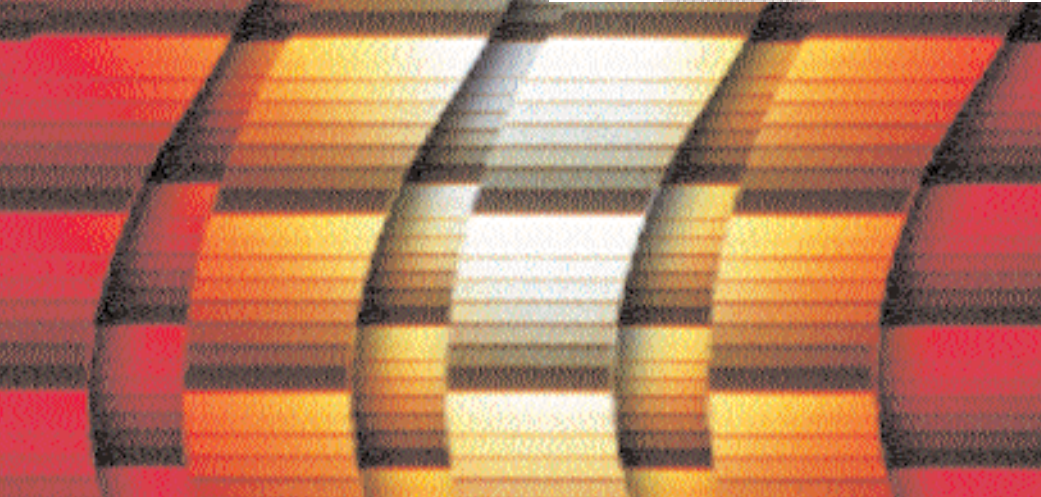
Aluminum Housed Mantles

- Spherical flasks
- Griffin beakers
- Resin reaction flasks
- Metal beakers
- Buchner funnels
- Mantle/control packages
- STM high temperature mantles
- StirMantles
- Metal Container mantles
- Series M mantles
- Combo mantles
- Safety accessories



Fabric Mantles

- Hemispherical
- Spherical
- Resin reaction flasks
- Metal beakers
- Griffin beakers
- Erlenmeyer flasks
- Funnels
- Micro mantles
- Tops
- Mantle/control packages



Premier Mantles

- Elements/Liners

Dry Block Heater

- Aluminum blocks

Custom Mantles

Tapes and Cords

- Grounded heating tapes
- Heating tapes/cords

Controls/Instruments

- Controls
- Low Profile Controls
- Thermocouples
- Custom controls
- Digital thermometers



Heating Mantles - Series TM Mantles

Aluminum Housed Mantles

- Rigid housing provides strength and durability while supporting the weight of the vessel
- Fabric interior to softly nest glass vessels and reduce the chance of thermal shock
- Adaptable to most vessels including larger sizes
- Withstands 450°C internal operating temperature (650°C for Series STM), enough power for most applications
- Can be adapted to special applications with custom sizes, bottom holes, and special electrical devices
- Feet on smaller sizes designed to provide stability and promote cooler exterior temperatures

Series TM Mantles

SPHERICAL FLASK MANTLES

The Series TM spherical flask mantle covers only the flask's bottom half, letting you see its full contents. Larger sizes have multiple circuits for ease of temperature control when a flask is less than half full. Splash Guards can be used with TM102 through TM117. Poncho Safety Shields can be used with sizes 500 ml (TM106) and larger. For heating and insulating tops, see page 22.

Specifications

Certification: All 115-volt items are CSA certified. TM122 also CSA certified.

Electrical: TM94 through TM118 detachable 4-ft., 3-wire cord and locking connector. TM120 and TM122-terminal box.

Options

Series TM mantles are available with a bottom hole for flask drain.

Terminal box models are available with switches and pilot lights.

TM106 through TM122 available sealed and with inert gas purge fitting.

Accessories

Following are recommended accessories:

Poncho Safety Shields - page 14.

Splash Guards - page 15.

Heating tops - page 22.



Heating mantles and tapes must be operated through a power control - see pages 29-34.

Catalog Number 115 volt	Catalog Number 230 volt	Flask Capacity (ml)	Max. Flask Diameter (mm)	Watts	Inside Depth (in)	Outside Diameter (in)	Outside Height (in)	Product Weight (lbs)
100B TM94	*	50	48	60	.94	6.25	4.13	2.2
100B TM96	100B TM97	100	60	80	1.19	6.25	4.13	2.2
100B TM98	100B TM99	125	70	80	1.38	6.25	4.13	2.2
100B TM100	100B TM101	200	76	100	1.50	6.25	4.13	2.2
100B TM102	100B TM103	250	83	180	1.63	6.25	4.75	2.5
100B TM104	100B TM105	300	86	180	1.69	6.25	4.75	2.5
100B TM106	100B TM107	500	101	270	2.00	6.25	5.00	2.5
100B TM108	100B TM109	1,000	130	380	2.56	7.50	5.00	3.0
100B TM110	100B TM111	2,000	170	500	3.38	10.00	6.00	4.7
100B TM112	100B TM113	3,000	183	500	3.60	10.00	6.00	4.7
100B TM114	100B TM115	5,000	220	600	4.31	12.00	7.00	6.2
100B TM116	100B TM117	12,000	293	2@650	5.77	16.50	9.00	15.0
100B TM118	100B TM119	22,000	347	2@770	6.81	19.00	10.00	18.8
100B TM120	100B TM121	50,000	456	3@1,000	8.98	24.00	13.00	41.0
	100B TM122	72,000	522	2@2,000	10.19	26.00	14.00	44.0

* 230 volt not available in this size. **WARNING:** chemical spillage, overheating, overloading, and general misuse will greatly reduce the service life.

CE units available contact Glas-Col.



Heating Mantles - Series TM Mantles

GRIFFIN BEAKER MANTLES

The Series TM Griffin beaker mantle has a resilient and pliable interior to cradle fragile beakers. Heat is concentrated at the bottom so even small liquid volumes can be heated.

Specifications

Certification: All 115-volt items are CSA certified.

Electrical: Detachable 4-ft., 3-wire cord and locking connector.

How to order

Specify catalog number corresponding to flask manufacturer and flask size. Consult factory for mantles to fit tall-form Griffin beakers.



Catalog Number 115 volt	Catalog Number 230 volt	Beaker Capacity (ml)	Beaker Diameter (in)	Inside Depth (in)	Watts	Outside Diameter (in)	Outside Height (in)	Product Weight (lbs)
100B TM610	100B TM611	600	3.56	3.75	325	6.25	5.50	2.8
100B TM612	100B TM613	800	3.88	4.25	350	7.50	6.00	3.6
100B TM614	100B TM615	1,000	4.25	4.50	430	7.50	6.00	3.6
100B TM616	100B TM617	2,000	5.13	6.00	550	9.00	8.00	5.0
100B TM618	100B TM619	3,000	5.75	6.50	630	9.00	8.00	5.0
100B TM620	100B TM621	4,000	6.38	8.00	710	9.00	10.00	5.4

WARNING: chemical spillage, overheating, overloading, and general misuse will greatly reduce the service life.

RESIN REACTION FLASK MANTLES

The Series TM resin reaction flask mantle provides even heat distribution to prevent scorching of clear resinous material. One-circuit heat input simplifies temperature control.

Heating mantles and tapes must be operated through a power control - see pages 29-34.

Specifications

Certification: All 115-volt items are CSA certified.

Electrical: Detachable 4-ft., 3-wire cord and locking connector.



Catalog Number 115 volt	Catalog Number 230 volt	Flask Capacity (ml)	Max. Flask Diameter (in)	Mantle Depth (in)	Watts	Outside Diameter (in)	Outside Height (in)	Product Weight (lbs)
For Kontes Glass K-612000								
100B TM508	100B TM509	500	4.5	3.00	200	7.5	5.0	2.9
100B TM512	100B TM513	1,000	4.5	4.50	270	7.5	7.0	3.6
100B TM514	100B TM515	1,500	4.5	6.63	330	7.5	9.0	4.3
100B TM516	100B TM517	2,000	4.5	7.50	400	7.5	9.0	4.5
100B TM518	100B TM519	3,000	4.5	11.00	600	7.5	13.0	5.9
For Ace Glass 6476, 6477, and 6497; Lab Glass LG-8010 and LG-8011; Reliance Glass R-4505 and R-4510								
100B TM560	100B TM561	500	4.63	2.50	250	7.5	5.0	3.0
100B TM562	100B TM563	1,000	4.63	5.63	300	7.5	7.5	3.7
100B TM564	100B TM565	1,500	4.63	6.63	380	7.5	9.0	3.9
100B TM566	100B TM567	2,000	4.63	8.88	450	7.5	11.0	4.8
100B TM568	100B TM569	3,000	4.63	10.00	600	7.5	12.0	6.0
For Reliance Glass, Corning 6947, and Kimble 33700								
100B TM570	100B TM571	500	3.75	4.50	270	7.5	6.5	3.7
100B TM572	100B TM573	1,000	4.25	5.25	335	7.5	7.0	3.7
100B TM576	100B TM577	2,000	5.50	6.00	470	9.0	8.0	4.9
100B TM578	100B TM579	3,000	5.50	9.00	550	9.0	11.0	6.0
100B TM580	100B TM581	4,000	5.50	11.00	750	9.0	13.0	6.8

Heating Mantles - *Series TM Mantles*

METAL BEAKER MANTLES

This heating mantle can heat metal beakers safely and efficiently. Inner glass-fabric layers prevent contact of heating elements and vessel walls. The mantle is designed for straight-walled, flat bottom vessels.

Certification: All 115-volt items are CSA certified.

Electrical: Detachable 4-ft., 3-wire cord and locking connector.



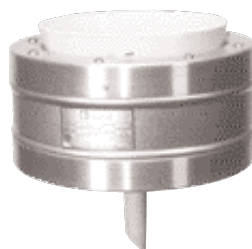
Specifications

Heating mantles and tapes must be operated through a power control - see pages 29-34.

Catalog Number 115 volt	Catalog Number 230 volt	Beaker Capacity (ml)	Beaker Diameter (in)	Inside Depth (in)	Watts	Outside Diameter (in)	Outside Height (in)	Product Weight (lbs)
100B TM630	100B TM631	1,200	4.13	4.50	430	7.5	7.00	3.6
100B TM632	100B TM633	2,000	4.88	5.50	550	9.0	8.00	5.1
100B TM634	100B TM635	3,300	6.13	6.00	630	10.0	8.00	5.4
100B TM636	100B TM637	4,000	6.50	6.25	700	10.0	8.75	5.8
100B TM638	100B TM639	5,800	7.25	7.25	710	12.0	9.50	6.5
100B TM640	100B TM641	8,000	8.00	8.25	1,000	12.0	11.00	8.5

BUCHNER FUNNEL MANTLES

The Buchner funnel mantle provides convenient support for funnel and gentle heat for solutions that must be kept warm during transfer. Durable support bracket slides over mast of ring stand, enabling mantle to be positioned at any convenient height above receiver. Accepts rod up to 1/2" diameter.



Buchner funnel mantle



Fritted disc Buchner funnel mantle

Specifications

Certification: All 115-volt items are CSA certified.

Electrical: Detachable 4-ft., 3-wire cord and locking connector.

Catalog Number 115 volt	Catalog Number 230 volt	Coors Catalog Number	Top Diameter (in)	Filter Size	Watts	Outside Diameter (in)	Outside Height (in)	Product Weight (lbs)
<i>For Fixed Plate Buchner Funnel</i>								
100B TM808	*	60240	2.63	55	50	5.00	2.75	2.5
100B TM810	*	60242	3.50	70	50	6.25	3.25	2.5
100B TM812	*	60243	4.25	90	70	6.25	3.50	2.8
100B TM814	*	60244	4.94	110	70	7.50	4.00	2.8
100B TM816	100B TM817	60245	5.63	124	100	7.50	4.25	2.9
100B TM818	100B TM819	60246	6.75	150	220	9.00	4.50	3.5
100B TM820	100B TM821	60247	8.38	185	300	12.00	5.75	5.9
100B TM822	100B TM823	60248	10.63	240	350	14.00	7.00	6.0

Catalog Number 115 volt	Catalog Number 230 volt	Capacity (ml)	Disc Diameter (mm)	Depth (in)	Inside Diameter (in)	Watts	Outside Diameter (in)	Outside Height (in)	Product Weight (lbs)
<i>For Fritted Disc Buchner Funnel</i>									
100B TM832	100B TM833	150	70	3.00	2.75	70	5.00	3.50	2.0
100B TM834	100B TM835	350	90	4.25	3.50	90	6.25	4.75	2.6
100B TM836	100B TM837	600	100	4.63	3.94	170	6.25	5.25	4.8
100B TM838	100B TM839	2,000	140	7.00	5.50	250	9.00	8.00	5.0
100B TM840	100B TM841	3,000	165	8.75	6.50	300	9.00	9.50	7.2

** 230 volt not available in these sizes*

Heating Mantles - Series TM / STM Mantles

MANTLE/CONTROL PACKAGES

Glas-Col offers its standard Series TM mantle for round-bottom flasks with the PowrTrol power control as a special, economical package. The PowrTrol is a

solid-state, proportional-voltage control that provides precise manual control of the output range, which is adjustable from 5-100%. The standard Series TM mantle is for round-

bottom flasks from 50 ml to 5,000 ml in both 115V and 230V where available. The mantles are designed to withstand an internal operating temperature of 450°C and are CSA certified.

Catalog Number 115 volt	Catalog Number 230 volt	Flask Capacity (ml)	Max. Flask Diameter (mm)	Watts
100D TM94PL	*	50	48	60
100D TM96PL	100D TM97PL	100	60	80
100D TM98PL	100D TM99PL	125	70	80
100D TM100PL	100D TM101PL	200	76	100
100D TM102PL	100D TM103PL	250	83	180
100D TM104PL	100D TM105PL	300	86	180
100D TM106PL	100D TM107PL	500	101	270
100D TM108PL	100D TM109PL	1,000	137	380
100D TM110PL	100D TM111PL	2,000	170	500
100D TM112PL	100D TM113PL	3,000	183	500
100D TM114PL	100D TM115PL	5,000	220	600

* 230 volt not available in this size



See individual mantles (page 4) and controls (page 29) for weights and dimensions.

SERIES STM MANTLES

The Series STM mantles perform the same function as Series TM heating mantles, plus operations requiring more heat. With an upper internal operating temperature of 650°C, these mantles resist burnout. STM1400 and STM1500 have 3" legs for cool lab benches, are sealed, and have inert gas purge fittings.

Specifications

Certification: All 115-volt items are CSA certified except STM400 through STM800.

Electrical: STM400 through STM1300 - detachable 4-ft., 3-wire cord and locking connector. STM1400 and STM1500 - terminal box.

Options

Sizes smaller than 12-liter also available sealed with inert gas purge fittings.

Sizes 12-liter and larger available with switches and pilot lights.

Caution

Series STM mantles are recommended for use with flammable solvents only when used with a Poncho Safety Shield - see page 14.

Accessories

Following are recommended accessories:

Poncho Safety Shields - page 14.

Splash Guards - page 15.

Heating tops - page 22.



Heating mantles and tapes must be operated through a power control - see pages 29-34.

Catalog Number 115 volt	Catalog Number 230 volt	Flask Capacity (ml)	Max. Flask Diameter (mm)	Watts	Outside Depth (in)	Outside Diameter (in)	Outside Height (in)	Product Weight (lbs)
100B STM400	100B STM401	100	60	230	1.19	6.25	4.13	2.3
100B STM500	100B STM501	125	70	230	1.38	6.25	4.13	2.3
100B STM600	100B STM601	200	76	300	1.50	6.25	4.13	2.4
100B STM700	100B STM701	250	83	470	1.63	6.25	4.75	2.6
100B STM800	100B STM801	300	86	470	1.89	6.25	4.75	2.6
100B STM900	100B STM901	500	101	470	2.00	6.25	5.00	2.8
100B STM1000	100B STM1001	1,000	130	600	2.69	7.50	5.00	3.4
100B STM1100	100B STM1101	2,000	170	870	3.38	10.00	6.00	4.4
100B STM1200	100B STM1201	3,000	183	970	3.63	10.00	6.00	5.2
100B STM1300	100B STM1301	5,000	220	2@700	4.31	12.00	7.00	7.9
100B STM1400	100B STM1401	12,000	293	2@1000	5.77	16.50	9.00	18.9
100B STM1500	100B STM1501	22,000	347	3@1000	6.81	19.00	10.00	24.6

WARNING: chemical spillage, overheating, overloading, and general misuse will greatly reduce the service life.

Heating Mantles - *StirMantles*

STIRMANTLES

The StirMantle adds electromagnetic stirring capability (50-750 rpm) to the Series TM heating mantle for spherical flasks. Heating and stirring are independent; choose either or both. Speed is easily adjusted by a single dial on the StirControl II.

The StirControl II creates and synchronizes the magnetic field. When restarting (as for removal and reinsertion of the flask), Glas-Col's exclusive "Synchrostart" feature maintains linkage between the field and the bar. The StirControl II connects to the StirMantle by cord, so it may be placed outside corrosive hood atmospheres and is easily accessible.

Specifications

Complete System: One StirMantle, one

Complete System 115 volt	Complete System 230 volt	StirMantle Only 115 volt	StirMantle Only 230 volt	Flask Capacity (ml)	Watts	Depth (in)	Outside Dia. (in)	Height (in)	Product Weight (lbs)
100D EMS102	100D EMS103	100D TEM102	100D TEM103	250	180	1.64	6.25	4.75	4.5
100D EMS104	100D EMS105	100D TEM104	100D TEM105	300	180	1.70	6.25	4.75	4.5
100D EMS106	100D EMS107	100D TEM106	100D TEM107	500	270	2.00	6.25	5.25	4.5
100D EMS108	100D EMS109	100D TEM108	100D TEM109	1,000	380	2.56	7.50	5.50	5.2
100D EMS110	100D EMS111	100D TEM110	100D TEM111	2,000	500	3.35	10.00	6.50	5.5
100D EMS112	100D EMS113	100D TEM112	100D TEM113	3,000	500	3.60	10.00	6.50	6.4

Catalog Number	Recommended Stirring Bars Size	For Flask Size
100D M24	1/2" x 1"	250-300 ml
100D M25	11/16" x 1-7/8"	500 ml-1 liter
100D M26	1" x 2-3/4"	2 liters-5 liters

Catalog Number	StirControl II Description
104A EMC4	StirControl II, 120V
104A EMC424	StirControl II, 240V

StirControl II must be used to operate StirMantles.



StirControl II, connecting cords, and stir bar. Completely grounded and fused. (Order temperature or power controls separately. See pages 29-34.)

StirMantle Only: With connecting cords. (Order StirControl II from chart below.)

StirControl II Only: LED relative field speed indication, lighted on/off power switch, fuse protection, 3-wire load receptacle, 3-wire line cord, and molded plug. Receptacles on front for operating two stirring units at once. Rating: 50/60 HZ, 60 VA. Stepless speed, 50-750 rpm. Low-profile housing 8"w x 6"d x 3-3/8"h. Weight: 3.75 lbs.

LARGE CAPACITY STIRMANTLES

This system has the power to mix volumes as large as 72 liters with a magnetic stir bar, eliminating the need for an overhead stirrer, which could introduce contaminants. The unit is ideal for continuous distillations. The variable-speed control (included) offers total mixing management. Attached 4" feet allow bench clearance and air flow.

Specifications

System: One Large Capacity StirMantle with 1/50 hp motor, stir control, and stirring bar. 4-ft. detachable cord, except 50 and 72 liter mantles which have terminal boxes for heating applications. Speed: 100-1850 rpm.



Catalog Number 115 volt	Catalog Number 230 volt	Flask Capacity (ml)	Depth (in)	Watts	Outside Diameter (in)	Height (in)	Product Weight (lbs)
100D EMS114	100D EMS115	5,000	4.33	600	12.0	7.25	8.0
100D EMS116	100D EMS117	12,000	5.77	2@650	16.5	13.00	19.0
100D EMS118	100D EMS119	22,000	6.83	2@770	19.0	14.00	22.8
100D EMS120	100D EMS121	50,000	8.98	3@1,000	24.0	16.50	45.0
	100D EMS122	72,000	10.19	2@2,000	26.0	17.75	48.0

For Schott Glassware only

100D EMS116G	100D EMS117G	10,000	5.77	2@650	16.5	13.00	19.0
100D EMS118G	100D EMS119G	20,000	6.83	2@770	19.0	14.00	22.8
	100D EMS122G	50,000	10.19	3@1,000	26.0	17.75	48.0

Stirring Bar

R96 419 .75" diameter x 3" long

Heating Mantles - Metal Container Mantles

PAINT CAN MANTLES

These arson-detection mantles are specified by the Bureau of Alcohol, Tobacco, and Firearms* for use in arson investigations and fit the three sizes of paint cans in which evidence is most often collected. The recommended procedure heats fire debris to vaporize suspected accelerants, which, if present, are collected in a charcoal tube for analysis. According to the Arson Resource Directory of the U.S. Fire Administration, "Even though fire may destroy 99 percent of incendiary evidence, properly equipped and staffed laboratories can often determine the

type of accelerant, incendiary device, or explosives used by analyzing the most minute particles of submitted evidence." ATF (paragraph 3.4): "To minimize need for evidence repackaging, suggest buying two or more different sizes to fit paint cans most often received." These mantles are also useful for work done in metal cans with resins and adhesives.

The mantles are equipped with compact power controls that have solid-state circuitry, positive-off switches, and pilot lights.



**ATF Standard Methods for Detection of Petroleum-Based Accelerants in Fire Debris, paragraphs 3.4, 3.5, and 5.1.*

Catalog Number 115 volt	Capacity	Inside Diameter (in)	Inside Depth (in)	Watts	Product Weight (lbs)
100D CH093PL	Pint	3.38	3.25	225W	3.0
100D CH095PL	Quart	4.25	4.25	325W	3.7
100D CH097PL	Gallon	6.69	5.25	590W	5.3

ONE-GALLON CAN MANTLES

These mantles heat one-gallon metal cans quickly to speed the removal of viscous materials: tars, plastics, shortening. The temperature must be controlled by a separate control device.

Specifications

Electrical: Detachable 4-ft., 3-wire cord and locking connector.



Heating mantles and tapes must be operated through a power control - see pages 29-34.

Catalog Number	Inside Diameter (in)	Inside Depth (in)	Wattage Voltage	Outside Diameter (in)	Height	Product Weight (lbs)
100D DH098BC	6.75	5.25	750W 115V	10.0	7.5	4.7
100D DH099BC	6.75	5.25	750W 230V	10.0	7.5	4.7

FIVE-GALLON CAN MANTLES

These mantles allow fast heating of five-gallon metal cans with or without bail. Features include a pilot light, "hurry-up" switch for faster heat up, and integral thermostatic bulb and capillary-type control.

Specifications

Electrical: Attached 8-ft., 3-wire cord.

Electrical Rating: 1450 Watts.

Depth: 9-3/4" for can with bail, 14" without bail.



Catalog Number	Volts	Inside Depth (in)	Inside Diameter (in)	Temperature Range	Outside Diameter (in)	Height	Product Weight (lbs)
100D DH110BCH	115V	9.75	12.0	122-482°F	16.5	12.75	18.3
100D DH110BCL	115V	9.75	12.0	85-230°F	16.5	12.75	18.3
100D DH111BCH	115V	14.00	12.0	122-482°F	16.5	17.00	20.7
100D DH111BCL	115V	14.00	12.0	85-230°F	16.5	17.00	20.7
100D DH11124BCH	230V	14.00	12.0	122-482°F	16.5	17.00	20.7
100D DH11124BCL	230V	14.00	12.0	85-230°F	16.5	17.00	20.7
100D DH11024BCH	230V	9.75	12.0	122-482°F	16.5	12.75	18.3
100D DH11024BCL	230V	9.75	12.0	85-230°F	16.5	12.75	18.3



Heating Mantles - Series M Mantles

SERIES M MANTLES

The Series M mantle is the most compact mantle with an aluminum shell that can heat flasks up to 72 liters. Like the Series TM, this mantle has a durable aluminum housing outside and resilient glass fabric inside to support flasks and protect flask walls from thermal strain. Only the bottom of the flask is covered so the contents being heated are fully visible. The mantle is grounded through the aluminum housing and requires a support as shown below and on page 11.

Specifications

Internal Operating Temperature: Withstands internal operating temperature of 450°C.

Electrical: Detachable 4-ft., 3-wire cord and locking connector.

Accessories

Following are recommended accessories:

Poncho Safety Shields - page 14.

Splash Guards - page 15.

Heating tops - page 22.



Heating mantles and tapes must be operated through a power control - see pages 29-34.

Catalog Number 115 volt	Catalog Number 230 volt	Flask Capacity (ml)	Max. Flask Diameter (mm)	Watts	Inside Depth (in)	Outside Diameter (in)	Outside Height (in)	Product Weight (lbs)
100C M94	*	50	48	60	.95	5.50	3.34	1.6
100C M96	*	100	60	80	1.19	5.50	3.34	1.6
100C M98	*	125	70	80	1.38	5.50	3.34	1.6
100C M100	100C M101	200	76	100	1.50	5.50	3.34	1.9
100C M102	100C M103	250	83	180	1.64	7.00	4.34	2.0
100C M104	100C M105	300	86	180	1.70	7.00	4.34	2.0
100C M106	100C M107	500	101	270	2.00	7.00	4.34	2.0
100C M108	100C M109	1,000	130	380	2.56	8.25	4.97	2.5
100C M110	100C M111	2,000	170	500	3.35	10.75	6.47	4.0
100C M112	100C M113	3,000	183	500	3.60	10.75	6.47	4.0
100C M114	100C M115	5,000	220	600	4.33	12.75	7.47	5.6
100C M116	100C M117	12,000	293	2@650	5.81	18.38	8.31	10.5
100C M118	100C M119	22,000	347	2@770	6.83	21.00	9.50	11.8
100C M120	100C M121	50,000	456	3@1,000	8.98	26.00	12.00	34.0
	100C M122	72,000	522	2@2,000	10.19	28.63	13.25	40.0

* 230 volt not available in these sizes. **WARNING:** chemical spillage, overheating, overloading, and general misuse will greatly reduce the service life.

EXTENSION SUPPORTS

Extension supports should be used for smaller mantles. Attached to a stable ring stand or distillation rack, the support can be adjusted to any convenient height.

Specifications

Finish: Foxtip Gray.

Construction: Steel ring with 6" shank.



Steel ring extension support attaches easily to ring stand or distillation rack.

Catalog Number	Mantle Size	Inside Diameter (in)	Inside Diameter (mm)	Product Weight (lbs)
100E M532	50-200 ml	5.19	132	.8
100E M534	250-500 ml	6.38	162	.8
100E M535	1 liter	7.63	194	1.6
100E M540	2-3 liter	10.19	259	2.0
100E M550	5 liter	12.25	311	2.4

Call us at 1-800-GLASCOL(452-7265) for the name of your nearest Glas-Col distributor.

Be sure to visit us on the Internet at:

www.glascol.com



Heating Mantles - Series M Supports

TRIPOD SUPPORT

The tripod support sits on the floor or a bench to hold Series M mantles ranging in size from 3 to 72 liters. Mounting holes are in the foot of each leg for securing to floor or bench.

Specifications

Construction: Steel rings and legs.

Finish: Foxtip gray.

Catalog Number	Mantle Size (liters)	Height (in)	Inside Diameter (in)	Inside Diameter (mm)	Product Weight (lbs)
100E M505	3	14	10.19	259	3.6
100E M510	5	14	12.25	311	3.6
100E M515	12	14	16.75	425	8.0
100E M520	22	14	19.25	489	8.0
100E M525	50	16	24.25	616	10.8
100E M530	72	18	26.88	686	12.0



Support is shipped unassembled.

ADJUSTABLE SUPPORT

These supports are adjustable in height to provide convenient locations of Series M mantles. If a drain container is necessary, one side of the leg brace may be easily removed to accommodate it. The adjustable legs are self-storing when not in use.

Specifications

Construction: Steel.

Finish: Foxtip gray.

Height: Adjustable from 24" to 36" in 3" increments.

Mounting: Holes in foot of each leg.

Catalog Number	Mantle Size (liters)	Inside Diameter (in)	Inside Diameter (mm)	Product Weight (lbs)
100E M515A36	12	16.75	425	19.2
100E M520A36	22	19.25	489	22.7
100E M525A36	50	24.25	616	25.4
100E M530A36	72	27.00	686	38.0



Support is shipped unassembled.

TILTING SUPPORT

These tilting supports allow fingertip-control for emptying flasks. The heating mantle support ring is adjustable and locks at any convenient height. The base is compact and extremely stable. The upper cross member strengthens the assembly and serves as a stop for the tilted mantle.

Specifications

Rings: One set included. Order extra sets from chart below.

Base Size: 36" x 38-1/2".

Height: 48".

Finish: Foxtip gray.

Catalog Number	Mantle Size (liters)	Inside Diameter (in)	Inside Diameter (mm)	Product Weight (lbs)
Complete Tilting Support				
100E MS2012	12	16.75	425	114.0
100E MS2022	22	19.25	489	116.0
100E MS2050	50	24.25	616	118.0
100E MS2072	72	27.00	686	120.0
Rings Only for Tilting Support				
100E MS2012R	12	16.75	425	41.0
100E MS2022R	22	19.25	489	41.0
100E MS2050R	50	24.25	616	41.0
100E MS2072R	72	27.00	686	41.0



Support is shipped unassembled.

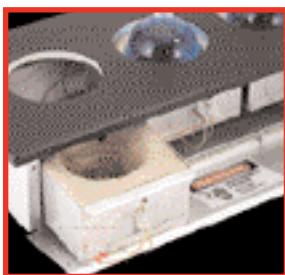
Heating Mantles - *Combo Mantles*

COMBO MANTLES

Glas-Col's combination mantles have always been the mantles of choice for repetitive extracting, refluxing, and distilling procedures in labs of the food, textile fiber, water and waste-water, petroleum, and many other industries. Glas-Col's latest version offers safety and convenience never before available in a multi-place heating mantle.

- Lower profile for space-saving convenience
- Revolutionary heating element container system makes replacing burned-out elements a simple task
- Element containers act as spill containment chambers to capture chemicals from spillage or boil-over
- Clear anodized aluminum cabinet with black Teflon® resin coated top for chemical resistance
- Offered in two space-saving configurations; six-place for 100-300 ml flasks and three-place for 500-1,000 ml flasks
- Available in low-temperature (450°C RX version) and high-temperature (650°C RJ version) for greater versatility
- The ideal mantle for Kjeldahl, Soxhlet, and other extraction procedures

Each six-place Combo is furnished with six spring-type glassware clamps, and each three-place unit contains three. The clamps hold glassware from 1 5/8" - 2" in diameter. The clamps attach



The replaceable element containers provide spill containment and can be replaced in a matter of a few minutes.



to one of the horizontal support rods.

Two Series RL control choices are available: percentage timer or proportional voltage. The percentage-timer version pulses full-line voltage to each heating position according to the dial setting. The proportional-voltage version supplies a constant, steady-state voltage to each position. The six-place controls are actually two units that can be mounted together or separately. The cord-connected controls allow placement at a convenient location for the operator.

Mantle specifications

Size: 29 1/4" w x 9 1/2" d x 5 1/4" h (6-place), 24" w x 11 1/4" d x 6 1/4" h (3-place)

Element size: 6 1/2" w x 6 1/2" d x 3 1/2" h (3-place), 4 1/4" w x 4 1/4" d x 2 9/16" h (6-place)

Power control specifications

Size: 4 1/2" w x 8 1/4" h x 4 1/4" d (3-place unit); 9" w x 8 1/4" h x 4-1/4" d (6-place unit) Equipped with one quick-attach open-face bracket for 1/2" diameter rod. Six-place controls are equipped with two brackets.

Electrical: Three-place control has one 6 ft. (1.8 m) multi-conductor interconnect cord to mantle and one 4 ft. (1.2 m) long, three-wire power cord with grounding plug. Six-place control has two interconnect cords and two power cords.

Finish: Black and silver.



Heating Mantles - Combo Mantles

Table A

Catalog Number	Flask Size (ml)	Maximum Diameter (in)	Bottom	Rating Per Position	Mantle Weight (lbs)	Replacement Element Number	Element Weight (lbs)
Six-Place - low temperature							
100D RX12512	100/125	2.75	Flat	85W, 120V	19.0	100D RX12512E	1.2
100D RX12712	100/125	2.75	Round	85W, 120V	19.0	100D RX12712E	1.2
100D RX30012	250/300	3.41	Flat	125W, 120V	19.0	100D RX30012E	1.2
100D RX30412	250/300	3.41	Round	125W, 120V	19.0	100D RX30412E	1.2
100D RX30024	250/300	3.41	Flat	125W, 240V	19.0	100D RX30024E	1.2
100D RX30424	250/300	3.41	Round	125W, 240V	19.0	100D RX30424E	1.2
Six-Place - high temperature							
100D RJ12512	100/125	2.75	Flat	140W, 120V	19.0	100D RJ12512E	1.2
100D RJ12712	100/125	2.75	Round	140W, 120V	19.0	100D RJ12712E	1.2
100D RJ30012	250/300	3.41	Flat	210W, 120V	19.0	100D RJ30012E	1.2
100D RJ30412	250/300	3.41	Round	210W, 120V	19.0	100D RJ30412E	1.2
100D RJ12524	100/125	2.75	Flat	140W, 240V	19.0	100D RJ12524E	1.2
100D RJ12724	100/125	2.75	Round	140W, 240V	19.0	100D RJ12724E	1.2
100D RJ30024	250/300	3.41	Flat	210W, 240V	19.0	100D RJ30024E	1.2
100D RJ30424	250/300	3.41	Round	210W, 240V	19.0	100D RJ30424E	1.2
Three-Place - low temperature							
100D RX50012	500	4.06	Flat	180W, 120V	20.0	100D RX50012E	2.5
100D RX50212	500	3.98	Round	180W, 120V	20.0	100D RX50212E	2.5
100D RX65012	650	4.25	Round	200W, 120V	20.0	100D RX65012E	2.5
100D RX80012	800	4.56	Round	225W, 120V	20.0	100D RX80012E	2.5
100D RX100012	1,000	5.12	Round	290W, 120V	20.0	100D RX100012E	2.5
100D RX50024	500	4.06	Flat	180W, 240V	20.0	100D RX50024E	2.5
100D RX50224	500	3.98	Round	180W, 240V	20.0	100D RX50224E	2.5
100D RX65024	650	4.25	Round	200W, 240V	20.0	100D RX65024E	2.5
100D RX80024	800	4.56	Round	225W, 240V	20.0	100D RX80024E	2.5
100D RX100024	1000	5.12	Round	290W, 240V	20.0	100D RX100024E	2.5
Three-Place - high temperature							
100D RJ50012	500	4.06	Flat	300W, 120V	20.0	100D RJ50012E	2.5
100D RJ50212	500	3.98	Round	300W, 120V	20.0	100D RJ50212E	2.5
100D RJ65012	650	4.25	Round	325W, 120V	20.0	100D RJ65012E	2.5
100D RJ80012	800	4.56	Round	375W, 120V	20.0	100D RJ80012E	2.5
100D RJ50024	500	4.06	Flat	300W, 240V	20.0	100D RJ50024E	2.5
100D RJ50224	500	3.98	Round	300W, 240V	20.0	100D RJ50224E	2.5
100D RJ65024	650	4.25	Round	325W, 240V	20.0	100D RJ65024E	2.5
100D RJ80024	800	4.56	Round	375W, 240V	20.0	100D RJ80024E	2.5
100D RJ100024	1,000	5.12	Round	450W, 240V	20.0	100D RJ100024E	2.5

Table B

Catalog Number	Control Type	For Use With	Amps	Volts	Product Weight (lbs)
104A RL3312	Percentage timer	3-place 120V RJ or RX	12	120	5.0
104A RL3324	Percentage timer	3-place 240V RJ or RX	12	240	5.0
104A RL3612	Percentage timer	6-place 120V RJ or RX	15	120	11.0
104A RL3624	Percentage timer	6-place 240V RJ or RX	15	240	11.0
104A RL4312	Proportional voltage	3-place 120V RJ or RX	12	120	5.0
104A RL4324	Proportional voltage	3-place 240V RJ or RX	12	240	5.0
104A RL4612	Proportional voltage	6-place 120V RJ or RX	15	120	11.0
104A RL4624	Proportional voltage	6-place 240V RJ or RX	15	240	11.0

How to order

Select the heating mantle from Table A based on the flask being used, the power needed for the application, and the operating voltage. Generally, the RX units are used with solvents common to Soxhlet extractions, and the RJ units are for refluxing aqueous solutions. Select the required power control from Table B based on mantle configuration (3-place or 6-place) and whether pulsing on-off or constant-input voltage is desired.

Order the Combo control to match your application from the chart on the left.



Heating Mantles - *Safety Accessories*

PONCHO SAFETY SHIELDS

The Poncho Safety Shield covers a flask in a Series TM or STM mantle, greatly improving operating safety. Flammable liquids should be processed in Series STM mantles only if a Poncho Safety Shield is used and, in sizes 12-liter and larger, the mantle and Poncho can be purged with an inert gas such as argon.

In addition to reducing fire hazards, the Poncho Shield also protects flasks from falling objects such as screwdrivers or pliers, protects personnel from flying glass and liquid if flask implodes under high vacuum distillation or explodes, and serves as an efficient insulator.

The Poncho has two glass observation ports, allowing the material being heated to be seen while still affording protection. The shield is furnished with a sealer ring and an NPT purge relief port (1/8" for sizes P1300 and smaller and 3/4" for P1400 and larger).

Ponchos shown in chart are for single-neck flasks and are shipped ready for use. Ponchos for multiple-neck flasks may require final fitting in lab.

Note

When using flasks with additional or modified necks, neck location and tubulation length are important. To reduce fitting problems, side necks should not be lower than halfway between equator and top center neck. Side necks should be nearly vertical, if possible, and necks must project through Poncho far enough to allow makeup of taper or ball joints (see chart). For larger sizes, please consult the factory.

How to order

Specify catalog number in chart for single-neck flasks. Submit a sketch for custom-made flasks or those difficult to describe.

Catalog Number	Size	Fits Mantle 115 volt	Fits Mantle 230 volt	Min. Neck Length (in)	Product Weight (lbs)
100D P900	500	100B TM106	100B TM107	1.50	.5
		100B STM900	100B STM901		
100D P1000	1,000	100B TM108	100B TM109	1.50	.9
		100B STM1000	100B STM1001		
100D P1200	2,000 3,000	100B TM110	100B STM111	1.75	.9
		100B TM112	100B TM113		
		100B STM1200	100B STM1201		
100D P1300	5,000	100B TM114	100B TM115	2.00	1.4
		100B STM1300	100B STM1301		
100D P1400	12,000	100B TM116	100B TM117	2.50	3.6
		100B STM1400	100B STM1401		
100D P1500	22,000	100B TM118	100B TM119	3.00	4.0
		100B STM1500	100B STM1501		
100D P1600	50,000	100B TM120	100B TM121	4.00	7.3
100D P1700	72,000		100B TM122	5.00	12.7



Glass viewing port.
Standard Poncho includes
two ports, 180° apart.

Spun
aluminum
safety shield.

Rugged elastic silicone
rubber pad grips flask
neck tightly; is attached
to shield with silicone
and cement.

Resilient silicone sealer ring cemented to
inner circumference of shield provides airtight
grip around mantle.

Heating Mantles - *Safety Accessories*

SPLASH GUARDS

Splash Guards can help prevent mantle damage from chemical spillage and improve operating safety when heating liquids. The shield is appropriate for use with low-wattage mantles (Series M and TM) for flasks, glass beakers, steel beakers, resin flasks, and Buchner funnels. A rugged silicone pad grips outer circumference of vessel, holding the shield securely in place.



Splash Guard with Series TM for glass beaker

Fits Heating Mantle	Vessel Size And Type
100D SG10 <i>Wt.-.2 lbs</i>	
100D CH093PL	1-pint can
100C M102	250-ml flask
100C M103	
100C M104	300-ml flask
100C M105	
100C M106	500-ml flask
100C M107	
100D TEM102	250-ml flask
100D TEM103	
100D TEM104	300-ml flask
100D TEM105	
100D TEM106	500-ml flask
100D TEM107	
100B TM102	250-ml flask
100B TM103	
100B TM104	300-ml flask
100B TM105	
100B TM106	500-ml flask
100B TM107	
100B TM610	600-ml Griffin beaker
100B TM611	
100B TM812	4-1/4" Buchner funnel
100B TM834	350-ml fritted disc
100B TM835	Buchner funnel
100B TM836	600-ml fritted disc
100B TM837	Buchner funnel
100D SG11 <i>Wt.-.3 lbs</i>	
100B TM570	500-ml resin flask
100B TM571	
100B TM612	800-ml Griffin beaker
100B TM613	
100D SG12 <i>Wt.-.3 lbs</i>	
100C M108	1,000-ml flask
100C M109	
100D TEM108	1,000-ml flask
100D TEM109	
100B TM108	1,000-ml flask
100B TM109	
100B TM814	5" Buchner funnel
100D SG13 <i>Wt.-.3 lbs</i>	
100D CH095PL	1-quart can
100D SG13	
100B TM508	500-ml resin flask
100B TM509	
100B TM512	1,000-ml resin flask
100B TM513	

Fits Heating Mantle	Vessel Size And Type
100D SG13(cont.) <i>Wt.-.3 lbs</i>	
100B TM514	1,500-ml resin flask
100B TM515	
100B TM516	2,000-ml resin flask
100B TM517	
100B TM518	3,000-ml resin flask
100B TM519	
100B TM542	500-ml resin flask
100B TM543	
100B TM544	1,000-ml resin flask
100B TM545	
100B TM546	1,500-ml resin flask
100B TM547	
100B TM548	2,000-ml resin flask
100B TM549	
100B TM552	3,000-ml resin flask
100B TM553	
100B TM560	500-ml resin flask
100B TM561	
100B TM562	1,000-ml resin flask
100B TM563	
100B TM564	1,500-ml resin flask
100B TM565	
100B TM566	2,000-ml resin flask
100B TM567	
100B TM568	3,000-ml resin flask
100B TM569	
100B TM572	1,000-ml resin flask
100B TM573	
100B TM614	1,000-ml Griffin beaker
100B TM615	
100B TM630	1,200-ml steel beaker
100B TM631	
100D SG14 <i>Wt.-.3 lbs</i>	
100B TM616	2,000-ml Griffin beaker
100B TM617	
100B TM632	2,000-ml steel beaker
100B TM633	
100D SG15 <i>Wt.-.3 lbs</i>	
100B TM576	2,000-ml resin flask
100B TM577	
100B TM578	3,000-ml resin flask
100B TM579	
100B TM580	4,000-ml resin flask
100B TM581	
100B TM618	3,000-ml Griffin beaker
100B TM619	

Fits Heating Mantle	Vessel Size And Type
100D SG15(cont.) <i>Wt.-.3 lbs</i>	
100B TM620	4,000-ml Griffin beaker
100B TM621	
100B TM816	5-5/8" Buchner funnel
100B TM817	
100B TM838	2,000-ml fritted disc
100B TM839	Buchner funnel
100D SG16 <i>Wt.-.3 lbs</i>	
100C M110	2,000-ml flask
100C M111	
100D TEM110	2,000-ml flask
100D TEM111	
100B TM110	2,000-ml flask
100B TM111	
100B TM634	3,300-ml steel beaker
100B TM635	
100D SG17 <i>Wt.-.3 lbs</i>	
100D CH097PL	1-gallon can
100C M112	3,000-ml flask
100C M113	
100D TEM112	3,000-ml flask
100D TEM113	
100B TM112	3,000-ml flask
100B TM113	
100B TM636	4,000-ml steel beaker
100B TM637	
100B TM818	6-3/4" Buchner funnel
100B TM819	
100D SG18 <i>Wt.-.3 lbs</i>	
100B TM638	5,800-ml steel beaker
100B TM639	
100D SG19 <i>Wt.-.3 lbs</i>	
100C M114	5,000-ml flask
100C M115	
100D TEM114	5,000-ml flask
100D TEM115	
100B TM114	5,000-ml flask
100B TM115	
100B TM640	8,000-ml steel beaker
100B TM641	
100B TM820	8-3/8" Buchner funnel
100B TM821	
100D SG20 <i>Wt.-.3 lbs</i>	
100B TM116	12,000-ml flask
100B TM117	

Heating Mantles - *Safety Accessories*

INSULEZE® INSULATION

InsulEze® insulating kits make insulating in the laboratory an easy, neat job. InsulEze® insulation comes in three different kits that can be used alone or combined for different insulating jobs. The kits contain everything necessary to insulate virtually any application you have against heat transfer, while protecting your personnel at the same time.

InsulEze® insulation can be used as a heat shield, as a cold shield, for insulating over heaters, as a shock absorber, as a light shield, to protect personnel, as a shatter shield, or for protecting sensitive surfaces. The kits

come with insulating materials that can be cut and shaped to almost any size, with minimum fraying of the insulation edges. The fasteners provided make InsulEze® insulation quick and easy to apply and remove from your application, and it is easy to clean. Glas-Col manufactures InsulEze® insulation using materials that are non-hazardous, non-flammable and inert to most chemicals. That makes this insulating product ideal for the safety-conscious lab.

How to order

Specify the catalog number for the kit that meets your needs.



100G IK210



100G IK220

Contact Glas-Col for special sizes and custom applications.



100G IK230

Specifications

1. InsulEze® insulating kit Cat. No. 100G IK210

Contains three choices of 400°C fiberglass tape 1/32" thick in these lengths and widths: 10' x 1", 10' x 3" and 5' x 6". Also includes 60" of 1" and 40" of 1" Velcro hook and loop fasteners. Weight: .9 lbs.

2. InsulEze® insulating kit Cat. No. 100G IK220

Insulating pad 15" wide x 30" long x 1/2" thick for use to 250°C. Unimpregnated fiberglass fabric on one side, moisture-resistant and cleanable silicone impregnated fiberglass fabric on the other. With two 72" lengths of high-temp tying cord. Weight: 1.4 lbs.

3. InsulEze® insulating kit Cat. No. 100G IK230

400°C insulating tape 3" wide x 10' long x 1/2" thick. High-temp fiberglass on both sides. Dual attachment eyelets on each end. With two 60" lengths of high-temp tying cord. Weight: 1.4 lbs.

4. InsulEze® combination insulating kit Cat. No. 100G IK240

Includes one each of the above kits at an economy price. Weight: 4.8lbs.

Glas-Col is proud to be

ISO 9001
CERTIFIED



Heating Mantles

Fabric Mantles

- Fabric exterior provides effective heating in a space saving configuration
- Fabric interior to softly nest glass vessels and reduce the chance of thermal shock
- Withstands 450°C internal operating temperature, enough power for most applications
- Ideal for bottom holes, viewing ports, and other tubulations
- Easily customized for most applications

Series O Mantles

HEMISPHERICAL MANTLES

This Series O mantle is a hemispherical style, meaning it covers only the bottom half of the flask. This allows full view of the flask contents. The mantle accommodates single- and multi-neck flasks. It should be used with the Series O supports on the following page.

Heating mantles and tapes must be operated through a power control - see pages 29-34.

Specifications

Certification: All 115-volt items are CSA certified.

Electrical: Separable 4-ft., 2-wire cord and locking connector.



Larger size Series O mantles have a silicone impregnated exterior for moisture resistance

CE units available contact Glas-Col.

Catalog Number 115 volt	Catalog Number 230 volt	Flask Capacity (ml)	Max. Flask Diameter (mm)	Watts	Inside Depth (in)	Outside Diameter (in)	Outside Height (in)	Product Weight (lbs)
Glass Fabric Exterior								
100A O394	*	50	48	60	1.20	3.14	1.83	.8
100A O396	*	100	60	80	1.43	3.86	2.18	.8
100A O398	*	125	70	80	1.63	4.25	2.38	.9
100A O400	100A O401	200	76	100	1.75	4.50	2.50	.9
100A O402	100A O403	250	83	180	1.89	4.77	2.64	.9
100A O404	100A O405	300	86	180	1.95	4.89	2.70	.9
100A O406	100A O407	500	101	270	2.24	5.48	2.99	1.0
Silicone Impregnated Glass Fabric Exterior								
100A O408	100A O409	1,000	130	380	2.81	7.12	3.81	1.4
100A O410	100A O411	2,000	170	500	3.60	8.70	4.60	1.9
100A O412	100A O413	3,000	183	500	3.85	9.20	4.85	2.0
100A O414	100A O415	5,000	220	600	4.58	10.66	5.58	2.6
100A O416	100A O417	12,000	293	2@650	6.27	14.53	7.77	5.5

** 230 volt not available in these sizes. WARNING: chemical spillage, overheating, overloading, and general misuse will greatly reduce the service life.*

Heating Mantles - Series O Mantles

SPHERICAL MANTLES

This Series O spherical mantle covers both the top and bottom of 1-, 2-, or 3-neck spherical flasks for improved safety and efficiency. The circumferential zipper holds the halves snugly together to prevent heat loss, and the side split in top allows removal without disturbing the flask. Series O supports to use with this mantle are shown below.

Specifications

Certification: All 115-volt items are CSA certified.

Electrical: Separable 4-ft., 2-wire cord and locking connector.

Heating mantles and tapes must be operated through a power control - see pages 29-34.



Catalog Number 115 volt	Catalog Number 230 volt	Flask Capacity (ml)	Wattage Lower Half	Wattage Upper Half	Outside Height (in)	Product Weight (lbs)
Glass Fabric Exterior						
100A O943	*	50	60	None	3.14	1.0
100A O963	*	100	80	None	3.86	1.0
100A O983	*	125	80	None	4.25	1.0
100A O1003	100A O1013	200	100	None	4.49	1.0
100A O1023	100A O1033	250	180	None	4.77	1.1
100A O1043	100A O1053	300	180	None	4.89	1.1
Silicone Impregnated Glass Fabric Exterior						
100A O1063	100A O1073	500	270	None	5.48	1.4
100A O1083	100A O1093	1,000	380	140	7.12	2.7
100A O1103	100A O1113	2,000	500	200	8.70	5.0
100A O1123	100A O1133	3,000	500	200	9.20	4.0
100A O1143	100A O1153	5,000	600	300	10.66	4.9
100A O1163	100A O1173	12,000	2@650	590	14.53	9.6

* 230 volt not available in these sizes

EXTENSION SUPPORTS

This table-top support holds spherical and hemispherical Series O mantles up to 5-liter capacity. The steel support, with its fabric

strap basket, is strong, handy and durable. Attaches easily to stable ring stands or distillation racks.

Catalog Number	Mantle Size (ml)	Inside Diameter (in)	Product Weight (lbs)
100E O522	50 ml	3.75	.9
100E O524	100-200 ml	5.00	.9
100E O525	250-300 ml	5.75	1.0
100E O530	500 ml	6.13	1.0
100E O535	1000 ml	7.50	1.3
100E O540	2000 ml	9.25	1.4
100E O545	3000 ml	9.81	1.8
100E O550	5000 ml	11.50	2.9

TRIPOD SUPPORTS

This support sits on the floor or a bench to accommodate larger Series O mantles. Made of steel, the tripod support has an aluminum basket strap. Mounting holes in the foot of

each leg permit securing to floor or bench.

Specifications

Finish: Foxtip Gray.

Catalog Number	Mantle Size (ml)	Height (in)	Inside Diameter (in)	Product Weight (lbs)
100E O504	5000 ml	12	11.13	9.5
100E O505	12000 ml	14	15.00	10.0
100E O510	22000 ml	14	18.00	10.5



Extension supports will help extend the useful life of Series O mantles

Specifications

Steel Ring: 3/8" diameter O522 - O540;

1/2" diameter O545 - O550.

6" shank

Finish: Foxtip Gray.



Heating Mantles - *Series O Mantles*

RESIN REACTION FLASK MANTLES

This mantle's even heat distribution prevents scorching of clear resinous materials. Its one-circuit heat input simplifies temperature control.

Specifications

Certification: All 115-volt items are CSA certified.

Electrical: Separable 4-ft., 2-wire cord and locking connector.

How to order

Specify catalog number. For flasks not listed, submit a flask sketch specifying outside diameter, height, capacity, bottom shape (hemispherical, dished, etc.), and manufacturer.

Resin flask mantles, as well as most other Series O mantles, are available modified to accept vessel drains or other tubulations.



Shown with optional slit.

Catalog Number 115 volt	Catalog Number 230 volt	Flask Capacity (ml)	Inside Depth (in)	Flask Diameter (in)	Watts	Outside Diameter (in)	Outside Height (in)	Product Weight (lbs)
100A O570	100A O571	500	4.50	3.75	270	5.75	5.50	1.8
100A O572	100A O573	1,000	5.25	4.25	335	6.25	6.25	1.9
100A O576	100A O577	2,000	6.00	5.50	470	7.50	7.00	2.5
100A O578	100A O579	3,000	9.00	5.50	550	7.50	10.00	3.3
100A O580	100A O581	4,000	11.00	5.50	750	7.50	12.00	3.3

WARNING: chemical spillage, overheating, overloading, and general misuse will greatly reduce the service life.

METAL BEAKER MANTLES

This mantle accommodates and efficiently heats all types of straight-walled metal beakers, including stainless steel. Its inner glass-fabric layers prevent contact of heating elements and vessel walls.

Heating mantles and tapes must be operated through a power control - see pages 29-34.

Specifications

Certification: All 115-volt items are CSA certified.

Electrical: Separable 4-ft., 2-wire cord and locking connector.

How to order

Specify catalog number corresponding to beaker dimensions in chart. Specify outside diameter and height for vessels with dimensions not listed in the table.



Catalog Number 115 volt	Catalog Number 230 volt	Beaker Capacity (ml)	Mantle Depth (in)	Beaker Diameter (in)	Watts	Outside Diameter (in)	Outside Height (in)	Product Weight (lbs)
100A O630	100A O631	1,200	4.50	4.13	430	6.13	5.50	1.8
100A O632	100A O633	2,000	5.50	4.88	550	6.88	6.50	2.3
100A O634	100A O635	3,300	6.00	6.13	630	8.13	7.00	2.6
100A O636	100A O637	4,000	6.25	6.50	700	8.50	7.25	3.2
100A O638	100A O639	5,800	7.25	7.25	710	9.25	8.25	4.3
100A O640	100A O641	8,000	8.25	8.00	1,000	10.00	9.25	6.0

Heating Mantles - Series O Mantles

GRIFFIN BEAKER MANTLES

A resilient and pliable interior cradles fragile beakers. Even small liquid volumes may be heated in this mantle because the heat is concentrated at the bottom.

Specifications

Certification: All 115-volt items are CSA certified.

Electrical: Separable 4-ft., 2-wire cord and locking connector.

How to order

Specify catalog number. Consult factory for mantles to fit tall-form beakers.

Heating mantles and tapes must be operated through a power control - see pages 29-34.



Catalog Number 115 volt	Catalog Number 230 volt	Beaker Capacity (ml)	Beaker Diameter (in)	Mantle Depth (in)	Watts	Outside Diameter (in)	Outside Height (in)	Product Weight (lbs)
100A O600	*	50	1.63	1.63	40	2.63	2.13	.9
100A O602	100A O603	100	2.00	2.00	100	3.00	2.50	.9
100A O604	100A O605	150	2.25	2.38	100	3.25	2.88	1.0
100A O606	100A O607	250	2.69	2.50	140	4.19	3.25	1.2
100A O608	100A O609	400	3.00	3.25	240	4.50	4.00	1.3
100A O610	100A O611	600	3.56	3.75	325	5.00	4.50	1.6
100A O612	100A O613	800	3.88	4.25	350	5.00	4.50	1.6
100A O614	100A O615	1,000	4.25	4.50	430	6.25	5.50	2.1
100A O616	100A O617	2,000	5.13	6.00	550	7.13	7.00	2.3
100A O618	100A O619	3,000	5.75	6.50	630	7.75	7.50	2.8
100A O620	100A O621	4,000	6.38	8.00	710	8.25	9.00	3.4

* 230 volt not available in this size. **WARNING:** chemical spillage, overheating, overloading, and general misuse will greatly reduce the service life.

ERLENMEYER FLASK MANTLES

The Series O Erlenmeyer and filter flask mantles help prevent thermal strain on unusually susceptible heavy-walled vessels.

Specifications

Certification: All 115-volt items are CSA certified.

Electrical: Separable 4-ft., 2-wire cord and locking connector.

How to order

Specify type of flask, 250, 500, 1,000, 2,000, or 4,000 ml. Mantles for Erlenmeyer and filter flasks of corresponding sizes have the same wattage but slightly different dimensions. All other sizes are for Erlenmeyer flasks only.



Catalog Number 115 volt	Catalog Number 230 volt	Flask Capacity (ml)	Watts	Mantle Depth (in)	Outside Diameter (in)	Outside Height (in)	Product Weight (lbs)
100A O910	*	50	50W	1.75	2.75	2.75	1.0
100A O912	100A O913	125	95W	2.50	3.63	3.00	1.0
100A O914	100A O915	200	110W	3.00	4.13	3.50	1.2
100A O916	100A O917	250	150W	3.63	4.31	4.13	1.3
100A O918	100A O919	300	150W	3.38	4.63	3.88	1.3
100A O920	100A O921	500	200W	4.50	5.69	5.25	1.5
100A O922	100A O923	750	260W	5.25	6.31	6.00	1.8
100A O924	100A O925	1,000	300W	7.25	7.38	8.25	1.8
100A O926	100A O927	1,500	350W	6.50	8.13	7.50	2.0
100A O928	100A O929	2,000	400W	8.50	8.56	9.50	3.3
100A O930	100A O931	3,000	Bottom 260W Top 260W	9.75	9.81	10.75	4.5
100A O932	100A O933	4,000	Bottom 330W Top 330W	8.63	9.50	9.63	5.5
100A O934	100A O935	6,000	Bottom 390W Top 390W	10.25	12.50	11.75	6.5

* 230 volt not available in this size. **WARNING:** chemical spillage, overheating, overloading, and general misuse will greatly reduce the service life.

Heating Mantles - Series O Mantles

60° FUNNEL MANTLES

This funnel mantle reduces viscosity and prevents precipitation of solutions that must be kept warm during transfer.

Specifications

Certification: All 115-volt items are CSA certified.

Electrical: Separable 4-ft., 2-wire cord and locking connector.



Heating mantles and tapes must be operated through a power control - see pages 29-34.

Catalog Number 115 volt	Catalog Number 230 volt	Top Diameter (in)	Watts	Mantle Depth (in)	Outside Diameter (in)	Product Weight (lbs)
100A O710	*	2.5	40	1.59	3.5	.8
100A O712	*	3.0	40	1.95	4.0	.8
100A O714	*	4.0	60	2.67	5.0	1.0
100A O716	100A O717	5.0	90	3.00	6.0	1.0
100A O718	100A O719	6.0	120	3.59	7.0	1.6
100A O722	100A O723	8.0	210	5.63	9.0	1.6
100A O724	100A O725	10.0	400	6.78	11.0	2.5
100A O726	100A O727	12.0	400	7.71	13.0	2.5

* 230 volt not available in these sizes

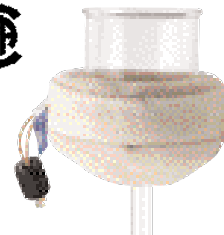
BUCHNER FUNNEL MANTLES

The Series O Buchner funnel mantle provides gentle heat for solutions that must be filtered while warm.

Specifications

Certification: All 115-volt items are CSA certified.

Electrical: Separable 4-ft., 2-wire cord and locking connector.



Catalog Number 115 volt	Catalog Number 230 volt	Coors Funnel Number	Top Diameter (in)	Plate Diameter (mm)	Watts	Mantle Depth (in)	Outside Diameter (in)	Product Weight (lbs)
100A O808	*	60240	2.75	56	50	2.00	4.25	1.0
100A O810	*	60242	3.50	75	50	2.69	5.00	1.2
100A O812	*	60243	4.25	91	70	3.25	5.75	1.4
100A O814	*	60244	5.00	111	70	3.50	7.00	1.8
100A O816	100A O817	60245	5.63	126	100	4.06	7.63	1.9
100A O818	100A O819	60246	6.75	151	220	4.63	8.75	2.4
100A O820	100A O821	60247	8.38	186	300	5.81	10.38	3.0
100A O822	100A O823	60248	10.63	241	350	7.31	12.63	3.8

* 230 volt not available in these sizes

SEPARATORY FUNNEL MANTLES

These funnel mantles allow extraction of fluids while hot, preventing solidification of viscous material in cold stopcocks. The thickness of the fiberglass fabric between heating elements and soft glass wall of the separatory funnel prevents thermal strain and the resultant cracking. Viewing is possible

in sizes 1-liter and larger through opposite slots near the mantle bottom.

Specifications

Certification: All 115-volt items are CSA certified.

Electrical: Separable 4-ft., 2-wire cord and locking connector.



Catalog Number 115 volt	Catalog Number 230 volt	Funnel Type	Funnel Capacity (ml)	Watts	Mantle Depth (in)	Outside Diameter (in)	Product Weight (lbs)
100A O850	100A O851	Squibb	250	140	5.00	4.88	1.3
100A O852	100A O853	Squibb	500	180	7.00	5.63	1.5
100A O854	100A O855	Squibb	1,000	190	8.00	6.50	1.8
100A O856	100A O857	Squibb	2,000	280	10.00	8.00	2.0
100A O860	100A O861	Globe	500	180	3.50	5.94	1.4
100A O862	100A O863	Globe	1,000	190	5.00	6.88	1.8
100A O864	100A O865	Globe	2,000	250	6.50	8.50	2.1
100A O866	100A O867	Globe	4,000	340	6.75	10.00	5.5
100A O868	100A O869	Globe	6,000	400	9.25	11.00	6.5

Heating Mantles - Series O Mantles

MICRO MANTLES

Glas-Col micro mantles provide precise heat control for small flasks. The mantle is used extensively in analytical work and in purification of research products with only small samples available. Available for spherical flasks from 5 to 35 ml and pear-shaped flasks from 5 to 250 ml. Fits multiple-neck flasks.

Specifications

Electrical: Separable 3-ft., 2-wire cord and locking connector.

Note

Most micro mantles are rated at less than 115 volts and must be operated through a power control (see pages 29-34). Not available for 230 volts.

How to order

Little standardization of micro flask shapes and sizes exists. Therefore, specify flask capacity, shape (spherical or pear-shaped), manufacturer and catalog number, and flask diameter (maximum if pear-shaped).



Catalog Number 115 volt	Flask Capacity (ml)	Approx. Dia. (mm)	Wattage, Voltage	Depth (in)	Outside Diam. (in)	Outside Height (in)	Product Weight (lbs)
<i>For Spherical Flasks</i>							
100A MIC5	5	27	12W-30V max.	.66	1.56	.91	.5
100A MIC10	10	32	20W-30V max.	.81	1.75	1.06	.6
100A MIC20	20	41	27W-60V max.	1.06	2.25	1.31	.6
100A MIC25	25	43	30W-60V max.	1.09	2.19	1.34	.6
100A MIC35	35	46	35W-60V max.	1.22	2.44	1.47	.8
<i>For Pear-Shaped Flasks</i>							
100A MICP5	5	25	12W-30V max.	1.13	1.50	1.38	.6
100A MICP10	10	31	15W-30V max.	1.25	1.69	1.50	.6
100A MICP25	25	45	25W-60V max.	1.50	2.31	1.88	.6
100A MICP50	50	51	35W-60V max.	1.94	2.69	2.31	.8
100A MICP65	65	55	40W-60V max.	1.56	2.92	1.94	.8
100A MICP100	100	59	70W-115V max.	1.88	3.88	2.63	1.0
100A MICP150	150	68	90W-115V max.	2.75	4.25	3.50	1.1
100A MICP250	250	81	135W-115V max	2.31	4.69	3.06	1.2

HEATING/INSULATING TOPS

This mantle helps prevent vapor condensation in the upper half of a flask during distillation of high-boiling materials. The tops are designed for use with Series M, TM, or STM mantles. They protect the flask, the solutions, and the laboratory in these ways: 1) from drafts, which would disturb the reflux ratio during fractionation; 2) from flying glass of flask implosions in high-vacuum distillations; 3) from falling objects; and, 4) from thermal strain between

top and lower half of flask during high-temperature operations. With a glass-fabric construction and laced-side opening, the elliptical hole accommodates 1-, 2-, and 3-neck flasks.

Specifications

Certification: All 115-volt items are CSA certified.

Electrical: Separable 4-ft., 2-wire cord and locking connector.



How to order

Specify catalog number for heating or insulating top. Custom tops for 1-, 2-, or multiple-neck flasks are available on special order.

Insulating Top Catalog Number	Heating Top Catalog Number 115 volt	Heating Top Catalog Number 230 volt	Flask Capacity (ml)	Flask Diameter (mm)	Heating Top Wattage	Outside Diameter (in)	Product Weight (lbs)
100A INS1023	100A MO1023	100A MO1033	250	83	140	4.77	.6
100A INS1043	100A MO1043	100A MO1053	300	86	140	4.89	.6
100A INS1063	100A MO1063	100A MO1073	500	101	140	5.48	.6
100A INS1083	100A MO1083	100A MO1093	1,000	130	140	7.12	.6
100A INS1103	100A MO1103	100A MO1113	2,000	170	200	8.70	1.0
100A INS1123	100A MO1123	100A MO1133	3,000	183	200	9.20	1.8
100A INS1143	100A MO1143	100A MO1153	5,000	220	300	10.66	2.8
100A INS1163	100A MO1163	100A MO1173	12,000	293	590	14.53	4.4
100A INS1183	100A MO1183	100A MO1193	22,000	347	650	16.66	6.8
100A INS1203	100A MO1203	100A MO1213	50,000	456	1,000	20.95	10.8
100A INS1223		100A MO1223	72,000	522	1,000	23.35	11.8

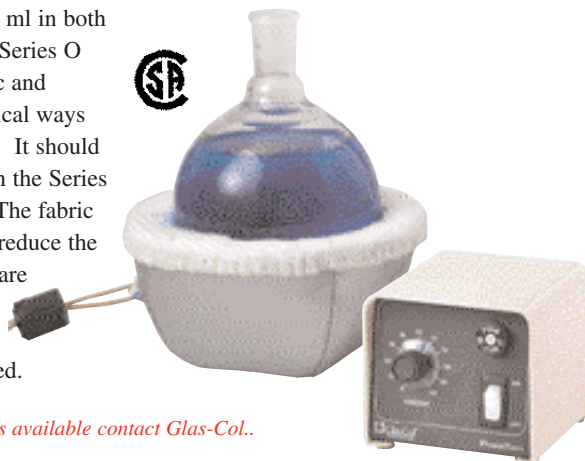
Heating Mantles - *Series O Mantles*

MANTLE/CONTROL PACKAGES

Glas-Col offers its standard Series O mantles for round-bottom flasks with the PowrTrol power control as a special, economical package. The PowrTrol from Glas-Col is ideally suited for accurate control of mantles, tapes, cords, and other resistive loads. The unit is a solid-state, proportional-voltage control that provides precise manual control of the output range, which is adjustable from 5-100%.

The heating mantles in this package represent one of the most popular items in the Glas-Col family of laboratory products. The standard Series O mantles are for round-

bottom flasks from 50 ml to 5,000 ml in both 115V and 230V where available. Series O mantles are made of flexible fabric and represent one of the most economical ways to safely heat chemicals in the lab. It should be used with a support as shown in the Series O mantle section of this catalog. The fabric interior cushions the glassware to reduce the chance of breakage. The mantles are designed to withstand an internal operating temperature of 450°C and 115 volt units are CSA certified.



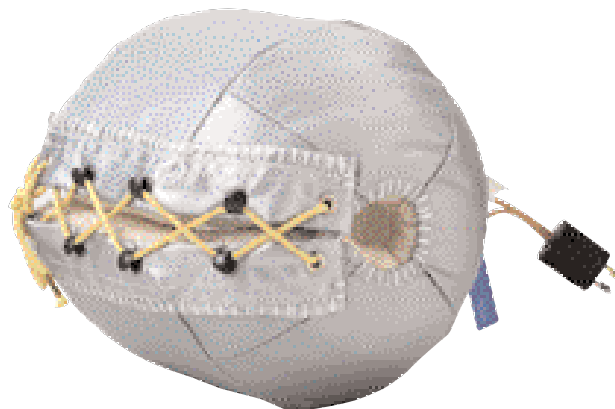
CE units available contact Glas-Col.

Catalog Number 115 volt	Catalog Number 230 volt	Flask Capacity (ml)	Max. Flask Diameter (mm)	Watts	Inside Depth (in)	Outside Diameter (in)	Outside Height (in)
<i>Glass Fabric Exterior</i>							
100D O394PL	*	50	48	60	1.20	3.14	1.83
100D O396PL	*	100	60	80	1.43	3.86	2.18
100D O398PL	*	125	70	80	1.63	4.25	2.38
100D O400PL	100D O401PL	200	76	100	1.75	4.50	2.50
100D O402PL	100D O403PL	250	83	180	1.89	4.77	2.64
100D O404PL	100D O405PL	300	86	180	1.95	4.89	2.70
100D O406PL	100D O407PL	500	101	270	2.24	5.48	2.99
<i>Silicone Impregnated Glass Fabric Exterior</i>							
100D O408PL	100D O409PL	1,000	130	380	2.81	7.12	3.81
100D O410PL	100D O411PL	2,000	170	500	3.60	8.70	4.60
100D O412PL	100D O413PL	3,000	183	500	3.85	9.20	4.85
100D O414PL	100D O415PL	5,000	220	600	4.58	10.66	5.58

* 230 volt not available in these sizes. **WARNING:** chemical spillage, overheating, overloading, and general misuse will greatly reduce the service life.

* See individual mantles and controls for weight and dimensions.

One of the major benefits of buying Glas-Col heating mantles is the ability of our staff to customize your mantle to your specific needs. Bottom holes, viewing slits, and an array of closures are a few of the custom features that can be built into a mantle for your application. See the next few pages for more information on custom products, or contact our customer service representatives to see how we can help with your specific heating application.



Call us at 1-800-GLASCOL(452-7265) for the name of your nearest Glas-Col distributor.

Be sure to visit us on the Internet at:

www.glascol.com

Heating Mantles - Premier Mantles

PREMIER MANTLES

Glas-Col's Premier heating mantle offers many high-quality features that make laboratory heating much more efficient, convenient, and safe.

The Premier mantle comes with a built-in proportional power control for precise control of your operations. and is equipped to accept external controls as well, making the Premier mantle a versatile addition to any laboratory.

Designed with safety in mind, the Premier mantle has a spill-capture system that no other heating mantle can equal. This system includes:

- a removable and replaceable stainless steel foil liner.
- a catch pan (in accordance with NFPA standard #45).

These two features help capture spills so they can be easily and safely contained and removed. This virtually eliminates the danger of damage to the heating elements and mantle control and protects your personnel from hot or caustic solutions. If the heating element must be replaced, it is easy and quick to do in the field.

For added safety, the Premier mantle is



encased in a UL fire-rated plastic enclosure which:

- is chemical resistant.
- remains cool to the touch during operation.
- is self supporting on non-skid feet.

Specifications

Electrical: With integral 4-ft., 3-wire cord. Power-on indicator plus output-level light.

Control: Nearly linear from 5 to 100% of rated voltage.

Finish: Foxtip gray and charcoal.

Premier Mantle

Catalog Number 120 volt	Catalog Number 240 volt	Flask Capacity (ml)	Flask Diameter (mm)	Watts	Dimensions (in)	Product Weight (lbs)
100M LS2106	100M LS2107	500	108	270	11w x 9.63d x 5.25h	5.0
100M LS2108	100M LS2109	1,000	130	380	11w x 9.63d x 5.25h	5.0

Premier Mantle Replacement Elements

Catalog Number	Flask Capacity (ml)	Flask Diameter (mm)	Electrical Rating	Dimensions (in)	Product Weight (lbs)
100F LS2106E	500	108	270W, 120V	5.75w x 2.50d x 3.25h	.6
100F LS2107E	500	108	270W, 240V	6.88w x 2.94d x 3.69h	.6
100F LS2108E	1,000	130	380W, 120V	5.75w x 2.50d x 3.25h	.6
100F LS2109E	1,000	130	380W, 240V	6.88w x 2.94d x 3.69h	.6

Premier Mantle Replacement Foil Liners (2 per pack)

Catalog Number	Flask Capacity (ml)	Flask Diameter (mm)	Dimensions (in)	Product Weight (lbs)
100F LS2106L	500	108	5.75w x 2.50d x 3.25h	.9
100F LS2108L	1,000	130	6.88w x 2.94d x 3.69h	.9

Heating - *Dry Block Heater/Aluminum Blocks*

DRY BLOCK HEATER

This block heater is a convenient answer to the laboratory's need for a small constant temperature heater that can accommodate a variety of different sizes. Heater opening is a standard sbs format which allows heating of standard well plates (low or high profile). Our block heater features a digital control with easy setup and simple input commands making the control very "user friendly." This control is single-loop and auto-tuning. Automatically setting PID control parameters for optimum system performance. Maintains temperature from slightly above ambient to 125°C +/-1°C.

Specifications

Electrical : On/Off power switch, fuse protection, 3-wire line cord with molded plug.
Accuracy: 0.1% of span.

Ambient Temperature Range: 32-149°F

Display: Dual, 4-digit LED

Set Point: Up/Down keys. °F or °C display, user selectable.

Finish: Black

Note: Aluminum Blocks sold below.



Catalog Number	Electrical Rating	Thermocouple Type	Product Weight (lbs)
099A HBC12	120V, 150W	5-3/4 x 4-1/2 x 6-3/4	5.0
099A HBC24	240V, W	5-3/4 x 4-1/2 x 6-3/4	5.0

ALUMINUM BLOCKS

Catalog Number	Electrical Rating	Product Weight (lbs)
099A R34 562	Holds 24 (12mm x 32mm) vials	2.0
099A R34 561	Holds 24 (15mm x 45mm) vials	2.0
099A R34 563	Holds 20 (15mm x 16mm) vials	2.0
099A R34 516	Holds 8 EPA vials	2.0



Glas-Col is proud to be

ISO 9001
CERTIFIED

Heating Mantles - *Custom Mantles*

CUSTOM MANTLES

Column-type heating mantles provide a solution to heating problems that is often quicker and easier to install than other methods. In addition, the mantles insulate as well as heat, thereby increasing convenience and operating safety.

Type GF Mantles

With insulation that is typically 3/4" to 1" thick, the Type GF column mantle:

- provides uniform heat and insulation for scrubbing and fractionating columns.
- maintains even adiabatic conditions over the entire column, creating no hot spots.
- maintains flow temperatures of high melting-point materials in pipelines.
- closes with a zipper or with laces if numerous column projections exist.
- has an internal operating temperature limit of 450° C.

Type QF Mantles

The high-temperature, durable, cylindrical type QF column mantle:

- maintains flow temperature in pipelines.
- is suitable for vapor phase cracking of materials in tubes and other high-temperature operations.
- closes with eyelets and laces or hooks and laces.
- has an internal operating temperature of 650° C.

How to order

Because of the wide range of heating requirements and environmental factors, custom mantle construction varies. Each application is quoted individually, based on specific needs. Specify the outside diameter of the vessel, length of mantle, voltage, number of circuits and length of each heating zone, operating temperature, unusual ambient conditions, and size and location of holes for view ports, tubulations, etc. Please submit a sketch for complicated applications. Contact our application engineers today at 1-800-452-7265.



Heating Tapes and Cords

GROUNDING HEATING TAPE

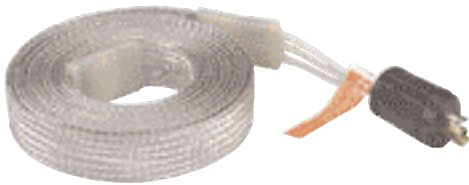
Providing a new level of safety and convenience for laboratory heating applications, Glas-Col's new tinned-copper overbraided heating tapes:

- are grounded for increased safety
- offer wrap-around heating convenience
- improve heat transfer
- are usable in high-moisture areas
- are durable yet flexible

Specifications

Electrical: Separable 4-ft., 3-wire cord and locking connector.

Temperature Limit: 480°F.



Catalog Number	Width, Length	Wattage Voltage	Ohms Per Ft.	Product Weight (lbs)
103A DET0.254G	1/4" x 4 ft.	60W-45V	9.08	.6
103A DET0.256G	1/4" x 6 ft.	90W-70V	9.08	.7
103A DET0.258G	1/4" x 8 ft.	120W-95V	9.08	.9
103A DET0.2510G	1/4" x 10 ft.	150W-115V	9.08	.9
103A DET0.54G	1/2" x 4 ft.	140W-45V	3.77	.6
103A DET0.56G	1/2" x 6 ft.	210W-70V	3.77	.9
103A DET0.58G	1/2" x 8 ft.	280W-95V	3.77	.9
103A DET0.510G	1/2" x 10 ft.	340W-115V	3.77	1.2
103A DET0.520G	1/2" x 20 ft.	680W-230V	3.77	2.0
103A DET110G	1" x 10 ft.	700W-115V	1.88	1.0
103A DET120G	1" x 20 ft.	1,400W-230V	1.88	2.5
103A FET0.65G	5/8" x 5 ft.	145W-115V	18.15	.6
103A FET0.66G	5/8" x 6 ft.	120W-115V	18.15	.7
103A FET0.67G	5/8" x 7 ft.	105W-115V	18.15	.7
103A FET0.68G	5/8" x 8 ft.	90W-115V	18.15	.8
103A FET0.69G	5/8" x 9 ft.	80W-115V	18.15	.8
103A FET0.610G	5/8" x 10 ft.	300W-230V	18.15	1.0
103A SET13G	1" x 3 ft.	150W-115V	27.25	.8
103A SET14G	1" x 4 ft.	120W-115V	27.25	.8
103A SET15G	1" x 5 ft.	100W-115V	27.25	.9
103A SET16G	1" x 6 ft.	300W-230V	27.25	1.0
103A SET17G	1" x 7 ft.	275W-230V	27.25	1.0
103A SET18G	1" x 8 ft.	240W-230V	27.25	1.0
103A SET19G	1" x 9 ft.	215W-230V	27.25	1.3

HEATING TAPE

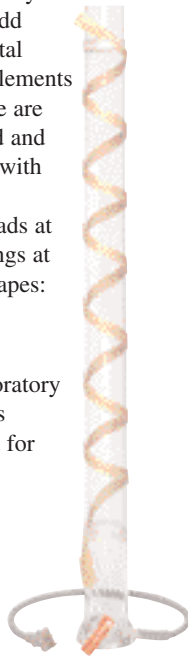
In both permanent and temporary applications, this tape heats odd lengths of glass tubes and metal pipes. Ribbon-type heating elements running lengthwise in the tape are encased in durable glass braid and are impregnated and covered with tough silicone rubber, which insulates stranded terminal leads at one end and waterproofs fittings at both ends. Glas-Col heating tapes:

- are ideal for use in high moisture areas
- are resistant to most laboratory environmental conditions
- easily pass a 1,000V test for electrical insulation

Specifications

Electrical: Attached cord with 2-blade plug. Single end termination.

Temperature Limit: 480°F.



Catalog Number	Width, Length	Wattage Voltage	Ohms Per Ft.	Product Weight (lbs)
103A DET0.254	1/4" x 4 ft.	60W-45V	9.08	.4
103A DET0.256	1/4" x 6 ft.	90W-70V	9.08	.5
103A DET0.258	1/4" x 8 ft.	120W-95V	9.08	.5
103A DET0.2510	1/4" x 10 ft.	150W-115V	9.08	.9
103A DET0.54	1/2" x 4 ft.	140W-45V	3.77	.5
103A DET0.56	1/2" x 6 ft.	210W-70V	3.77	.7
103A DET0.58	1/2" x 8 ft.	280W-95V	3.77	.7
103A DET0.510	1/2" x 10 ft.	340W-115V	3.77	1.0
103A DET0.520	1/2" x 20 ft.	680W-230V	3.77	1.0
103A DET110	1" x 10 ft.	700W-115V	1.88	1.0
103A DET120	1" x 20 ft.	1,400W-230V	1.88	1.7
103A FET0.65	5/8" x 5 ft.	145W-115V	18.15	.5
103A FET0.66	5/8" x 6 ft.	120W-115V	18.15	.5
103A FET0.67	5/8" x 7 ft.	105W-115V	18.15	.6
103A FET0.68	5/8" x 8 ft.	90W-115V	18.15	.6
103A FET0.69	5/8" x 9 ft.	80W-115V	18.15	.8
103A FET0.610	5/8" x 10 ft.	300W-230V	18.15	.8
103A SET13	1" x 3 ft.	150W-115V	27.25	.6
103A SET14	1" x 4 ft.	120W-115V	27.25	.6
103A SET15	1" x 5 ft.	100W-115V	27.25	.6
103A SET16	1" x 6 ft.	300W-230V	27.25	.8
103A SET17	1" x 7 ft.	275W-230V	27.25	.8
103A SET18	1" x 8 ft.	240W-230V	27.25	.8
103A SET19	1" x 9 ft.	215W-230V	27.25	1.2

Note: Power ratings in the tables are for tapes not covered by insulation when installed. If covered, temperature should be monitored and controlled to avoid exceeding 480°F limit. Short, narrow tapes rated at less than 115 volts must be operated at reduced voltages, which are easily attained with a power control (see pages 29-34). Consult Glas-Col for information on special lengths of heating tapes.

Heating Tapes and Cords

HEATING CORDS

The high-temperature, wrap-around Cal-Cord wraps and heats tubes as small as 1/2" diameter. It should be used only in dry or low-moisture areas, on non-metallic surfaces, because of the insulation's high-temperature capabilities. Installation and removal are quick and easy with single end termination.

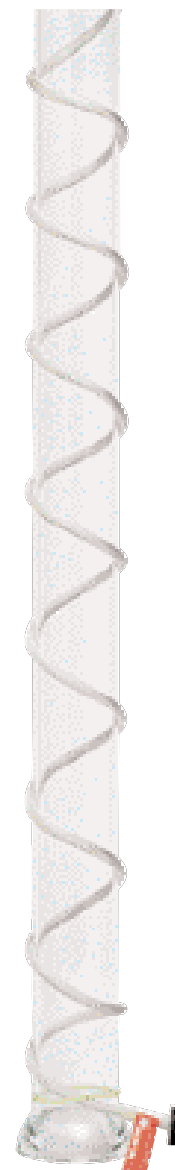
Specifications

Electrical: Separable 4-ft., 2-wire cord and locking connector.

Size: 1/4" diameter, varying lengths.

Temperature Limit: See chart.

Catalog Number	Length (ft)	Wattage, Voltage	Ohms Per Foot	Product Weight (lbs)
400°C Cal-Cord				
103B CC2	2	80W-115V	83.0	.5
103B CC3	3	120W-115V	37.0	.5
103B CC4	4	160W-115V	21.0	.6
103B CC6	6	240W-115V	9.2	.7
103B CC8	8	340W-115V	4.9	.8
103B CC10	10	400W-115V	3.3	1.1
103B CC12	12	480W-230V	9.2	1.2
103B CC14	14	560W-230V	6.7	1.3
103B CC16	16	640W-230V	5.2	1.4
600°C Super Cal-Cord				
103B SCC2	2	200W-115V	33.0	.6
103B SCC3	3	300W-115V	14.7	.7
103B SCC4	4	400W-115V	8.3	.7
103B SCC6	6	500W-115V	4.4	.7
103B SCC8	8	700W-230V	9.5	1.0



Note: For temperature regulation, always operate through controls. Because most laboratory uses are temporary, manual controls (variable transformers, percentage timers) are often used (see pages 29-34)

Call us at 1-800-GLASCOL(452-7265) for the name of your nearest Glas-Col distributor.

Be sure to visit us on the Internet at:

www.glascol.com

Controls

Controls

- Wide selection of power and temperature controls to match most heating applications
- Designed and tested to provide accurate, long-term service
- Low profile, space-saving designs

POWRTROL

The PowrTrol control is a solid-state, proportional-voltage power control that provides precise manual control of heating mantles, tapes, cords, and other resistive loads. The output range is conveniently adjustable from 5-100% of rated voltage.

Specifications

Lab Bench Case: Low-profile cabinet, 4"w x 4"d x 3-3/8"h.

Electrical: Lighted on/off power switch, circuit breaker protection, 3-wire load receptacle, and 3-wire line cord with molded plug.

Finish: Foxtip gray and charcoal.



CE units available contact Glas-Col..

Catalog Number	Description	Electrical Rating	Range	Product Weight (lbs)
104A PL120	Proportional voltage control	10A @120V, 1,200W	from 5-100% of rated voltage	1.5
104A PL124	Proportional voltage control	10A @240V, 2,400W	from 5-100% of rated voltage	1.5

POWRTWIN

Glas-Col's PowrTwin control is capable of controlling two separate circuits independently. Like the PowrTrol, the PowrTwin is a solid-state, proportional-voltage controller that allows the precise manual control of laboratory heating equipment such as heating tapes, cords, and mantles. The PowrTwin has an output range adjustable from 5-100% of rated voltage. The PowrTwin can be used on the bench top.

Lab Bench Case: Low-profile cabinet, 8"w x 6"d x 3-3/8"h.

Electrical: Lighted on/off power switch, circuit breaker protection, 3-wire load receptacle, and 3-wire line cord with molded plug.

Finish: Foxtip gray and charcoal.



Specifications

Catalog Number	Description	Electrical Rating	Range	Product Weight (lbs)
104A PL1202	Proportional voltage control	7A @120V, 840W per circuit	from 5-100% of rated voltage	2.0

Controls

MINITROL

The operator manually adjusts the MiniTrol, which has a percentage-timer design and no sensing element. It regulates mantles, tapes, and cords, as well as small furnaces, ovens, hot plates, dies, and other applications requiring stepless control. MiniTrol may also be used on any non-inductive loads to its rated capacity. It proportions the operating voltage to the load from 5-1/2% to 100% of the time according to the preset dial position. When turned off, it effects a positive break. For very small loads, smaller fuses may be used. PL3122 MiniTwin handles two separate circuits. A pilot light is

connected across the output side of the control, indicating power to load. With the desired temperature determined on the initial run, a simple dial setting controls repeat operation.

Specifications

Certification: All 115 Volt units are CSA certified.

Electrical: Pilot light, fuse protection, 3-wire load receptacle, and 3-wire line cord with molded plug.

Case Construction: Anodized aluminum with no-mar rubber feet.



Catalog Number	Number Circuits	Volts	Amps Per Circuit	Wattage Capacity	Case Dimensions	Product Weight (lbs)
104A PL312	1	120	12.0	1,440	2-1/2" x 4-1/4" x 2"	1.5
104A PL3122	2	120	7.5	900 per circuit	5" x 4-1/4" x 2"	2.0
104A PL324	1	240	10.0	2,400	2-1/2" x 4-1/4" x 2"	1.5

MANTLEMINDER II

The MantleMinder II is a 1/16 DIN, automatic, time-proportioning control used with heating mantles, tapes, cords, small ovens and other resistive heating loads up to 2,400W (240V). Very small loads may be easily protected by changing the fuse. The load and the thermocouple receptacles are located on the back panel for easy accessibility. Furnished with a type J immersion thermocouple with 6"-long stainless steel probe.

Electrical: Lighted on/off power switch with digital temperature indicator, fuse protection, 3-wire load receptacle, 3-wire line cord with molded plug.

Control Type: Time proportioning.

Accuracy: $\pm 1.5\%$ of full scale ($\pm 11^\circ\text{C}$).

Power Consumption: 4 watts plus load.

Set Point: Calibrated in 20°C increments.

Lab Bench Case: Low profile cabinet,



8" w x 6" d x 3-3/8" h.

Finish: Foxtip gray and charcoal.

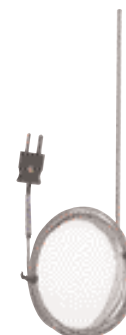
Specifications

Catalog Number	Electrical Rating	Range	Thermocouple Type	Product Weight (lbs)
104A PL512	15A@120V, 1,800W	0-750°C	Type J	2.9
104A PL524	10A@240V, 2,400W	0-750°C	Type J	2.9

THERMOCOUPLES

Choose features to match application. These thermocouples, available in a variety of sizes and constructions, are for use with Glas-Col temperature controls and the digital thermometer. Thermocouples are type J unless identified differently in catalog number.

Catalog Number	Recommended Range	Description
104A TC105	0-370°C (0-700°F)	24 gauge. 1/8" dia. x 6"-long stainless steel probe. 48"-long, fiberglass insulated duplex lead with stainless steel overbraid.
104A TC105K	95-1260°C (200-2300°F)	With miniature plug. For liquid immersion.
104A TC105T	-200-350°C (-330-660°F)	
104A TC110	0-260°C (0-500°F)	24 gauge. 1/8" dia. x 6"-long, Teflon®-coated stainless steel probe. 48"-long, Teflon®-insulated duplex lead. With miniature plug. For liquid immersion.
104A TC115	0-480°C (0-900°F)	20 gauge. 72"-long, fiberglass-insulated duplex lead wire with welded tip. With miniature plug. Not for liquid immersion.
104A TC120	0-370°C (0-700°F)	24 gauge. 36"-long, fiberglass-insulated duplex lead wire with welded tip. With miniature plug. Not for liquid immersion.





Controls

DIGITROL II

The DigiTrol II uses a 1/16 DIN micro-processor-based, user-selectable control mode temperature control. The control features a digital dual output display for set point and process temperature indication. The automatic-tuning feature ensures increased temperature accuracy with minimum overshoot. Easy set-up and simple input commands make this control very “user friendly.” The load and the thermocouple receptacles are located on the front panel for easy accessibility. Features automatic cold junction compensation and

thermocouple break protection. Furnished with an immersion thermocouple with 6”-long stainless steel probe.

Specifications

Electrical: Lighted on/off power switch with auxiliary LED indication, fuse protection, 3-wire load receptacle, and 3-wire line cord with molded plug.

Control Type: PID parameters with auto/manual mode option.

Accuracy: 0.1% of span.

Display: Dual, 4-digit LED.

Set Point: Up/down keys. °F or °C display, user selectable.



CE units available contact Glas-Col.

Lab Bench Case: Low profile cabinet, 8”w x 6”d x 3-3/8”h.

Finish: Foxtip gray and charcoal.

Catalog Number	Electrical Rating	Range	Thermocouple Type	Product Weight (lbs)
104A PL612	15A@120V, 1,800W	0-750°C	Type J	3.0
104A PL612K	15A@120V, 1,800W	-200-1250°C	Type K	3.0
104A PL612T	15A@120V, 1,800W	-200-350°C	Type T	3.0
104A PL624	10A@240V, 2,400W	0-750°C	Type J	3.0
104A PL624K	10A@240V, 2,400W	-200-1250°C	Type K	3.0
104A PL624T	10A@240V, 2,400W	-200-350°C	Type T	3.0

RAMPTROL

This microprocessor-based ramping control provides four-file/24-step program capability or easy-to-use non-ramping set-point operation. Ramping operations include four files with six steps each. Programming options include ramp-rate or time-based profiles, guaranteed soak deviation, program looping, and program status selection after power outage. Files may be linked to create a single, 24-step program. Also allows automatic setting of control parameters with little user input. RampTrol automatically sets the PID parameters (proportional band, reset/integral, and rate/derivative) through a “learning” sequence in the auto-tuning mode. The primary analog input is a thermocouple. The back panel features a nine-pin serial port for communication with a PC. A secondary

output is available for cooling, along with a 4-20ma retransmit output for temperature recording and an RTD input. Information is stored in non-volatile memory.

Specifications

Control Mode: Single output. Optional retransmit of set point or process variable. Four-file/24-step ramping or non-ramping, set-point control. Ramp-rate or time-based programming. Selectable control status following power loss.

Operator Interface: Dual, four-digit LED displays: upper, 0.4 inch (10 mm) for process (red); lower, 0.3 inch (8 mm) for set point (green). Mode, Hold/Run, Display, Up, and Down keys.



Accuracy: 0.1% of span, temperature stability +/-0.2%°F/°F change in ambient.

Input: Factory set for thermocouple; grounded or ungrounded.

Lab Bench Case: 8”w x 8”d x 4 3/4”h.

Finish: Foxtip gray and charcoal.

Catalog Number	Electrical Rating	Range	Thermocouple Type	Product Weight (lbs)
104A PL912	15A@120V, 1,800W	0-816°C	Type J	4.0
104A PL912K	15A@120V, 1,800W	-200-1371°C	Type K	4.0
104A PL912T	15A@120V, 1,800W	-200-399°C	Type T	4.0
104A PL924	10A@240V, 2,400W	0-816°C	Type J	4.0
104A PL924K	10A@240V, 2,400W	-200-1371°C	Type K	4.0
104A PL924T	10A@240V, 2,400W	-200-399°C	Type T	4.0

Controls

LIMITROL

Glas-Col's LimiTrol limiting control provides a safety backup for laboratory heating processes in a compact, 1/16 DIN package. When installed between the primary power or temperature control and the power source, the LimiTrol allows for over-temperature limiting. The operator simply sets the LimiTrol to the maximum temperature for the process. Should the primary power control fail, or the process temperature be exceeded for any reason, the LimiTrol will terminate power to the primary control, thus reducing the chance of damage to samples, expensive equipment, and

glassware due to overheating. The unit features a manual reset, which means power will remain off until the operator restores the system. The set-point dial is calibrated in 20° C increments, and the load and thermocouple receptacles are located on the back panel for easy access. Furnished with a type J immersion thermocouple with 6"-long stainless steel probe.

Specifications

Electrical: Lighted on/off power switch with auxiliary LED indication, fuse protection, 3-wire load receptacle, 3-wire line cord with molded plug.



Set Point Accuracy: $\pm 3\%$ of span maximum.

Power Consumption: 4 watts.

Lab Bench Case: 8"w x 6"d x 3-3/8"h.

Catalog Number	Electrical Rating	Range	Thermocouple Type	Product Weight (lbs)
104A PC512	7.5A@120V, 1,200W	0-750°C	Type J	3.0
104A PC524	7.5A@240V, 2,400W	0-750°C	Type J	3.0

DIGITAL TIMER

The Glas-Col Digital Timer is a micro controller-based countdown interval timer with digital display. For use with mantles, heating tapes, ovens, and other resistive loads up to 10 amps. Also can be used with stirrers, vortexers, shakers, and other motor-driven laboratory equipment up to 10 amps load capacity.

Four timing ranges may be selected from the front panel. At the completion of the timing cycle, a solid-state alarm will sound for 5 seconds. The power to the load receptacle is terminated at the end of the timing cycle. The timer will then reset to the preset starting time. The timing cycle may be interrupted by pushing the start/stop button. Timing will resume from the stopping point when timing cycle is restarted.

Specifications

Electrical: Lighted on/off switch, circuit breaker protection, 3-wire grounded receptacle, and 3-wire line cord with molded plug.

Timing Ranges:

- 000.1 - 999.9 seconds
- 00:01 - 59:59 minutes : seconds
- 0001 - 9999 seconds
- 00:01 - 23:59 hours : minutes

Display: 4-digit, 1/2" LED.

Momentary Buttons: Two for time setting; one for start/stop.

Audible Indicator: Solid state alarm sounds



for 5 seconds at the end of the timing cycle.

Lab Bench Case: Low-profile cabinet, 8"w x 6"d x 3-3/8"h.

Finish: Foxtip gray and charcoal.

Catalog Number	Electrical Rating	Product Weight (lbs)
104A PT612	10A @ 120V, 1,200W	3.0
104A PT624	10A @ 240V, 2,400W	3.0



Controls

LOW PROFILE CONTROLS

The low profile temperature controls feature a 1/32 DIN format with 1, 2 or 3 load receptacles. Control uses one thermocouple to operate all load receptacles simultaneously. Easy set-up and simple input commands make this control very “user friendly.” These controls are single-loop, auto-tuning temperature controllers that automatically set PID control parameters for optimum system performance. For use with heating mantles, tapes, ovens, water baths or other processes requiring accurate control.

Specifications

Control Dimensions:

One load receptacle control
6”w x 2-1/4”h x 8”

Two load receptacle control
6”w x 2-1/4”h x 9-1/2”

Three load receptacle control

6”w x 2-1/4”h x 11”

Electrical: Lighted on/off power switch with auxiliary LED indication, fuse protection, 3-wire load receptacle, and 3-wire line cord with molded plug.

Control Type: PID parameters with Auto-Tune.

Accuracy: 0.1% of span

Display: Dual, 4-digit LED

Set Point: Up/down keys. °F or °C display, user selectable.

Finish: Black



Catalog Number	Electrical Rating	Range	Load Receptacles	Thermocouple Type	Product Weight (lbs)
104A PLSM112	15@120V, 1800W	0-750°C	1	Type J	2.5
104A PLSM112K	15@120V, 1800W	-200-1250°C	1	Type K	2.5
104A PLSM112T	15@120V, 1800W	-200-350°C	1	Type T	2.5
104A PLSM212	15@120V, 1800W	0-750°C	2	Type J	3.0
104A PLSM212K	15@120V, 1800W	-200-1250°C	2	Type K	3.0
104A PLSM212T	15@120V, 1800W	-200-750°C	2	Type T	3.0
104A PLSM312	15@120V, 1800W	0-750°C	3	Type J	3.5
104A PLSM312K	15@120V, 1800W	-200-1250°C	3	Type K	3.5
104A PLSM312T	15@120V, 1800W	-200-350°C	3	Type T	3.5

Catalog Number	Electrical Rating	Range	Load Receptacles	Thermocouple Type	Product Weight (lbs)
104A PLSM124	10@240V, 2400W	0-750°C	1	Type J	2.5
104A PLSM124K	10@240V, 2400W	-200-1250°C	1	Type K	2.5
104A PLSM124T	10@240V, 2400W	-200-350°C	1	Type T	2.5
104A PLSM224	10@240V, 2400W	0-750°C	2	Type J	3.0
104A PLSM224K	10@240V, 2400W	-200-1250°C	2	Type K	3.0
104A PLSM224T	10@240V, 2400W	-200-750°C	2	Type T	3.0

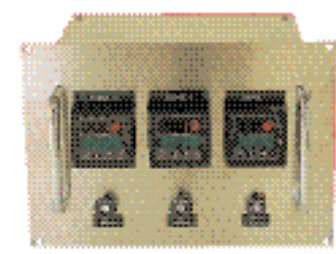
Controls

CUSTOM CONTROLS

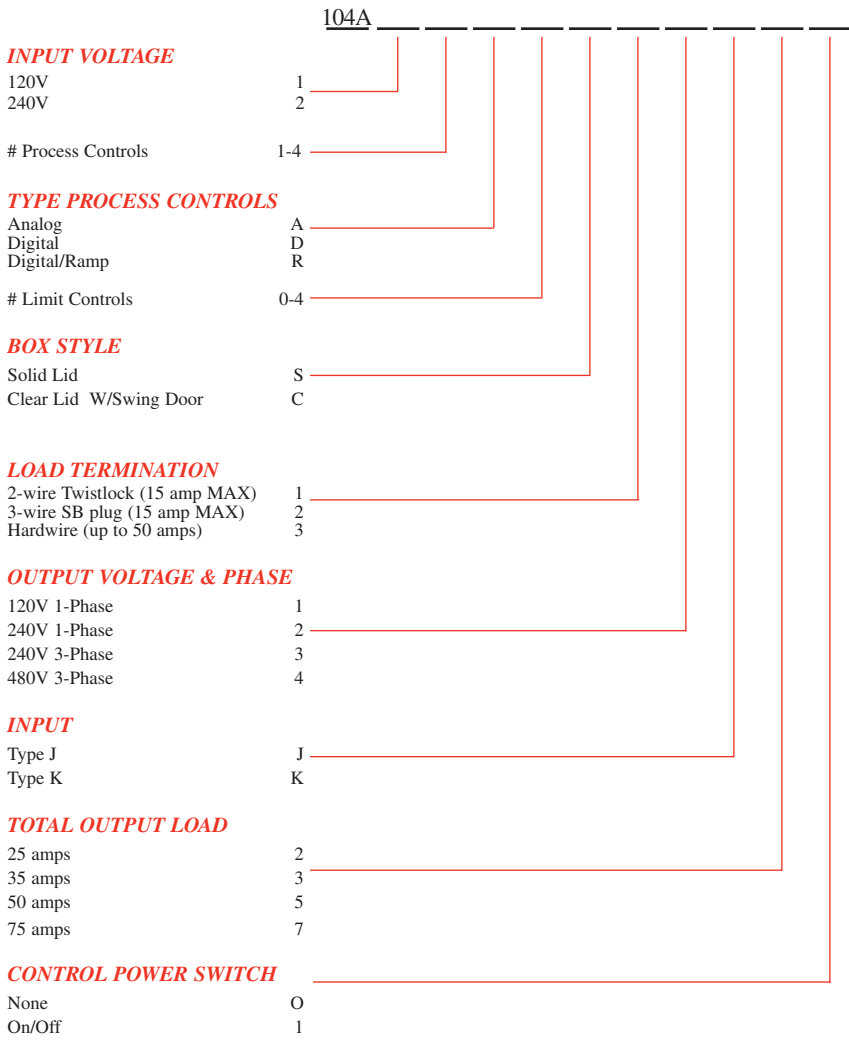
Glas-Col's integrated systems provide maximum performance. All of our custom heating jackets can be created to work with any of our digital control packages. Each control package is designed to provide the utmost control, efficiency, and consistent heating possible.

In fact, our control packages have been successfully implemented in a variety of situations. We offer:

- custom packages to fit your application.
- up to 75 amp capacity.
- 120/240V single phase, 240/480V 3-phase.
- automatic limiting controls.
- quick turnaround.
- digital temperature controls.
- easy installation and various mounting options.



Industrial Control Selection Chart



The number of Process and Limit controls dictates the size of box required and follows this format:

# Process Controls	# Limit Controls	Box Size Inches
1	1	10 X 8 X 6
2	2	12 X 10 X 6
3	3	18 X 16 X 10
4	4	18 X 16 X 10

For more than four Process or Limit controls, consult the factory.



Controls - Thermometers

DIGITAL THERMOMETER

This microprocessor-based, battery-operated thermometer monitors temperatures of furnaces, reactors, baths, appliances, and heating mantles. It can conveniently be hand-held or placed on a bench with the built-in, flip-down stand. The 3-3/4 digit, 1/2"-high LCD display is easy to read, even in direct sunlight. The sealed silicone rubber keypad allows simple, reliable operation.

Four buttons control On/Off, C/F scale, Hold, and CAL for single point field calibration. Input is ANSI standard mini-connector, voltage protected.

Thermocouples may be interchanged in seconds. Case is ABS/polycarbonate.

Specifications

Accuracy: $\pm 0.2\%$ of reading $\pm 0.5^\circ\text{C}$ above 99° ($\pm 1^\circ\text{C}$ below 99°).

Batteries: Two AA batteries (included).

Thermocouple:
Type J Cat. No.
TC105
(see page 31)
included.

Case Size: 3.3"w x
6.2"h x 1.2"d.

Ratings: UL & CUL rated intrinsically safe, certified safe for Class 1, Division 1; Groups A, B, C, and D classified hazardous location.

CE units available contact Glas-Col.



Catalog Number	Range	Thermocouple Type	Product Weight (lbs)
104A PR1000	-190 to + 1000° C (-310 to + 1832° F)	J	2.0

DIGITAL LOGGING THERMOMETER

Glas-Col's newest portable digital thermometer logs up to 1,000 real-time readings and can send them to a printer or computer by infrared output. Accepts up to two thermocouple inputs and provides for two-point field calibration for offset and slope. Allows selection of log interval from one second to one hour and of resolution and input filtering. LCD display can show minimum, maximum, and differential readings simultaneously. Provides field calibration anti-tampering lockout. Has easy-to-use

12-button keypad of sealed silicone rubber.

Specifications

Display: Three 4-digits: 0.4"H and 0.2"H.

Accuracy:

Types J, K, T, E, and N: $\pm 0.4^\circ\text{C}$ ($\pm 0.7^\circ\text{F}$) above -150°C (-238°F), $\pm 1^\circ\text{C}$ ($\pm 2^\circ\text{F}$) below -150°C (-238°F), $\pm 0.1\%$ of reading.

Types R, S, and B: $\pm 1^\circ\text{C}$ ($\pm 2^\circ\text{F}$), $\pm 0.1\%$ of reading.

Resolution: Less than or equal to

Catalog Number	Range	Thermocouple Type	Product Weight (lbs)
104A PR2000	-200 to 1000° C (-328 to 1832° F)	J	2.0
	-250 to 1372° C (-418 to 2501° F)	K	
	-250 to 400° C (-418 to 752° F)	T	
	-250 to 1000° C (-418 to 1832° F)	E	
	0 to 1768° C (32 to 3214° F)	R	
	0 to 1768° C (32 to 3214° F)	S	
	-250 to 1300° C (-418 to 2372° F)	N	
	200 to 1800° C (392 to 3272° F)	B	

Thermocouple must be ordered separately; see chart on page 31.



999.9':0.1'. Greater than 999.9':1'.

Battery: Two AA batteries (included).

Case Size: 3.3"w x 6.2"h x 1.2"d.

Ratings: UL & CUL rated intrinsically safe, certified safe for Class 1, Division 1; Groups A, B, C, and D classified hazardous location.

CE units available contact Glas-Col.

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Homogenizers

Homogenizers

Variable Speed Motor Drives

Pestles And Tubes

Straight Glass Pestles/Tubes

Straight Teflon® Pestles/Tubes

Straight Glass-Reinforced Pestles

Tapered Glass Pestles/Tubes

Tapered Teflon® Pestles/Tubes

Tapered Glass-Reinforced Pestles

Accessories

Chucks

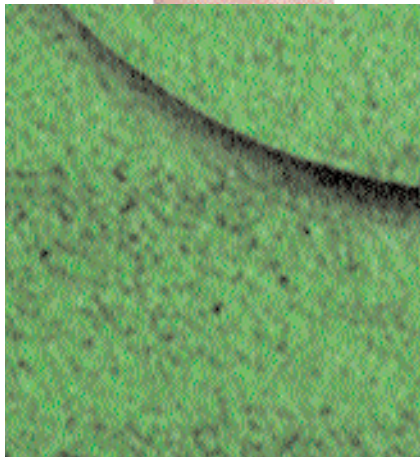
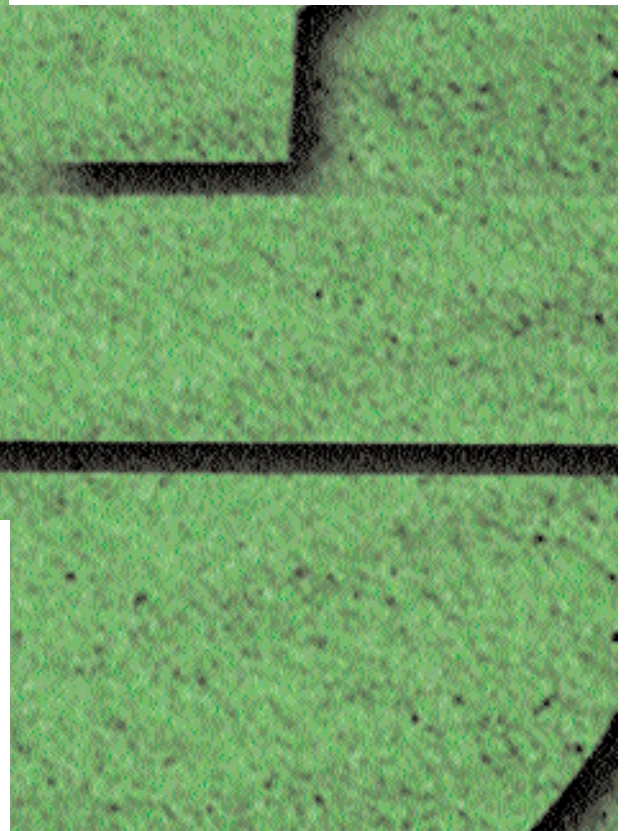
Flexible Drive

Motor Stand



Nail Homogenizer

Pneumatic Egg Punch



Homogenizers - Motor Drives

Homogenizers

- Variable speed motor drives to make the process faster, safer, and more thorough
- Straight homogenizers for softer tissue
- Tapered homogenizers for tougher tissue
- Teflon® resin pestles for grinding softer material with less heat generation and contamination
- Glass reinforced Teflon® pestles for moderately tough tissue maintains features of Teflon®
- Ground-glass pestles for tougher sample tissue
- Manufactured for precise fit to insure complete tissue disruption

HOMOGENIZERS



VARIABLE SPEED MOTOR DRIVES

Glas-Col's variable-speed homogenizer drives feature:

- totally enclosed motors.

For high-speed operations, the direct-drive shaft is recommended. The geared shaft, on the other hand, generates high torque and lower speeds.

The homogenizer drive's electronic motor controller delivers versatile and reliable performance and maintains speed. This controller also provides:

- smooth rotation and repeatability, reduced motor temperature, and reduced noise thanks to filtered circuitry.
- a switch for reversing pestle direction during homogenizing or allowing either motor shaft to rotate in the proper direction for use with the quick change chuck.

- cord connection to the motor so control

can be placed away from corrosive hood environments for ease of access.

Furnished with a 3-jaw keyless chuck and 90-degree clamp.

Optional Accessories

Flex-grip chucks for glass pestles.

Quick-change chucks for Teflon® pestles.

Flexible drive for safer homogenizing.

Lab stand.

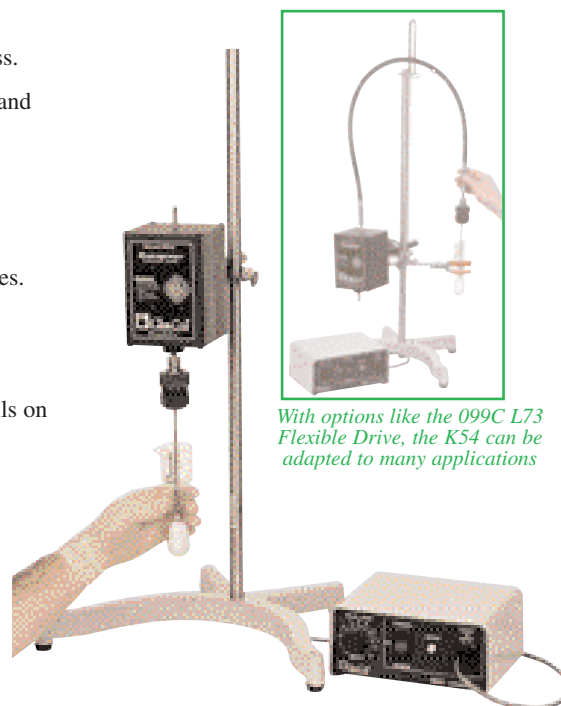
See the following pages for more details on accessories.

Specifications

Lab bench case size: 8"w x 6"d x 3.38"h

Motor size: 4.38"w x 4.38"d x 5.50"h

Finish: Foxtip gray/charcoal



With options like the 099C L73 Flexible Drive, the K54 can be adapted to many applications

The high-quality motors and controllers described on this page also make exceptional laboratory stirrers when used with paddles, blades, and other stirring devices.

CE units available contact Glas-Col.

Catalog Number	Description	Input Voltage	RPM	Product Weight (lbs)
099C K54	Motor & Speed controller	120V	333/4,000	17.0
099C K5424	Motor & Speed controller	240V	333/4,000	17.0
099C K64	Motor & Speed controller	120V	11,500	14.0
099C K6424	Motor & Speed controller	240V	11,500	14.0
099D A130150	Heavy-duty lab stand with 3/4" (19 mm) diameter nickel-plated mast. Cast iron base. Accepts containers up to 16" (406 mm) diameter. Shaft L=28" or 711mm.			12.0

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Homogenizers - *Pestles and Tubes*

STRAIGHT, POTTER-ELVEHJEM TYPE HOMOGENIZERS Specifications

Teflon® Pestles

- 1-5/8" (41.3 mm) long Teflon® tip on a 7" (178 mm) long x 3/16" (4.76 mm) diameter stainless steel shaft.
- Shafts fit adjustable chucks on any listed motor drives.
- All shafts specially notched to fit the L11 quick-change chuck.

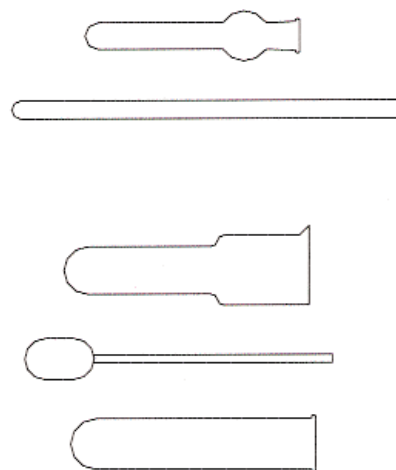
Glass Pestles

- Medium ground-glass surface tip on 10 mm diameter glass shaft.
- S24 is ground its entire length and can be reversed for double life.

- All sizes may be used with either the L14 or L15 flex-grip motor chuck.

Tubes

- Precision-bore borosilicate glass.
- About 5-3/4" (146 mm) long, except the S38, which is 4" (102 mm) long for centrifuge use.
- Tubes for glass pestles have medium-ground surface on inside walls of grinding chamber.
- Tube diameter listed is the approximate outside diameter of the grinding section.



Straight Pestles & Tubes

Straight Glass Pestles & Tubes

Capacity	Catalog Number Each Item	Description	Outside Diameter (mm)	Outside Diameter (in)	Clearance (mm)	Clearance (in)	Product Weight (lbs)
8 ml	099C S24	Glass pestle	9.84	.3875			
	099C S34	Tube for S24 pestle	10.02	.3945	.18 - .23	.007-.009	.2
15 ml	099C S26	Glass pestle	15.14	.5960			
	099C S36	Tube for S26 pestle	15.32	.6030	.18 - .23	.007-.009	.2
40 ml	099C S29	Glass pestle	24.54	.9660			
	099C S39	Tube for S29 pestle	24.71	.9730	.18 - .23	.007-.009	.2

Note on charts: "Capacity" is the maximum usable liquid capacity with the pestle moving in the tube. "Clearance" is the difference between the pestle outside diameter and the tube inside diameter.

Straight Teflon® Pestles & Straight Glass Tubes

Capacity	Catalog Number Each Item	Description	Outside Diameter (mm)	Outside Diameter (in)	Clearance (mm)	Clearance (in)	Product Weight (lbs)
2 ml	099C S20	Teflon® pestle	7.82	.3080			
	099C S30	Tube for S20 pestle	8.00	.3150	.18-.23	.007-.009	.4
10 ml	099C S21	Teflon® pestle	15.14	.5960			
	099C S31	Tube for S21 pestle	15.32	.6030	.18-.23	.007-.009	.4
15 ml	099C S21	Teflon® pestle	15.14	.5960			
	099C S35	Tube with overflow chamber for S21 pestle	15.32	.6030	.18-.23	.007-.009	.4
5 ml	099C S21	Teflon® pestle	15.14	.5960			
	099C S38	Tube, short for centrifuge use for S21 pestle	15.32	.6030	.18-.23	.007-.009	.4
10 ml	099C S21G	Glass reinforced Teflon® pestle	15.14	.5960			
	099C S31	Tube for S21G pestle	15.32	.6030	.18-.23	.007-.009	.4
15 ml	099C S21G	Glass reinforced Teflon® pestle	15.14	.5960			
	099C S35	Tube with overflow chamber for S21G pestle	15.32	.6030	.18-.23	.007-.009	.4
5 ml	099C S21G	Glass reinforced Teflon® pestle	15.14	.5960			
	099C S38	Tube, short for centrifuge use for S21G pestle	15.32	.6030	.18-.23	.007-.009	.4
20 ml	099C S22	Teflon® pestle	18.69	.7360			
	099C S32	Tube for S22 pestle, extra-heavy wall	18.87	.7430	.18-.23	.007-.009	.4
30 ml	099C S23	Teflon® pestle	24.54	.9660			
	099C S33	Tube for S23 pestle	24.71	.9730	.18-.23	.007-.009	.4
40 ml	099C S23	Teflon® pestle	24.54	.9660			
	099C S37	Tube with overflow chamber for S23 pestle	24.71	.9730	.18-.23	.007-.009	.4
30 ml	099C S23G	Glass reinforced Teflon® pestle	24.54	.9660			
	099C S39	Tube for S23G pestle	24.71	.9730	.18-.23	.007-.009	.4
40 ml	099C S23G	Glass reinforced Teflon® pestle	24.54	.9660			
	099C S37	Tube with overflow chamber for S23G pestle	24.71	.9730	.18-.23	.007-.009	.4



Homogenizers - *Pestles and Tubes*

TAPERED HOMOGENIZERS

Specifications

Teflon® Pestles

- Precision-machined Teflon® tip.
- Both conical and cylindrical grinding surfaces.
- Mounted on 7" (178 mm) long x 1/4" (6.35 mm) diameter stainless steel shaft, except S61 with 7" (178 mm) x 3/16" (4.76 mm) diameter shaft that fits quick-change chuck.
- Fit adjustable chuck on either homogenizer drive.
- Pestle diameter given is the outside diameter of cylindrical portion.

Glass Pestles

- Ground-glass tip on a 10-mm diameter glass rod (diameter of S62 rod is 6 mm).
- Both conical and cylindrical grinding areas with medium-ground surface.
- All sizes may be used with either the L14 or L15 motor chuck.

- Diameter listed is the outside diameter of the cylindrical grinding portion.

Tubes

- Precision-bore borosilicate glass.
- All tapered tubes have over flow chambers.
- Tubes for glass pestles have medium-ground surface on inside walls of homogenizing portion.
- Diameter listed is the approximate outside diameter of cylindrical homogenizing portion.



Tapered Pestle & Tube

Note on charts: "Capacity" is the maximum usable liquid capacity with the pestle moving in the tube. "Clearance" is the difference between the pestle outside diameter and the tube inside diameter.

Tapered Teflon® Pestles & Tapered Glass Tubes

Capacity	Catalog Number Each Item	Description	Outside Diameter (mm)	Outside Diameter (in)	Clearance (mm)	Clearance (in)	Product Weight (lbs)
2 ml	099C S61	Teflon® pestle	7.82	.3080			
	099C S71	Tube for S61 pestle	8.00	.3150	.18-.23	.007-.009	.4
15 ml	099C S64	Teflon® pestle	15.14	.5960			
	099C S74	Tube for S64 pestle	15.31	.6030	.18-.23	.007-.009	.4
40 ml	099C S68	Teflon® pestle	24.54	.9660			
	099C S78	Tube for S68 pestle	24.71	.9730	.18-.23	.007-.009	.4

Tapered Glass Pestles & Tapered Glass Tubes

Capacity	Catalog Number Each Item	Description	Outside Diameter (mm)	Outside Diameter (in)	Clearance (mm)	Clearance (in)	Product Weight (lbs)
2 ml	099C S62	Glass pestle	7.82	.3080			
	099C S73	Tube for S62 pestle	8.00	.3150	.18-.23	.007-.009	.4
15 ml	099C S65	Glass pestle	15.31	.6030			
	099C S75	Tube for S65 pestle	19.00	.8000	.18-.23	.007-.009	.4
40 ml	099C S69	Glass pestle	24.54	.9660			
	099C S79	Tube for S69 pestle	30.00	1.2000	.18-.23	.007-.009	.4

Call us at 1-800-GLASCOL(452-7265) for the name of your nearest Glas-Col distributor.

Be sure to visit us on the Internet at:

www.glascol.com



Homogenizers - Accessories

CHUCKS

Quick-Change Chuck

- For 3/16" diameter notched pestle rods.
- Allows one-hand introduction and locking of notched pestle rod.
- Permits rapid and convenient homogenizing procedure. Particularly useful where a separate pestle must be

used with each tube to prevent cross contamination.

Flex-Grip Chuck

- Flexible, self aligning, slip-clutch.
- For glass pestle and stirrer rods.



L14 and L15 fit Glas-Col motors or any motor with a 5/16" shaft. L11 chuck requires c.c.w. motor rotation.

Catalog Number	Description	Product Weight (lbs)
099C L11	Quick-change chuck for 3/16" dia. notched pestle rod	.5
099C L14	Flexgrip chuck for 10mm glass pestle	.2
099C L15	Flexgrip chuck for 6mm glass pestle	.2

FLEXIBLE DRIVE

The flexible homogenizer drive allows up-and-down motion of rotating pestle in a stationary tube that can be mounted in ice or controlled-temperature bath.

- Accepts the adjustable chucks furnished with the motor drives as well as the L11 quick-change chuck and the L14 and L15 flex-grip chucks.
- Eliminates hand-holding of tubes and pestles.

- Furnished with clamp for holding homogenizer tube and shaft restrainer for top of support stand.
- Fits Glas-Col motor drives or any 5/16"-diameter motor shaft.
- For use with 099C L70 support stand.
- 36" long.
- Convenient for processing several samples: pestle may be rinsed or separate pestle used to avoid sample contamination.



Catalog Number	Description	Product Weight (lbs)
099C L73	Flexible homogenizer drive for 5/16" dia. motor shafts	2.3

LAB STANDS

Catalog Number	Description	Shaft Length (in)	Shaft Length (mm)	Product Weight (lbs)
099C L70	Horseshoe-base laboratory stand with 3/4" (19 mm) diameter aluminum mast. Accepts containers up to 9" (229 mm) diameter.	24	610	10.0
099D A130150	Heavy-duty lab stand with 3/4" (19 mm) diameter stainless-steel mast. Cast iron base. Accepts containers up to 16" (406 mm) diameter.	28	711	12.0



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Homogenizers

NAIL HOMOGENIZER

The Nail Homogenizer is a hand-held attrition mill that easily pulverizes small nail samples for more reliable dermatological testing. When treated with 10% KOH, the micronized samples spread out rapidly and evenly beneath a cover slip, making study easier and more accurate. The homogeneous sample derived from using the Nail Homogenizer increases the chances of discovering fungal hyphae in a specimen. Additionally, using pulverized samples increases the possibility of culture isolation by permitting greater numbers of potentially viable fungal cells to come into direct contact with the isolation medium.

Pulverizing in the Nail Homogenizer is a simple task, and laboratory safety is improved since no sharp-edged tools are required. The technician places a specimen

in the mill cavity, presses the two mill halves together, and rotates the halves in opposite directions several times. This process is successful with other tough, resilient materials in addition to nail clippings.

Cutting head inserts are replaceable, and the entire unit is autoclavable in preparation for the next sample.

Specifications

Construction: 100% stainless steel.

Work Surface Of Cutting Head Diameter: .625".

Clearance Between Cutting Heads: Adjustable (set at .004").

Overall Diameter: 2".

Overall Height: 1.5".



Catalog Number	Description	Product Weight (lbs)
099C E2000	Complete mill	1.5

PNEUMATIC EGG PUNCH

Glas-Col's hand-held pneumatic egg punch produces a clean, circular fracture in embryonated chicken eggs. The lab technician holds the egg punch in one hand and centers the bottom of the punch over the end of the egg. As the trigger button is pushed and released, the knife makes a 1" diameter cut, and the circular cap of the egg is ready to be lifted off. The lower air sac membrane is exposed, intact and readily accessible. Because the unit is hand-held, it can be used at any convenient height. Each unit includes brass fittings and six feet of tubing to connect to a compressed air source.

The egg punch may be sterilized by suitable disinfectants or by heating in dry air. It should not be totally immersed in liquids.

Specifications

Construction: All stainless steel with black foam grip.

Knife Diameter: 1".

Overall Diameter: 1-1/8".

PSI Range: 50-100.



Catalog Number	Description	Product Weight (lbs)
099C E90	Egg punch	1.5

Glas-Col is proud to be **ISO 9001** CERTIFIED



Rotators

Rugged Rotator

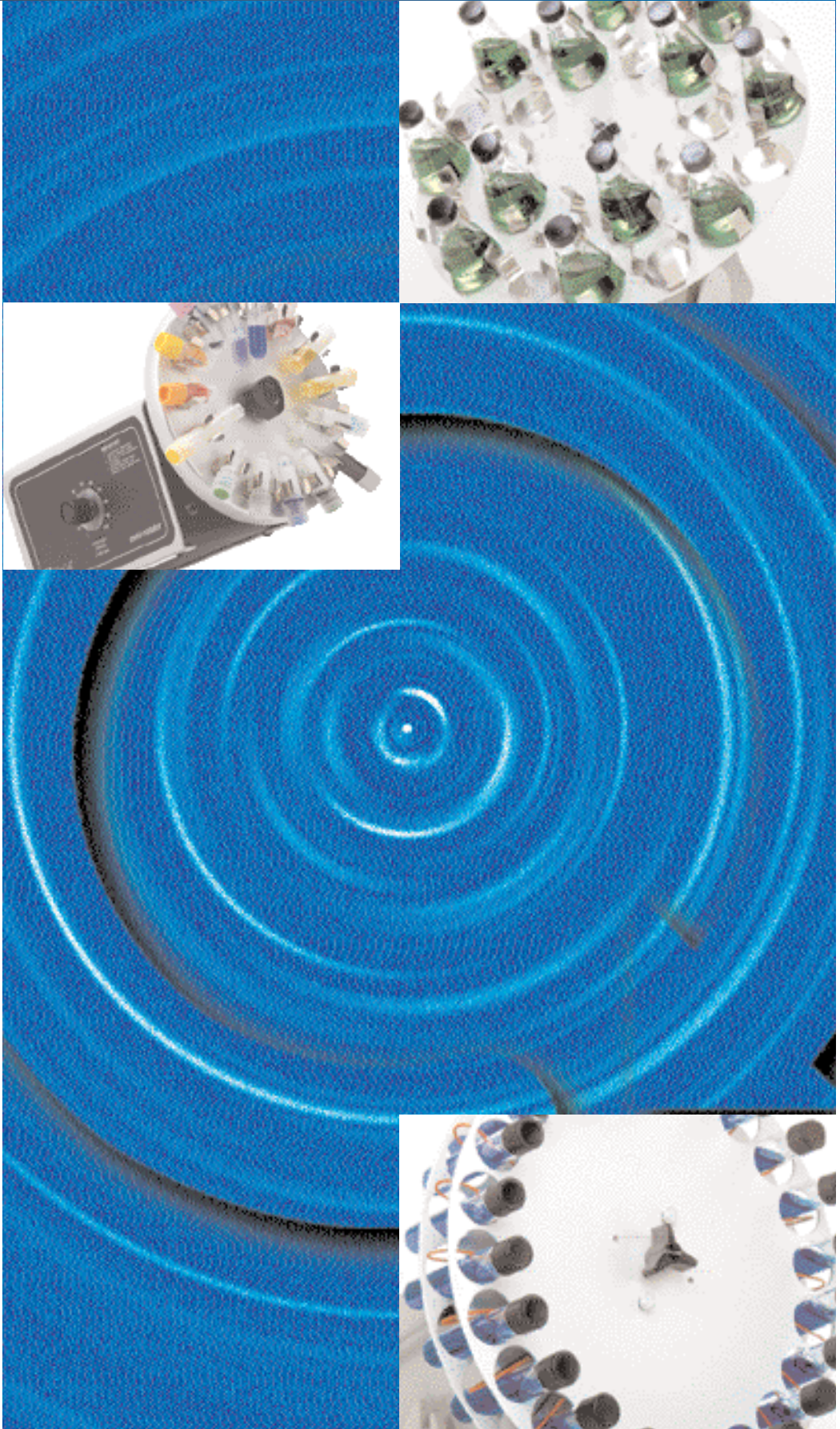
- Test tube rack head
- Hexagonal clamping head
- Friction-drive test tube head
- Tissue culture head
- Twin-disk test tube head
- Multi-purpose head
- Erlenmeyer flask head

Small Tube Rotator

Mini-Rotator

- Tissue culture head

Dry Powder Rotator



Rotators

Rotators

- Variable speed motor drives to make the process faster, safer, and more thorough
- DC filtered motors for durability and smooth operation
- Interchangeable heads for most rotating processes
- Replaceable head design to allow for customizing to meet special applications
- Motors and controls designed for use in fume hoods and cabinets

RUGGED ROTATOR

Variable speed adjusts mixing action from a gentle slosh to rapid agitation. Driven by a continuous-duty motor, it can stand up to demanding schedules and long hours of operation. Some of the procedures it can be used for are embedding electron microscopy, tissue-culture specimens, blood cell suspensions, washing of precipitates, disintegrating tablets, extracting, dissolving slow-reacting samples, homogenizing blood solids with plasma, and rotating closed containers for dialysis bags. A unique clamping device

utilizes leverage to assure selected motor position and permits positioning of the motor at any point within a 110° arc. Containers remain visible during rotating. Sturdy, stable, well-balanced, compact base handles substantial loads. Cord-attached speed control module allows convenient placement to avoid danger when starting or stopping rotation. Furnished complete with the friction-drive test tube head.

CE units available contact Glas-Col



Specifications

Size: 10-1/8" w x 10-11/16" d x 9-13/16" h.

Rating: 1.5A, 50/60Hz.

Electrical: On/Off switch separate from speed control, fuse-protected, 6-ft., 3-wire cord.

Finish: Foxtip gray and charcoal.

Load Weight Capacity: 5 lbs.

Catalog Number	Description	Input Voltage	RPM	Product Weight (lbs)
099A RD4512	Motor drive & base	120V	2-83	17.0
099A RD4524	Motor drive & base	240V	2-83	17.0
099A RD5512	Motor drive & base	120V	.17-8.3	17.0
099A RD5524	Motor drive & base	240V	.17-8.3	17.0
099A RR1	Riser for rotator			4.5

Optional riser lifts unit so larger glassware will clear bench.

TEST TUBE RACK HEAD

Holds a complete rack of stoppered test tubes for rotating end-over-end. Does double duty as a holder for bottles, Erlenmeyer flasks, or other stoppered containers.

Features

Retaining plate is polyfoam-lined, making it easy on glassware, and is held by two knurled nuts. Head will hold rack 12" x 5" (30.5 X 12.7 cm), with tubes 75-200 mm long. Quick adjustment permits load to be balanced on motor-drive axis.

Catalog Number	Description	Product Weight (lbs)
099A RD50	Test tube rack head	2.5



Requires RD5512 or RD5524

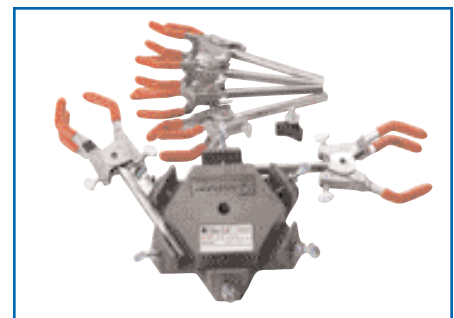
HEXAGONAL CLAMPING HEAD

Excellent for rotating an assortment of glassware up to 3-1/2" (89 mm) in diameter. Equipped with six large 3-finger clamps that hold securely without scratching. Head easily attaches directly onto any Rugged Rotator.

Features

Hexagonal casting mounts quickly on rotator. Clamps attach to casting individually with lockable thumb screws. Clamp position is adjustable to permit axial or end-over-end rotation of container.

Catalog Number	Description	Product Weight (lbs)
099A RD20	Hexagonal clamping head	5.5



ROTATORS



Rotators - Heads

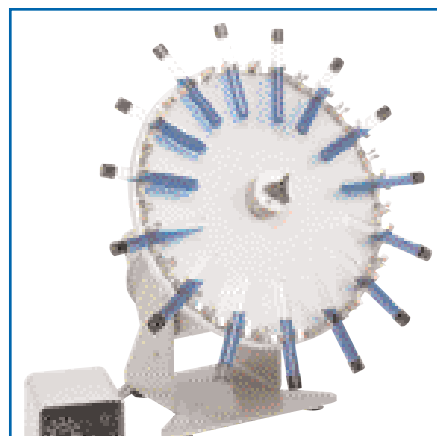
FRICITION-DRIVE TEST TUBE HEAD

This aluminum disk is equipped with spring clips to hold test tubes for such operations as blood agitations, isotopic competitive protein binding assays, and similar procedures. A clutch permits stopping the head to insert and remove tubes without turning off the motor. The spring clips permit the tubes to be inserted radially from the side of the clip

rather than the top. The clips are adjustable.

Features

Size: 14" (36cm), aluminum disk. Furnished with 31 spring clips to accommodate 10 mm- to 18 mm-diameter tubes and 16 spring clips to accommodate 20 mm- to 30 mm-diameter tubes.



Catalog Number	Description	Product Weight (lbs)
099A RD65	Friction-drive test tube head	2.7

TISSUE CULTURE TUBE HEAD

Designed to hold as many as 108 mini tissue-culture tubes, each up to 16 mm in diameter, this head facilitates simultaneous rotating. Quickly attaches to any Rugged Rotator and, when mounted, is still compact enough to fit into a table-top incubator.

Features

Size: 13"w x 14"d x 13"h (33 x 35.6 x 33 cm). Consists of a drum, 12" (30.5 cm) in diameter with 108 spaces for tubes. Angle can be adjusted so that tube contents won't touch while rotating.



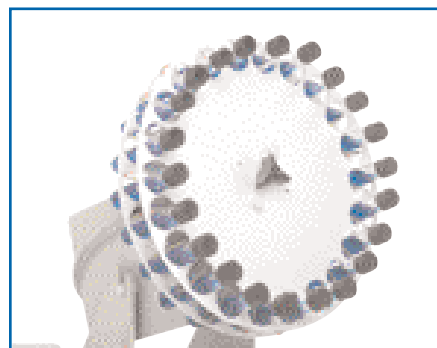
Catalog Number	Description	Product Weight (lbs)
099A TC108	Tissue culture tube head	2.7

TWIN-DISK TEST TUBE HEAD

Frequently used for embedding tissue for electron microscopy, the no-slip design of spaced disks with springs conveniently holds a combination of test, bottles, syringes, etc. Tubes are easily inserted or removed by deflecting leaf spring between disks. Clamps will not scratch glassware.

Features

Accepts 22 pieces of glassware each up to 25mm in diameter or 44 pieces up to 16mm. Head may be adjusted so that tube contents won't touch cap. Adjustable disk orientation provides gentle mixing (tube axis parallel to rotator shaft) or more active motion (a three-dimensional figure-8 motion).



Catalog Number	Description	Product Weight (lbs)
099A RD10	Twin-disk test tube head	5.0

ERLENMEYER FLASK HEAD

Conveniently rotates a large number of Erlenmeyer flasks at once. Attaches with ease to any Rugged Rotator base.

with 52 holes to accept stainless-steel flask clamps (order separately). Clamp sizes may be intermixed on disk.

Features

Simple, long-wearing design consists of aluminum disk, 18" (45.7 cm) in diameter,

Catalog Number	Description	Disk Capacity	Product Weight (lbs)
099A RD3018	Erlenmeyer flask head		5.2
R96 227	Flask clamp, 10 ml	40	.1
R96 123	Flask clamp, 25 ml	40	.1
R96 124	Flask clamp, 50 ml	40	.1
R96 122	Flask clamp, 125 ml	26	.1



Requires RD5512 or RD5524

Clamps are sold one to a package

Rotators - Small Tube/Mini/Dry Powder

SMALL TUBE ROTATOR

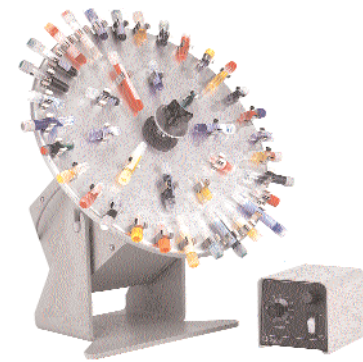
Modeled after our Rugged Rotator, this unit offers a multi tube head suitable for applications requiring the use of small samples with reliable results. Up to 40, 5-10mm micro tubes can be attached and mixed from a gentle slosh to a rapid agitation. Equipped with tilting motor brackets, a variety of mixing actions can be obtained.

The cord attached speed control module

allows convenient placement to avoid danger when starting or stopping rotation.

Features

- 5 lb. maximum weight capacity
- DC filtered motor for smooth operation
- Variable speed control
- Consult factory for custom applications



Catalog Number	Description	Input Voltage	RPM	Product Weight (lbs)
099A CR4012	Small Tube Rotator	120V	2-83	16
099A CR4024	Small Tube Rotator	240V	2-83	16

MINI-ROTATOR

The revolutionary mini-rotator's smaller size makes it ideal for use on a lab bench; in small incubators, refrigerators, biological cabinets, and fume hoods; or in any other area where space is at a premium. It handles both large and small applications for micro centrifuge tubes and micro test tubes and is a cost-effective, compact addition to any lab.

For optimum mixing the chemical-resistant cabinet is fixed at a 20° angle. The mixing action can be adjusted from a gentle slosh to a rapid agitation. Furnished complete with an aluminum disk head and spring clips for both 5-10mm and 12-14mm tubes.

Features

- Heavy duty, permanent magnet motor
- Variable speed control
- Holds 15 tubes and does not need to be balanced
- Heads are readily interchangeable

Specifications

Speed: Variable speed control.

Size: 7" w X 10" d X 11" h.

Rating: 1.5A, 50/60 Hz.

Electrical: Speed control with on/off switch.

Specifications

Speed: Variable speed control

Dimensions: 10" w x 10.5" d x 10" h

Rating: 180VA, 50/60 Hz

Electrical: On/Off switch separate from speed control, fuse-protected, 6', 3-wire cord

Weight: 16lbs.

Finish: Foxtip gray and charcoal



Catalog Number	Description	Input Voltage	RPM	Product Weight (lbs)
099A MR1512	Variable-speed motor drive, base, and aluminum disk head w/spring clamps	120V	2-80	6.0
099A MR1524	Variable-speed motor drive, base, and aluminum disk head w/spring clamps	240V	2-80	6.0
099A TC132	Tissue culture head w/spring clamps			1.2

DRY POWDER ROTATOR

Glas-Col's new Dry Powder Rotator is ideal for hard-to-mix powders. By setting the drive bar at a 20° angle, the motion of this rotator closely reproduces the mixing action achieved when mixing by hand. Not only is the powder tossed from end-to-end, it is rotated around the inside of the vessel as well. This gives a more thorough mixing action than ordinary reciprocal shakers.

Other features include:

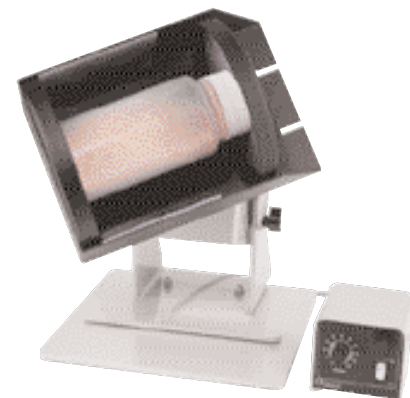
- adjustable rack fits bottles from 7" to 10" in height and up to 7" in diameter.

- 10 lb. maximum weight capacity
- DC filtered motor for smooth operation
- silicone lined rack reduces chemical deterioration
- variable speed control
- tilting motor bracket for variations of mixing action

Specifications

Rating: 1.5A, 50/60Hz

Electrical: On/off switch separate from speed control, fuse protected, 6-ft., 3-wire cord



Dimensions: 12" w x 12" d x 17" h

Finish: Foxtip gray and charcoal, powder coated rack

Load Weight Capacity: 10 lbs.

CE units available contact Glas-Col

Catalog Number	Description	Input Voltage	RPM	Product Weight (lbs)
099A RD9912	Motor drive & base	120V	2-80	36.5
099A RD9924	Motor drive & base	240V	2-80	36.5





Shakers

Bench-Top Shaker

- Separatory Funnel Holder
- Erlenmeyer Flask Holder
- Universal Mounting Platform
- Large-Finger Clamp
- Test Tube Rack Holder
- Centrifuge Tube Holder
- Fat Extraction Tube Holder

Mid-Range 3D Shaker

- Funnel and Flask Holders

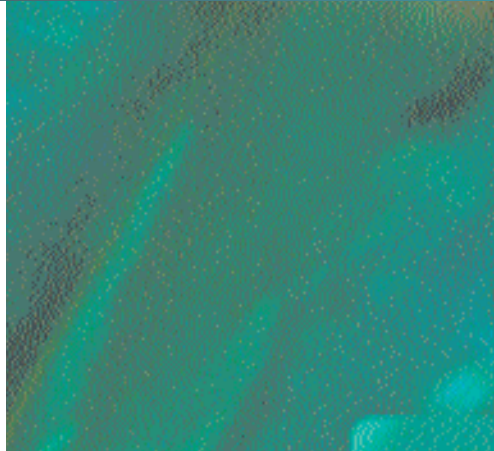
3D Floor Shaker

- Funnel and Flask Holders

WS180° Shaker

Accessories

- Snorkel Stopper
- Pressure Release Valve
- VentSep
- Separatory funnel



Shakers - Bench-Top Shaker

Shakers

- Variable speeds for more thorough shaking
- Designed to accept a variety of holders to meet a wider range of shaking needs
- DC filtered motors to handle heavier loads and provide greater durability
- Motions designed to simulate shaking by hand
- Designed to reduce the handling of glassware for greater safety and cost savings

BENCH-TOP SHAKER

Reciprocating shaking and mixing with bench-top convenience is now available. Glas-Col's Bench-Top Shaker is an adaptable, user-friendly shaker that is capable of many hours of continuous shaking and mixing. This shaker:

- features a variable-speed motor that provides gentle, low-speed shaking to vigorous, high-speed shaking.
- requires no load balancing.
- features a built-in shaking head with easy-to-adjust knobs for quick loading.
- will accept a variety of glassware holders for mixing and shaking.
- may be placed inside a fume hood for added safety.

Specifications

Load Weight Capacity: Up to 20 lbs. (9.1kg).

Electrical: 6-ft, 3-wire grounded cord.

Electrical Rating: 1.0A, 50/60 Hz.

Size: 13"w x 10"d x 11-3/4"h.

Finish: Foxtip gray and charcoal.



CE units available contact Glas-Col..



Catalog Number	Description	Input Voltage	RPM	Product Weight (lbs)
099A S60012	Shaker base	120V	2-125	54.0
099A S60024	Shaker base	240V	2-125	54.0

SEPARATORY FUNNEL HOLDER (up to 500 ml)

The funnel holder will accommodate up to three funnels at once, depending on size, and can hold funnels as large as 500 ml. You can mount one or two of these holders on the shaker base.

Just load the funnels with the stopcock down, adjust to the desired shaking position, and turn on the shaker. The funnel is secured by an easily adjusted yoke, and the stopper is held in place by a built-in elastic band.

If you're mixing materials that create pressure while being shaken, the pressure can be relieved automatically with the Snorkel Stopper (see page 52), which is substituted for the regular stopper, and is held in place with the elastic band. It automatically relieves pressure over one pound (psi).



Catalog Number	Description	Product Weight (lbs)
099A FR435SS	One, two, or three 60-250 ml funnels	3.0
099A FR600SS	Two 125-500 ml funnels	4.0

Shakers - Holders

SEPARATORY FUNNEL HOLDER (1000 ml & larger)

The separatory funnel holder is designed to allow 1- or 2-liter separatory funnels to be held in the positions necessary for sample processing, but with minimum handling of fragile funnels. From the upright, or fill, position the funnel may be rotated to the 45°

or 60° position for shaking and then returned to the upright position for the addition of materials or extracting. The flask may remain in the holder during the entire cycle. This holder requires the use of the Universal Mounting Platform (099A BT6000).



Catalog Number	Description	Dimensions (in)	Product Weight (lbs)
099A BT2000S	2-liter separatory funnel holder (099A BT6000 required)	12.50"h x 9.50"w x 5.50"d	3.2
099A BT1000S	1-liter separatory funnel holder (099A BT6000 required)	11.25"h x 9.50"w x 5.50"d	3.2
R80 258	Up to 1 liter stopper retainer		0.5
R80 255	2 liter stopper retainer		0.5

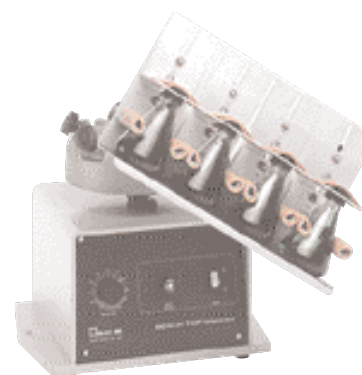
When using standard funnels with glass, plastic or teflon stoppers, our stopper retainer is required.

ERLENMEYER FLASK HOLDER

This flask holder lets you shake one to four Erlenmeyer flasks at a time. It will work with uncapped flasks (for gentle shaking), or you can close them with screw caps or tapered stoppers. An elastic band automatically holds the stoppers in place. Maximum of two flask holders can be shaken at once. A locking knob secures

holder in optimum positions for both loading flasks and for effective shaking. While mounted on shaker, the holder can be rotated 180°.

Each holder adjusts to accommodate three 500 ml flasks or four 125 or 250 ml flasks. A combination of flasks is possible, as well.



Catalog Number	Description	Dimensions (in)	Product Weight (lbs)
099A EF521	Erlenmeyer flask holder	8.00"h x 12.75"w x 4.50"d	5.3

FAT-EXTRACTION TUBE HOLDER

This tube holder lets you use the Bench-Top Shaker for Mojonnier fat extraction. Each holder accepts up to four flasks, 37 mm in diameter.

Maximum of two holders can be shaken at one time. The load max of up to five

pounds (2.27 kg) need not be balanced. Unstoppers flasks may be shaken vertically. For horizontal shaking, flasks should be stoppered and stoppers held with built-in restrainers.



Catalog Number	Description	Dimensions (in)	Product Weight (lbs)
099A MFG3	Fat-extraction tube holder	8.75"h x 13.00"w x 4.50"d	2.0

Shakers - Holders

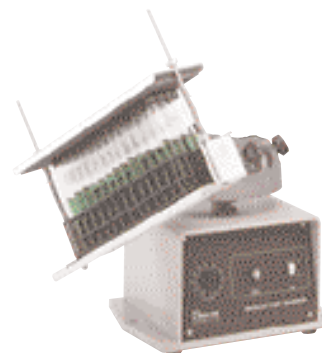
TEST TUBE RACK HOLDER

The test tube rack holder lets you shake one or two entire racks of test tubes at once. Does double duty as a holder for bottles, Erlenmeyer flask, or other stoppered containers.

Racks are held in place by a restraining

cover. This cover automatically releases and remains captive when retaining nuts are loosened for rack insertion or removal.

Existing racks up to 12" x 5" (30.5 x 12.7 cm) may be used with capped or stoppered tubes from 75 to 200 mm long.



Catalog Number	Description	Dimensions (in)	Product Weight (lbs)
099A TR700	Test tube rack holder	11.50"h x 13.25"w x 6.75"d	3.2

CENTRIFUGE TUBE HOLDER

The centrifuge tube holder allows shaking vertically to let gases escape, or horizontally with stoppers secured by a plate. Each holder accommodates up to eight tubes.

Maximum of three holders can be shaken at

one time. The total load may be up to five pounds (2.27 kg) and need not be balanced. If sizes other than those listed in the table are needed, call us with your requirements.



Catalog Number	Description	Dimensions (in)	Product Weight (lbs)
099A SR815	15 ml glass centrifuge tubes Test tubes up to 16 mm dia. 126-160 mm long (stoppered)	9.00"h x 6.50"w x 4.50"d	1.3
099A SR850	50 ml glass centrifuge tubes Test tubes up to 28 mm dia. 140-180 mm long (stoppered)	9.00"h x 6.50"w x 4.50"d	2.1

UNIVERSAL MOUNTING PLATFORM

The Universal Mounting Platform is required for mounting Series BT glassware holders. It also provides a horizontal surface for the easy attachment of a wide variety of vessels that need to be shaken.

The Universal Mounting Platform is set conveniently on top of the shaker head and

is held securely with three hand-tightened locking knobs. The Series BT holders also install quickly atop the platform through pre-located mounting holes. Two locking knobs secure each holder in place. The platform accepts two holders.



Catalog Number	Description	Product Weight (lbs)
099A BT6000	Universal mounting platform	4.0

LARGE-FINGER CLAMP

Large-finger clamps are available for use with the Bench-Top Shaker. They can hold various types of glassware up to 3-1/2"

(89 mm) in diameter. The clamps may also be adjusted to hold glassware at the most effective shaking angle. Sold individually.



Catalog Number	Description	Product Weight (lbs)
R96 344	Large-finger clamp, each	1.0



Shakers - 3D Shakers

MID-RANGE 3D SHAKER

The Mid-Range 3D Shaker gives you the same convenient, consistent 3D shaking on your bench top as you get with our 3D Floor Shaker.

- Mechanically shakes glassware for consistent, repeatable results.
- Fits in fume hood to protect personnel from fumes. (Minimum 30"d x 36"l x 36"h for 2-liter sep funnels; 24"d x 72"l x 36"h for sizes up to 1-liter)
- Handles total loads up to 40 lbs without needing to balance load.
- "Lazy Susan" design allows 360° rotating of platform for easy loading and unloading.
- Platform locks in place for added safety.
- Accommodates up to four 2-liter separatory funnels.
- Glas-Col's automatic venting separatory funnels are available for added safety.

Specifications

Motor: 1/4-hp continuous-duty motor.

Load Weight Capacity: Maximum of 40 lbs. (18.1 kg).

Electrical: Power switch, circuit breaker, and 6-ft., 3-wire cord. Digital speed and countdown interval timers.

Electrical Rating: 660 volt-amps.

Size: Shaker base dimensions-22"d x 17"w (55.9 x 43.2 cm). Height to platform 14" (35.6 cm). Octagonal platform-19" (48.3 cm) across corners.

Finish: Foxtip gray and charcoal.

RS232: Port can be used with LabNetix software.



CE units available contact Glas-Col.

Catalog Number	Description	Input Voltage	RPM	Product Weight (lbs)
*099A VS20012	Shaker base only	120V	10-150	165.0
*099A VS20024	Shaker base only	240V	10-150	165.0
099A VS21012	Shaker base w/four 1-liter separatory funnel holders	120V	10-150	165.0
099A VS21024	Shaker base w/four 1-liter separatory funnel holders	240V	10-150	165.0
099A VS22012	Shaker base w/four 2-liter separatory funnel holders	120V	10-150	165.0
099A VS22024	Shaker base w/four 2-liter separatory funnel holders	240V	10-150	165.0

**Note: Glassware holders not included. Order separately.*

FUNNEL OR FLASK HOLDER

Each separatory funnel holder will hold one funnel, and you can use up to four holders which mount to the platform without fasteners.

While the rear support of the funnel holder remains stationary, the front part holding the funnel can be released and rotated 360°. This permits the funnel to be filled, inverted

for shaking, and then reinverted for addition and/or extraction, all while the flask remains in the holder. This also helps to eliminate breakage of glassware caused by handling.

When using standard funnels with glass, plastic, or Teflon® stoppers, our stopper retainers are required. Gas pressure can be released by inverting the funnel and

shaking with the stopcock open. Gas pressure can also be released automatically by using Glas-Col's VentSep separatory funnels (see Accessories section).

The Erlenmeyer flask holder will hold a single flask and the volumetric flask holder will hold one flask.

Catalog Number	Description	Height (in)	Width (in)	Depth (in)	Product Weight (lbs)
099A VH0250S	Holder for 250-ml separatory funnel	11.0	7.00	8.25	5.5
099A VH0500S	Holder for 500-ml separatory funnel	11.0	7.00	8.25	5.5
099A VH1000S	Holder for 1000-ml separatory funnel	11.0	7.00	8.50	5.5
099A VH2000S	Holder for 2000-ml separatory funnel	11.0	7.25	9.50	5.5
099A VH0250E	Holder for 250-ml Erlenmeyer flask	11.0	7.25	9.00	5.5
099A VH0500E	Holder for 500-ml Erlenmeyer flask	11.0	7.25	9.25	5.5
099A VH1000E	Holder for 1000-ml Erlenmeyer flask	11.0	7.00	10.00	5.5
099A VH1000V	Holder for 1000-ml volumetric flask	11.0	7.00	8.50	5.5
099A VH2000V	Holder for 2000-ml volumetric flask	11.0	7.25	9.50	5.5



Shakers - 3D Shakers

3D FLOOR SHAKER

This shaker eliminates time-consuming and tiring shaking of large vessels by hand.

- Vigorously shakes large separatory funnels.
- 3D motion circulates liquid up, down, sideways, and around for effective mixing.
- Excellent for hemolyzing blood, water pollution analysis, or drug analysis.
- Shakes up to eight 2-liter funnels; no balancing required.
- Rack design minimizes strain on drains and stopcocks and reduces the possibility of broken glassware.
- Can be adapted to accommodate other types of vessels. Consult factory for special applications.

Specifications

Load Weight Capacity: 80 lbs. (36.3 kg).

Electrical: Power switch, circuit breaker, and 6-ft., 3-wire cord. Digital speed and countdown interval timers.

Electrical Rating: 660 volt-amps.

Mounting: Adjustable mounting feet provided

Size: Base dimensions of 27 1/4" w x 30 1/4" d x 26" h (69 x 77 x 66 cm). Platform working height of 36" (91.4 cm).

Finish: Foxtip gray and charcoal.

RS232: Port can be used with LabNetix software.

Shakers - 3D Shakers

MID-RANGE 3D SHAKER

The Mid-Range 3D Shaker gives you the same convenient, consistent 3D shaking on your bench top as you get with our 3D Floor Shaker.

- Mechanically shakes glassware for consistent, repeatable results.
- Fits in fume hood to protect personnel from fumes. (Minimum 30" d x 36" x 36" for 2-liter sep funnels; 24" d x 27" x 36" for sizes up to 1-liter)
- Handles total loads up to 40 lbs without needing to balance load.
- "Lazy Susan" design allows 360° rotating of platform for easy loading and unloading.
- Platform locks in place for added safety.
- Accommodates up to four 2-liter separatory funnels.
- Glas-Col's automatic venting separatory funnels are available for added safety.

Specifications

Motor: 1/4-hp continuous-duty motor.
Load Weight Capacity: Maximum of 40 lbs. (18.1 kg).

Electrical: Power switch, circuit breaker, and 6-ft., 3-wire cord. Digital speed and countdown interval timers.

Electrical Rating: 660 watt-amps.

Size: Shaker base dimensions: 27" d x 17" w (55.9 x 43.2 cm). Height to platform 14" (35.6 cm). Octagonal platform 19" (48.3 cm) across corners.

Finish: Foxtip gray and charcoal.

RS232: Port can be used with LabNetix software.



Catalog Number	Description	Input Volting
*099A VS20012	Shaker base only	120V
*099A VS20024	Shaker base only	240V
099A VS21012	Shaker base w/four 1-liter separatory funnel holders	120V
099A VS21024	Shaker base w/four 1-liter separatory funnel holders	240V
099A VS22012	Shaker base w/four 2-liter separatory funnel holders	120V
099A VS22024	Shaker base w/four 2-liter separatory funnel holders	240V

FUNNEL OR FLASK HOLDER

Each separatory funnel holder will hold one funnel, and you can use up to four holders which mount to the platform without fasteners.

While the rear support of the funnel holder remains stationary, the front part holding the funnel can be released and rotated 360°. This permits the funnel to be filled, inverted

for shaking, and then reinverted for addition and/or extraction, all while the flask remains in the holder. This also helps to eliminate breakage of glassware caused by handling.

When using standard funnels with glass, plastic, or Teflon® stoppers, our stopper retainers are required. Gas pressure can be released by inverting the funnel and

shaking will pressure can be by using G3 funnels (no The Erlenmeyer flask will hold on

CE units available contact Glas-Col.

Catalog Number	Description	Input Voltage	RPM	Product Weight (lbs)
099A VS50012	Shaker base only	120V	10-170	500.0
099A VS50024	Shaker base only	240V	10-170	500.0
099A VS5503	Shaker base w/ten 1-liter separatory funnel holders	120V	10-170	500.0
099A VS550324	Shaker base w/ten 1-liter separatory funnel holders	240V	10-170	500.0
099A VS5504	Shaker base w/eight 2-liter separatory funnel holders or Shaker base w/four 4-liter separatory funnel holders	120V	10-170	500.0
099A VS550424	Shaker base w/eight 2-liter separatory funnel holders or Shaker base w/four 4-liter separatory funnel holders	240V	10-170	500.0

Catalog Number	Description	Height (in)	Width (in)	Depth (in)	Product Weight (lbs)
099A VH1000DS	Double holder for 1 liter separatory funnel	11.0	14.00	8.50	9.0
099A VH2000DS	Double holder for 2 liter separatory funnel	11.0	14.50	9.50	9.0
099A VH1000DV	Double holder for 1 liter volumetric flask	11.0	14.00	8.50	9.0
099A VH2000DV	Double holder for 2 liter volumetric flask	11.0	14.50	9.50	9.0



Glas-Col is proud to be **ISO 9001 CERTIFIED**

Shakers - WS 180° Shaker/Accessories

WS 180° SHAKER

This shaker efficiently agitates small to medium solid phase peptide synthesis flasks. It is also useful for shaking culture flasks and for agitating hard-to-dissolve solids such as polymers.

- Shakes two flasks simultaneously.
- Simulates hand shaking by rotating through 180° of arc.
- May be used with screw-cap top or side-arm flasks.
- Two large-finger clamps included to secure glassware up to 3-1/2" diameter, 10" long.
- Bearing design permits operation in

cold room or incubator.

- DC filtering promotes longer motor life.
- Base configuration prevents "walking" on bench top.

Specifications

Electrical: Fuse protector; on/off switch; variable speed control; 6-ft., 3-wire grounded cord.

Electrical Rating: 50/60 Hz.

Size: 14" w x 6.5" d x 7" h.

Finish: Foxtip gray and charcoal.

Load Weight Capacity: Max 3 lbs. per side



CE units available contact Glas-Col.

Catalog Number	Description	Input Voltage	RPM	Product Weight (lbs)
099A WS18012	180° shaker w/2-large finger clamps	120V	2-30	11.0
099A WS18024	180° shaker w/2-large finger clamps	240V	2-30	11.0

SNORKEL STOPPER

With a Glas-Col Snorkel Stopper, you'll never again have to take time to open the stopcock and relieve pressure when vigorously shaking a separatory funnel, because our Snorkel Stopper does the task automatically. When using a Glas-Col shaker, you can simply load the funnels onto it and get on with more important things without worrying about exploding glass.

The Snorkel Stopper features a one-way check valve that automatically relieves gas

pressure. The non-sticking, ground-glass valve is backed with a stainless-steel spring and a Teflon® closure screw for maximum chemical resistance. The valve releases pressure of more than 1 pound and prevents direct air contact with the vessel.

The shape of the stopper allows manual or machine shaking and avoids solution leakage. For manual shaking, the stopper is held in place by hand. On Glas-Col shakers, glassware holders automatically restrain the stopper.

How to order.

Simply select the Snorkel Stopper from the chart that corresponds to the standard tapered stopper size on the funnels you use. Size charts are in many laboratory supply or glassware catalogs. Then contact your Glas-Col representative.

Catalog Number	Fits Standard Taper Stopper Size	Product Weight (lbs)
099A SST13	13	.3
099A SST16	16	.3
099A SST22	22	.4
099A SST27	27	.4
099A SST38	38	.5



PRESSURE RELEASE VALVES

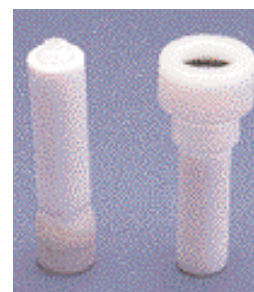
Exclusive! Designed to work specifically with Glas-Col's separatory funnels, these pressure release valves reduce the hazards of pressure build-up. They simply slip over the drain of a Glas-Col funnel and tighten down with a twist of the wrist. The valve can be

easily removed when it is time to drain the funnel.

Each valve is made of Teflon® resin and is factory preset to release at 1 psi of pressure. The valve can be adjusted to release at pressures up to 5 psi by turning the pressure

release slug on the top of the valve with a screwdriver. Models are also available to convert other separatory funnels to automatically vent. Weight: .2 lbs.

Catalog Number	Description
099A PRV6	For Glas-Col funnels SEP0060–SEP1000 or spout OD 7.5–9.5 mm
099A PRV10	For Glas-Col SEP2000 or spout OD 12.5–13.0 mm



Shakers - Accessories

VENTSEP

VentSep, a special 1-liter or 2-liter separatory funnel with a built-in relief valve, can be used on Glas-Col's Bench-Top Shaker or either of the Glas-Col 3D shakers. That means you can shake up to eight 2-liter funnels or ten 1-liter funnels at once without worrying about pressure buildup. What's more, VentSep features a screw cap instead of a penny-head stopper. As a result, VentSep is safer to use in the laboratory because the screw cap doesn't need restraining and won't come off at

inappropriate times, though it will come off easily when you want it to.

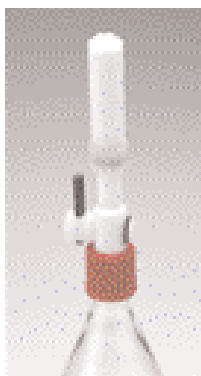
VentSep will vent gas pressure over 1 psi automatically. This means you reduce the possibility of unsuspected pressure buildups that could cause exploding glass and personnel injury. As a result, vigorous hand or machine shaking can be done with confidence.



Catalog Number	Description	Product Weight (lbs)
099A SST555	Separatory funnel with automatic pressure relief. Teflon® resin stopcock and screw cap with Teflon® resin liner, 1000 ml.	3.3
099A SST655	Separatory funnel with automatic pressure relief. Teflon® resin stopcock and screw cap with Teflon® resin liner, 2000 ml.	6.0

SEPARATORY FUNNEL

Glas-Col's new separatory funnel is designed to offer a new level of convenience and safety when used with Glas-Col shakers. This funnel has a screw cap with a Teflon® resin lining to reduce the possibility of contamination. The drain spout is a screw-on Teflon® resin design which reduces the chance of breakage and allows for easier cleaning. When used with Glas-Col's new pressure release valve (see page 50), it offers the convenience of self-venting for applications where pressure build-up is a concern.



When used with the Glas-Col Pressure Release Valve, this separatory funnel becomes self-venting.

Catalog Number	Description	Product Weight (lbs)
099A SEP 0060	Separatory funnel with Teflon® cap and spout, 60 ml	.3
099A SEP 0125	Separatory funnel with Teflon® cap and spout, 125 ml	.5
099A SEP 0250	Separatory funnel with Teflon® cap and spout, 250 ml	.8
099A SEP 0500	Separatory funnel with Teflon® cap and spout, 500 ml	.9
099A SEP 1000	Separatory funnel with Teflon® cap and spout, 1000 ml	1.0
099A SEP 2000	Separatory funnel with Teflon® cap and spout, 2000 ml	2.0



SHAKERS

Call us at 1-800-GLASCOL(452-7265) for the name of your nearest Glas-Col distributor

Be sure to visit us on the Internet at:

www.glascol.com



Stirrers

G. K. H. Stirring Systems

GT31

GT24

ST20

G. K. H. Stir-Testers

HST10

HST20

HST30

Accessories

Propellers

Paddles

Collets and Chucks

Flexible Shafts

Mounting Brackets

Clamps

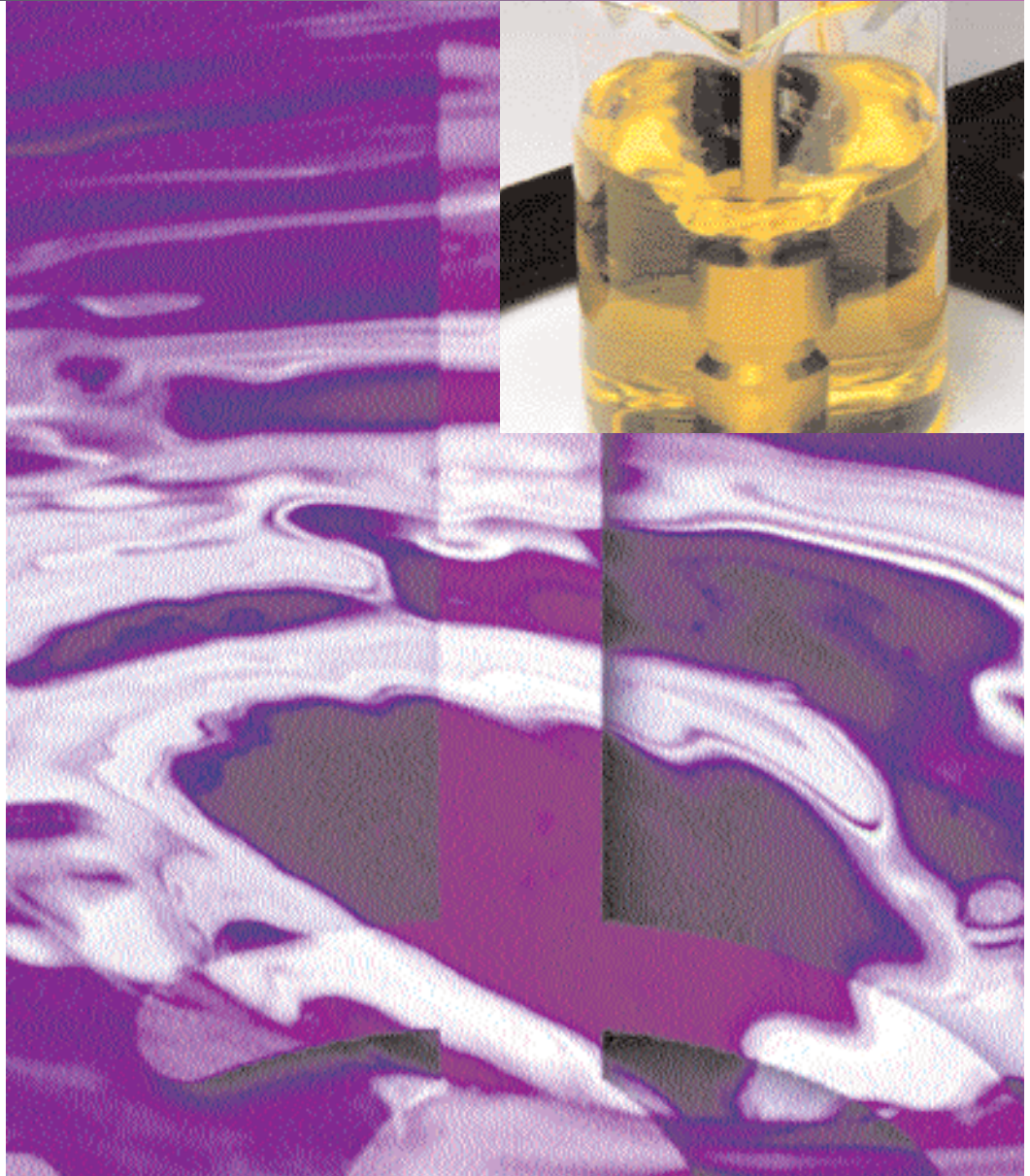
Glass and Teflon® Stirring
Assemblies

Miscellaneous Accessories

Lab Stands

Upward Flow Stirrer

Upward Flow Stirrer Attachments



Stirrers - G.K.H. Stirring Systems

Stirrers

- Wide variety of sizes and horsepower ratings to meet most applications
- Feedback circuitry to maintain speed even when viscosity changes
- DC-filtered motors on most models to handle heavier loads and provide greater durability
- Propellers and paddles for most applications
- Cord-connected controls for safety and convenience
- Reversible motors

GT31 STIRRING SYSTEM

The GT31 is an improved version of the standard dual-shaft stirring system that has been a favorite with chemists and lab technicians everywhere. It has a totally enclosed, 1/40 hp, permanent-magnet motor with two output shafts. The armature shaft provides high speeds for mixing light materials, while the geared shaft generates higher torque at slower speeds for stirring more viscous mixtures. Continuously variable speed control.

The GT31 stirring system is furnished complete with motor and mounting bracket, controller, and the following accessories:

099D A210101 3-jaw, keyless chuck

099D A210106 paddle

099D A210107 propeller

099D A283040 right angle clamp

Lab stand 099D A130150 is recommended to mount the GT31.

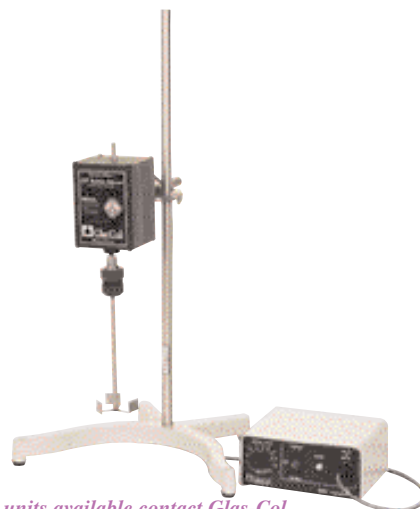
See the following pages for these and other accessories.

Specifications

Lab bench case: 8" w x 6" d x 3.38" h

Motor bracket: 4.38" w x 4.38" d x 5.5" h, with 8.5" rod

Finish: Foxtip gray and charcoal.



CE units available contact Glas-Col.

Catalog Number	Description	Input Voltage	Max rpm	Torque lb-in	Torque kg-cm	Torque Nm	Product Weight (lbs)
099D GT31	Dual-shaft 12:1 gearmotor	120	333/4,000	3.6/.26	4.2/.3	.4/.03	17.0
099D GT331	Dual-shaft 12:1 gearmotor	240	333/4,000	3.6/.26	4.2/.3	.4/.03	17.0

GT24 STIRRING SYSTEM

The GT24 stirring system offers the user a stirrer with more power than the GT31 and a selection of speed ranges up to 2,500 rpm. This model combines today's permanent-magnet motor technology with solid state electronics. It features totally enclosed, 1/17 hp, cool, and quiet-running motors with direct-drive and geared options, with continuously variable speed control.

The GT24 stirring system is furnished complete with motor, mounting bracket, controller, and the following accessories:

099D A210106 paddle

099D A210107 propeller

099D A210101 3-jaw, keyless chuck (with GT24N and GT224N only)

099D A260108 3-jaw, keyless chuck and arbor (with GT2406, GT22406, GT2412 and GT22412 only)

100D LC300 heavy-duty 90° clamp

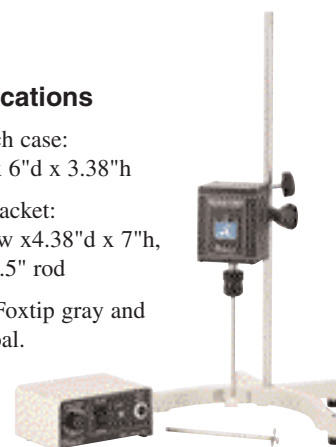
Lab stand 099D A130150 is recommended to mount the GT24. See the following pages for these and other accessories.

Specifications

Lab bench case: 8" w x 6" d x 3.38" h

Motor bracket: 4.38" w x 4.38" d x 7" h, with 8.5" rod

Finish: Foxtip gray and charcoal.



CE units available contact Glas-Col.

Catalog Number	Description	Input Voltage	Max rpm	Torque lb-in	Torque kg-cm	Torque Nm	Product Weight (lbs)
099D GT24N	Single-shaft motor, direct drive	120	2,500	1.5	1.7	.17	16.0
099D GT2406	Single-shaft motor, 6:1 gearmotor	120	417	5.4	6.2	.60	17.0
099D GT2412	Single-shaft motor, 12:1 gearmotor	120	208	12.0	13.8	1.32	16.0
099D GT224N	Single-shaft motor, direct drive	240	2,500	1.5	1.7	.17	16.0
099D GT22406	Single-shaft motor, 6:1 gearmotor	240	417	5.4	6.2	.60	17.0
099D GT22412	Single-shaft motor, 12:1 gearmotor	240	208	12.0	13.8	1.32	17.0

STIRRERS



Stirrers - G. K. H. Stirring Systems

ST20 STIRRING SYSTEM

This powerful stirring system has a totally enclosed, 1/8 hp, cool, quiet-running, permanent-magnet motor in direct- and gear-drive models with torques from 3.1 lb.-in. (3.57 kg-cm) to 96 lb.-in. (111 kg-cm). It provides a stirrer with more power and a selection of speed ranges up to 2,500 rpm with a continuously variable speed control.

The ST20 stirring system is furnished complete with motor and mounting bracket, controller, and the following accessories:

099D A260100 3-jaw, keyless chuck and arbor for ST20N and ST220N only

099D A260200 3-jaw, keyless chuck and arbor for ST20 geared models

099D A260106 propeller

100D LC300 heavy-duty 90° clamp

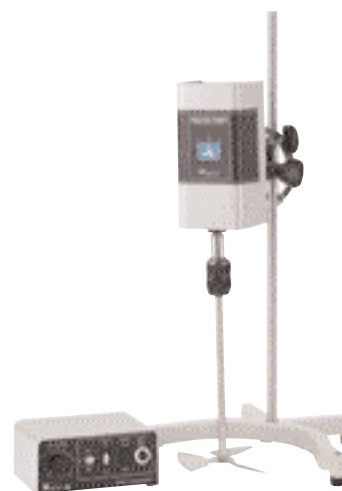
Lab stand 099D A130150 is recommended to mount the ST20. See the following pages for these and other accessories.

Specifications

Lab bench case: 8" w x 6" d x 3.38" h

Motor bracket: 4.5" w x 4.5" d x 9.5" h, with 8.5" rod

Finish: Foxtip gray and charcoal.



Catalog Number	Description	Input Voltage	Max rpm	Torque lb-in	Torque kg-cm	Torque Nm	Product Weight (lbs)
099D ST20N	Single-shaft motor, direct drive	120	2,500	3.1	3.57	.34	21.0
099D ST2004	Single-shaft motor, 4:1 gearmotor	120	660	6.0	6.90	.66	22.0
099D ST20	Single-shaft motor, 9:1 gearmotor	120	266	21.0	24.20	2.31	22.0
099D ST2021	Single-shaft motor, 20:1 gearmotor	120	125	46.0	53.00	5.06	22.0
099D ST2044	Single-shaft motor, 44:1 gearmotor	120	57	96.0	111.00	10.56	22.0
099D ST220N	Single-shaft motor, direct drive	240	2,500	3.1	3.57	.34	21.0
099D ST22004	Single-shaft motor, 4:1 gearmotor	240	660	6.0	6.90	.66	22.0
099D ST220	Single-shaft motor, 9:1 gearmotor	240	266	21.0	24.20	2.31	22.0
099D ST22021	Single-shaft motor, 20:1 gearmotor	240	125	46.0	53.00	5.06	22.0
099D ST22044	Single-shaft motor, 44:1 gearmotor	240	57	96.0	111.00	10.56	22.0

STIRRERS

Stirrers - G. K. H. Stir-Testers

Stir-Testers

- Actual speeds are displayed and maintained by a synthetic tachogenerator. (Speed is kept within less than 1% of the base speed from no-load to more than 100% of full-load regardless of AC line voltage fluctuations of ±10%.)
- Viscosity measurement is easier thanks to a controller with a digital readout switchable between speed and torque.
- Data on shear stress, shear rate, velocity gradients, and viscosity is accumulated easily with external DC multi-volt signals for speed and torque (for strip or X-Y recorders) available through an output port on the rear of the control.
- Operator convenience and safety is increased with cord connections between drive motors and controls to allow control placement away from hostile environments.

Stirrers - G. K. H. Stir-Testers

HST10 SERIES STIR-TESTER

The HST10 is available in direct-drive or geared models with a totally enclosed, 1/17 hp, permanent-magnet DC motor. Digital readout displays speed in rpm's and torque in gm-cm (kg-cm for geared motors). Front panel switch toggles between speed and torque. The HST10 includes a reversible drive motor with mounting bracket, controller, and the following accessories:

- 099D A210101 3-jaw, keyless chuck and arbor (with HST10N and HST210N only)
- 099D A260108 3-jaw, keyless chuck and arbor (for HST10 geared motors)

- 099D A210106 paddle
- 099D A210107 propeller
- 100D LC300 heavy-duty 90° clamp

Lab stand 099D A130150 is recommended to mount the HST10. See the following pages for these and other accessories.

Specifications

Lab bench case: 8"w x 8"d x 4.75"h

Motor bracket: 4.38"w x 4.38"d x 7"h, with 8" rod

Finish: Foxtip gray and charcoal.



Catalog Number	Description	Input Voltage	Max rpm	Torque lb-in	Torque kg-cm	Torque Nm	Product Weight (lbs)
099D HST10N	Direct drive, rpm/torque readout & X-Y output	120	2,500	1.5	1.73	.17	14.0
099D HST1006	Similar to HST10N but with 6:1 gearmotor	120	417	5.4	6.22	.60	15.0
099D HST1012	Similar to HST10N but with 12:1 gearmotor	120	208	12.0	13.80	1.32	15.0
099D HST210N	Direct drive, rpm/torque readout & X-Y output	240	2,500	1.5	1.73	.17	14.0
099D HST21006	Similar to HST210N but with 6:1 gearmotor	240	417	5.4	6.22	.60	15.0
099D HST21012	Similar to HST210N but with 12:1 gearmotor	240	208	12.0	13.80	1.32	15.0

HST20 SERIES STIR-TESTER

The HST20 lets you maintain stirring speed with a 1/8 hp, totally enclosed, permanent-magnet DC motor. Digital readout displays speed in rpm's and torque in oz-in. Front panel switch toggles between speed and torque. The HST20 a reversible drive motor with mounting bracket, controller, and the following accessories:

- 099D A260100 3-jaw, keyless chuck and arbor (HST20N & HST220N only)
- 099D A260106 propeller
- 100D LC300 heavy-duty 90° clamp

- 099D A260200 3-jaw, keyless chuck and arbor (for HST20 geared motors).

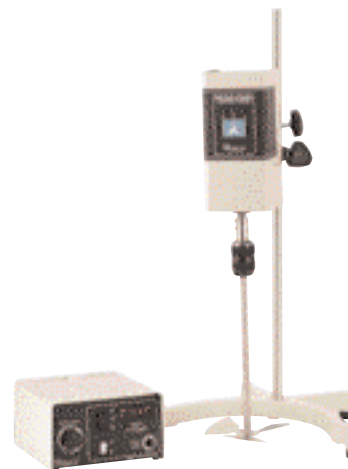
Lab stand 099D A130150 is recommended to mount the HST20. See the following pages for these and other accessories.

Specifications

Lab bench case: 8"w x 8"d x 4.75"h

Motor bracket: 4.5"w x 4.5"d x 9.5"h, with 8.5" rod

Finish: Foxtip gray and charcoal.



Catalog Number	Description	Input Voltage	Max rpm	Torque lb-in	Torque kg-cm	Torque Nm	Product Weight (lbs)
099D HST20N	Direct drive, rpm/torque readout & X-Y output	120	2,500	3.1	3.57	.34	16.0
099D HST2004	Similar to HST20N but with 4:1 gearmotor	120	660	6.0	6.90	.66	20.0
099D HST20	Similar to HST20N but with 9:1 gearmotor	120	266	21.0	24.20	2.31	20.0
099D HST2021	Similar to HST20N but with 20:1 gearmotor	120	125	46.0	53.00	5.06	20.0
099D HST2044	Similar to HST20N but with 44:1 gearmotor	120	57	96.0	111.00	10.56	20.0
099D HST220N	Direct drive, rpm/torque readout & X-Y output	240	2,500	3.1	3.57	.34	16.0
099D HST22004	Similar to HST220N but with 4:1 gearmotor	240	660	6.0	6.90	.66	20.0
099D HST220	Similar to HST220N but with 9:1 gearmotor	240	266	21.0	24.20	2.31	20.0
099D HST22021	Similar to HST220N but with 20:1 gearmotor	240	125	46.0	53.00	5.06	20.0
099D HST22044	Similar to HST220N but with 44:1 gearmotor	240	57	96.0	111.00	10.56	20.0

STIRRERS



Stirrers - G. K. H. Stir-Testers

HST30 SERIES STIR-TESTER

This model provides more power for heavy-duty applications with a 1/4 hp, totally enclosed, permanent-magnet DC motor. Digital readout displays speed in rpm's and torque in oz-in. Front panel switch toggles between speed and torque. The HST30 includes a reversible drive motor with mounting bracket, controller, and the following accessories:

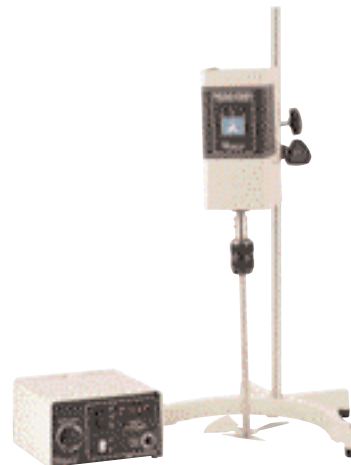
- 099D A260108 3-jaw, keyless chuck and arbor for HST30N and HST230N only
- 099D A260275 3-jaw, keyless chuck and arbor (for HST30 geared motors)

- 099D A260106 propeller
- 100D LC300 heavy-duty 90° clamp

Lab stand 099D A130150 is recommended to mount the HST30. See the following pages for these and other accessories.

Specifications

- Lab bench case: 8"w x 8"d x 4.75"h
- Motor bracket: 5"w x 5.5"d x 10"h, with 8.5" rod
- Finish: Foxtip gray and charcoal.



Catalog Number	Description	Input Voltage	Max rpm	Torque lb-in	Torque kg-cm	Torque Nm	Product Weight (lbs)
099D HST30N	Direct drive, rpm/torque readout & X-Y output	120	2,500	6.3	7.3	.70	20.0
099D HST3005	Similar to HST30N but with 5:1 gearmotor	120	500	25.0	28.8	2.75	24.0
099D HST3010	Similar to HST30N but with 10:1 gearmotor	120	250	45.0	51.8	4.95	24.0
099D HST3020	Similar to HST30N but with 20:1 gearmotor	120	125	90.0	103.7	9.90	24.0
099D HST230N	Direct drive, rpm/torque readout & X-Y output	240	2,500	6.3	7.3	.70	20.0
099D HST23005	Similar to HST230N but with 5:1 gearmotor	240	500	25.0	28.8	2.75	24.0
099D HST23010	Similar to HST230N but with 10:1 gearmotor	240	250	45.0	51.8	4.95	24.0
099D HST23020	Similar to HST230N but with 20:1 gearmotor	240	125	90.0	103.7	9.90	24.0

G. K. H. STIRRING GUIDE

The following reference charts are guidelines to help you determine the right G. K. H. stirring unit for your application. Other elements, such as temperature and volume,

can affect your choice of units. Please feel free to consult Glas-Col if you need further assistance in determining the right stirrer for your application.

Extra-Light Duty (less than 100 Centipoise)	Light Duty (100-1,000 Centipoise)	Medium Duty (1,000-50,000 Centipoise)	Heavy Duty (50,000-200,000 Centipoise)
GT31 Non-Geared	GT31 Geared	GT24 Geared	ST20 Geared
	GT24N	HST10 Geared	HST20 Geared
	HST10N	HST20N	HST30 Geared
		HST30N	

Glas-Col is proud to be

ISO 9001
CERTIFIED



Stirrers - Reference Chart

VISCOSITY REFERENCE CHART

Liquid and Semi-Solid Materials	Viscosity (Centipoise at 70°F)
ACETONE30
ADIPRENE (Urethane)	35,000.00
BENZINE50
CORN SYRUP	110,000.00
ETHYLENE GLYCOL	16.00
GLUE (Hot Melt)	30,000,000.00
HONEY	3,000.00
INK	45,000.00
KETCHUP	*50,000.00
LACQUER	1,100-250.00
LINDSEED OIL (Boiled)	64.00
LINDSEED OIL (Raw)	28.00
METHYL ETHYL KETONE40
MILK	3.00
MUSTARD	*70,000.00
OIL (Auto Lubricating)	
SAE 10	65.00
SAE 20	125.00
SAE 30	200.00
SAE 40	319.00
SAE 50	540.00
SAE 60	1,000.00
SAE 70	1,600.00
SAE 80 (Transmission Grade)	240.00
SAE 90 (Transmission Grade)	590.00
SAE 140 (Transmission Grade)	2,200.00
OIL - CASTOR	1,000-240.00
OIL - CORE	29.00
OIL - CORN	72.00
OIL - CRUDE	15.00
OIL - SOYBEAN	160.00
PEANUT BUTTER	*250,000.00
SALAD DRESSING	*250,000.00
SHORTENING	*1,200,000.00
SULPURIC ACIS (100%)20
SYRUP (Light)	3,200.00
SYRUP (Dark)	2,500.00
SYRUP (Maple)	144.00
TOLUOL60
TOMATO PASTE	*1,900,000.00
TURPENTINE	1.00
VARNISH	420.00
PETROLEUM JELLY	64,000.00
WATER	1.00
XYLOL60

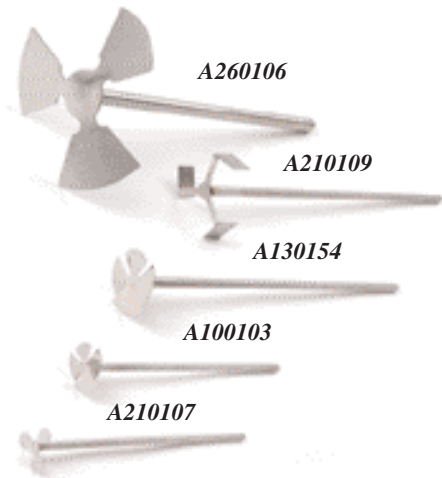
* The viscosity is representative of viscosity range of material in a static state



Stirrers - Accessories

PROPELLERS

Catalog Number	Description	Shaft Length (in)	Shaft Length (mm)	Max. Vessel Size (in)	Product Weight (lbs)
099D A100103	Stainless-steel, 4-bladed propeller, 1.5"(38 mm) dia. on 1/4"(6.4 mm) dia. shaft. For general purpose mixing applications.	9.00	229	4.0	.2
099D A100104	Stainless-steel, 4-bladed propeller, 2"(50.8 mm) dia. on 1/4"(6.4 mm) dia. shaft. For general purpose mixing applications.	12.00	305	4.0	.2
099D A100105	Stainless-steel, 4-bladed propeller, 2"(50.8 mm) dia. on 1/4"(6.4 mm) dia. shaft. For general purpose mixing applications.	18.00	457	4.0	.3
099D A130153	Stainless-steel, 3-bladed propeller, 1.5"(38 mm) dia. on 5/16"(7.9 mm) dia. shaft. For general purpose mixing applications.	9.00	229	5.5	.2
099D A130154	Stainless-steel, 3-bladed propeller, 2"(50.8 mm) dia. on 5/16"(7.9 mm) dia. shaft. For general purpose mixing applications.	12.00	306	5.5	.2
099D A130155	Stainless-steel, 3-bladed propeller, 2"(50.8 mm) dia. on 5/16"(7.9 mm) dia. shaft. For general purpose mixing applications.	18.00	457	5.5	.3
099D A210107	Stainless-steel, 3-bladed propeller, 1.5"(38 mm) dia. on 5/16"(7.9 mm) dia. shaft. For general purpose mixing applications. Blades can be bent to desired pitch.	8.75	222	4.0	.2
099D A210119	Stainless-steel, 3-bladed propeller, 1.5"(38 mm) dia. on 5/16"(7.9 mm) dia. shaft. For general purpose mixing applications. Blades can be bent to desired pitch.	12.00	305	4.0	.3
099D A210121	Stainless-steel, 3-bladed propeller, 1.5"(38 mm) dia. on 5/16"(7.9 mm) dia. shaft. For general purpose mixing applications. Blades can be bent to desired pitch.	18.00	457	4.0	.4
099D A260106	Heavy-duty stainless-steel, 3-bladed propeller, 6"(152 mm) dia. on 1/2"(12.7 mm) dia. shaft. High viscosity impeller for hard-to-mix solutions.	12.00	305	12.00	.9



PADDLES

Catalog Number	Description	Shaft Length (in)	Shaft Length (mm)	Max. Vessel Size (in)	Product Weight (lbs)
099D A210106	Stainless-steel, 3-bladed paddle, 2.5"(63.5 mm) dia. on 5/16"(7.9 mm) dia. shaft. High efficiency paddle for viscous liquids or semi-solids.	8.75	222	8.0	.3
099D A210109	Stainless-steel, 3-bladed paddle, 2.5"(63.5 mm) dia. on 5/16"(7.9 mm) dia. shaft. High efficiency paddle for viscous liquids or semi-solids.	12.00	305	8.0	.4
099D A210120	Stainless-steel, 3-bladed paddle, 2.5"(63.5 mm) dia. on 5/16"(7.9 mm) dia. shaft. High efficiency paddle for viscous liquids or semi-solids.	18.00	457	8.0	.5
099D A219106	A210106 paddle with Teflon® coating.	8.75	222	8.0	.3

FLEXIBLE SHAFTS

Catalog Number	Description	Length (in)	Length (mm)	Product Weight (lbs)
099D A210312	5/16" (8 mm) shaft end/ 5/16" end fitting, clockwise direction	36	914	1.3
099D A260375	3/8" (9.5 mm) shaft end/ 5/16" end fitting, clockwise direction	36	914	1.3
099D A260500	1/2" (12.78 mm) shaft end/ 5/16" end fitting, clockwise direction	36	914	1.3
099D A260625	5/8" (15.9 mm) shaft end/ 5/16" end fitting, clockwise direction	36	914	1.3



GLASS & TEFLON® STIRRING ASSEMBLIES

Glas-Col's glass and Teflon® stirring assemblies are designed for overhead agitation in air-tight systems with single- or multiple-neck flasks. They also reduce the possibility of sample contamination and are well suited for agitating corrosive and caustic

samples. The glass stirring rod is precision ground and polished to reduce abrasion to the sealing surface of the Teflon® bearing, thereby allowing a vacuum-tight seal. Each stirring rod includes a Teflon® nut and bolt. Each Teflon® bearing consists of a threaded

glass adapter, a saddle O-ring, a body bushing with a compression and locking nut, and a precision Teflon® inner gearing. Teflon® stirring blades rotate to permit easy insertion into a flask. The Flex-Coupling permits the use of the glass stirring rod with a motor drive. The 3" epoxy-coated spring compensates for misalignment, reduces the chance for breakage, and eliminates the need for special adapters.

Catalog Number	Description	Minimum Joint Size	Product Weight (lbs)
099D GS100	Stirring shaft w/Teflon® nut and bolt, 445 mm, 10mm O.D.		.4
099D GS110	Stirring shaft w/Teflon® nut and bolt, 515 mm, 10mm O.D.		.4
099D GS010	Stirring bearing, Teflon®, 10 mm diameter.	24/40	.3
099D GS015	Stirring bearing, Teflon®, 10 mm diameter.	29/42	.3
099D GS020	Stirring bearing, Teflon®, 10 mm diameter.	45/50	.3
099D GS210	Stirring blade, Teflon® 100-500 ml, 19 x 48 mm.	24/40	.1
099D GS220	Stirring blade, Teflon® 250-500 ml, 19 x 60 mm.	24/40	.1
099D GS230	Stirring blade, Teflon® 500 ml-1 L, 19 x 76 mm.	24/40	.1
099D GS240	Stirring blade, Teflon® 2-3 L, 24 x 110 mm.	29/42	.1
099D GS250	Stirring blade, Teflon® 5-12 L, 24 x 130 mm.	29/42	.1
099D GS005	Teflon® nut and bolt replacement set.		.1
099D GS300	Flex-Coupling for 10 mm O.D. glass shaft. Fits 5/16" motor shaft.		.5



GS100

Stirrers - Accessories

CHUCKS

Catalog Number	Description	Capacity		Product Weight (lbs)
		(in)	(mm)	
099D A210101	3-jaw, keyless chuck with arbor for 5/16" (8 mm) motor shaft.	.38	9.5	1.0
099D A260100	Precision 3-jaw, keyless chuck with arbor for 3/8" (9.5 mm) motor shaft.	.50	12.7	1.2
099D A260108	Precision 3-jaw, keyless chuck with arbor for 1/2" (12.7 mm) motor shaft.	.50	12.7	1.2
099D A260200	Precision 3-jaw, keyless chuck with arbor for 5/8" (15.9 mm) motor shaft.	.50	12.7	1.2
099D A260275	Precision 3-jaw, keyless chuck with arbor for 3/4" (19 mm) motor shaft.	.50	12.7	1.2

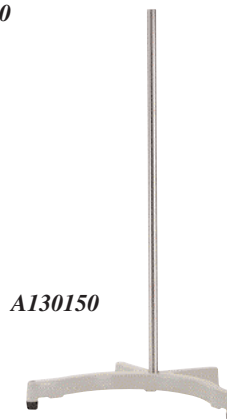
A260200



LAB STANDS

Catalog Number	Description	Shaft Length (in)	Shaft Length (mm)	Product Weight (lbs)
099C L70	Horseshoe-base laboratory stand with 11/16" (17 mm) diameter aluminum mast. Accepts containers up to 9" (229 mm) diameter.	23	610	10.0
099D A130150	Heavy-duty lab stand with 3/4" (19 mm) diameter stainless steel mast. Cast iron base. Accepts containers up to 16" (406 mm) diameter.	28	711	12.0

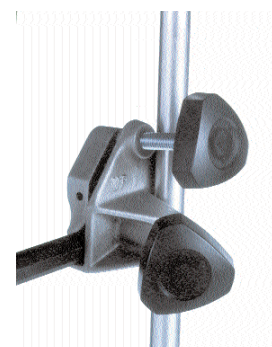
A260100



A130150

CLAMPS

Catalog Number	Description	Product Weight (lbs)
099D A283040	Right-angle clamp for up to 3/4" (19 mm) diameter rods.	.1
100D LC300	Heavy-duty 90° clamp designed to be more user friendly. Larger knobs make hand tightening easier and provide sufficient pressure to hold rods securely. Can be used on conventional round support rods from 1/2" to 3/4" diameter.	1.0



LC300

MISCELLANEOUS ACCESSORIES

Catalog Number	Description	Product Weight (lbs)
099A LCS	Shelf Adjustable w/knob 7" x 10"	1.6
099D A052060	Plug and extension cable for X-Y output of HST10 and HST20	.2
104B A051210	Isolation transformer for HST10 (3"w x 4"d x 4"h)	5.0
104B A051225	Isolation transformer for HST20/HST30 (3"w x 6.5"d x 6.5"h)	10.0



Stirrers - Component Selection Charts

COMPONENTS AND ACCESSORIES

Component Catalog No. Description	For use with: (denoted by ✓)	GT31 GT331 K54 K64 K6424	GT24N GT224N	GT2406 GT2412 GT22406 GT22412	HST10N HST210N (Direct- Drive Models)	HST1006 HST1012 HST21006 HST21012 (Geared Models)	Series ST20 And HST20 Direct- Drive Models	Series ST20 And HST20 Geared Models	Series HST30 Direct- Drive Models	Series HST30 Geared Models
099D A100103 4-blade 1-1/2"d; 9"l	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
099D A100104 4-blade 1-1/2"d; 12"l	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
099D A100105 4-blade 1-1/2"d; 18"l	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
099D A130153 4-blade 2"d; 9"l	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
099D A130154 4-blade 2"d; 12"l	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
099D A130155 4-blade 2"d; 18"l	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
099D A210107 3-blade 1-1/2"d; 8-3/4"l	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
099D A210119 3-blade 1-1/2"d; 12"l	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
099D A210121 3-blade 1-1/2"d; 18"l	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
099D A260106 3-blade 6"d; 12"l	-	-	✓	-	✓	✓	✓	✓	✓	✓
099D A210106 3-blade 2-1/2"d; 8-3/4"l	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
099D A219106 (210106 w/Teflon® coat)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
099D A210109 3-blade 2-1/2"d; 12"l	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
099D A210120 3-blade 2-1/2"d; 18"l	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
099D A210101 3-jaw, keyless chuck	✓	✓	-	✓	-	-	-	-	-	-
099D A260100 3/8" bore, keyless chuck	-	-	-	-	-	✓	-	-	-	-
099D A260108 1/2" bore, keyless chuck	-	-	✓	-	✓	-	-	✓	-	-
099D A260200 5/8" bore, keyless chuck	-	-	-	-	-	-	✓	-	-	-
099D A260275 3/4" bore, keyless chuck	-	-	-	-	-	-	-	-	-	✓
099D A210312 HD, 5/16" shafts	✓	✓	-	✓	-	-	-	-	-	-
099D A260375 HD, 3/8" shafts	-	-	-	-	-	✓	-	-	-	-
099D A260500 HD, 1/2" shafts	-	-	✓	-	✓	-	-	-	-	-
099D A260625 HD, 5/8" shafts	-	-	-	-	-	-	✓	-	-	-
099B A210104 Complete with rod	✓	-	-	-	-	-	-	-	-	-
099B A280104 Complete with rod	-	-	-	-	-	✓	✓	-	-	-
099B A281104 Complete with rod	-	-	✓	-	✓	-	-	-	-	-
099B A282104 Complete with rod	-	✓	-	✓	-	-	-	-	-	-
099D A052060 Cable for X-Y output	-	-	-	✓	✓	✓	✓	✓	✓	✓
104B A051210 Isolation transformer	-	-	-	✓	✓	-	-	✓	✓	✓
104B A051225 Isolation transformer	-	-	-	-	-	✓	✓	✓	✓	✓
099B A210103 Set screw wrench	✓	✓	-	✓	-	-	-	-	-	-
099B A260103 Set screw wrench	-	-	✓	-	✓	✓	✓	✓	✓	✓
099D A283040 Clamp, for 3/4" rods	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
100D LC300 Heavy-Duty 90° Clamp	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Contact us at pinnacle@glascol.com for the name of your nearest Glas-Col distributor

Be sure to visit us on the Internet at:

www.glascol.com



Stirrers - Glas-Col Stirrers

UPWARD FLOW STIRRERS

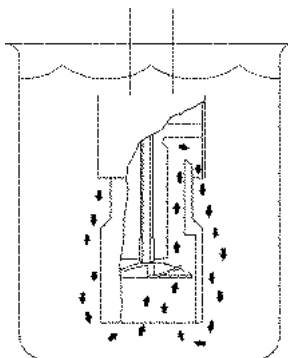
The upward flow stirrer mixes without introducing air. The unique, continuous-shearing and blending action occurs entirely below the solution's surface, creating a thorough mixing action without foaming or splashing. Even at high speeds in nearly full containers, there is minimal surface disturbance.

The upward flow stirrer may be used effectively in many procedures. It may be used with pharmaceuticals, cosmetics, paints, inks, petroleum, and foods. It is also useful in stirring hot and cold solutions in small or large volumes. It can provide rapid disbursement or re-suspension of heat-sensitive substances, proteins, oils, or food essences. It also emulsifies liquids of different densities, dissolves low-soluble solids, and resuspends bacteria into solution. Operation in open containers of all sizes is possible.

All wetted parts are made of corrosion-resistant stainless steel, which allows easy

cleaning. The self-lubricating Teflon® TFE bushing requires no maintenance and adds to the stirrer's long life. The shielded stirring blades cannot damage the mixing vessel.

To use as a conventional stirrer, the stirring blade and shaft may be used without the outer housing.



The unique flow of solution created by the upward flow stirrer allows it to mix thoroughly with no foaming, splashing, or introduction of air.



CE units available contact Glas-Col.

Upward Flow Stirrers

Catalog Number	Description	Input Voltage	RPM	Includes	Suggested Lab Stand	Dimensions	Product Weight (lbs)
099D UF12	Motor drive	120V	11,500	Lab Clamp	A130150	4 3/8" w x 13" d x 9 1/2" h	10.0
099D UF24	Motor drive	240V	11,500	Lab Clamp	A130150	4 3/8" w x 13" d x 9 1/2" h	10.0

How to select the right components for your specific needs:

Use the chart below to find the attachment that best fits your stirring needs.

Upward Flow Attachments

Catalog Number	Aqueous*	Mixing Range	Viscous* (Centipoise)	Specifications	Product Weight (lbs)
099D 25A	Will work in 25 mm test tube, 12 ml minimum solution for non-aeration maximum approx. 1 liter		Not advised	Diameter 3/4" (19mm), Length 9.5" (241mm) overall.	.8
099D 25B	250-8,000 ml		Up to 3000	Diameter 1 1/2" (38mm), Length 12" (305mm) overall	1.5

*Results for specific volumes will vary with viscosity.



Vortexers



Multi-Pulse Vortexer

Cartridges

Large Capacity Mixer

Cartridges

Touch Vortexer

Pulsing Vortex Mixer

Volumetric Flask Mixer

Digital Pulse Mixer

Digital Pulse Mixer Heated

Labnetix

Vortexers - Multi-Pulse Vortexer

Vortexers

- Pulsing feature interrupts action for more thorough mixing
- DC filtered motors for greater durability and more power
- Interchangeable cartridge system allows units to be adapted to different vessels easily
- Variety of sizes to fit most applications
- Easily customized for special applications

MULTI-PULSE VORTEXER

The new cartridge design of Glas-Col's Multi-Pulse Vortexer allows the user to switch the size of tubes to be mixed simply by changing the cartridge size, thus eliminating the need for extra racks. Cartridges are available for test tubes and centrifuge tubes and can be used with capped or uncapped tubes. The blank cartridges allow the use of most standard tube racks. Each cartridge is constructed of chemical resistant foam and ABS Plastic. The unit easily adjusts for different height tubes. The contents of the tubes remain visible during mixing, and sample can be added to uncapped tubes without stopping the action. Other features include:

- Variable speed.
- Pulsing feature interrupts vortexing to join upper and lower strata for more thorough mixing.

- DC motor with filtered control for smoother operation and longer motor life.

The drive base and upper section are hardcoat anodized for resistance to most acids and solvents.

Each Multi-Pulse Vortexer comes with two cartridges, one for 12-13 mm diameter tubes and one for 15-16 mm diameter tubes.

Specifications

Size: 18.25" w x 7" d x 13-1/2" h

Electrical Rating: 1.5A, 50/60Hz.

Load Weight Capacity Maximum: 4 lbs.



Patent: U.S. Patent No. 4202634.

CE units available contact Glas-Col.

Catalog Number	Description	Input Voltage	RPM	Product Weight (lbs)
099A VB4	Vortexer base with two cartridges	120V	100-2,000	38.0
099A VB424	Vortexer base with two cartridges	240V	100-2,000	38.0

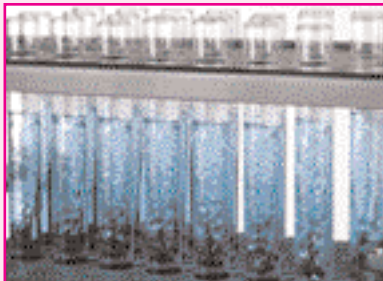
Cartridges for VB4

Catalog Number	Vessels Size and Type	Cartridge Capacity	Product Weight (lbs)
099A VC13100	Test tubes, 12-13 mm diameter	22	.8
099A VC17150	Test tubes, 15-16 mm diameter	22	.8
099A VC20150	Test tubes, 18-20 mm diameter	19	.8
099A VC25300	Test tubes, 25 mm diameter	12	.8
099A VC29135	Test tubes, 28-29 mm diameter	10	.8
099A VC1000	Blank Cartridge, 1/4 chem. res. foam		.8
099A VC9601	96 well plate	1	.8
099A VC9602	96 well plate	2	.8
099A VC12502	125 ml Erlenmeyer flask	2	.8
099A VC25002	250 ml Erlenmeyer flask	2	.8
099A VC1084	10 mm Eppendorf tube	84	.8
099A VC10841	10 mm Eppendorf tube, 1" thick	84	1.2
099A VC1236	12 mm Cryo tube	36	.8

For custom size cartridges contact factory.



Vortexers - Large Capacity Mixer



Why use pulsing?

Glas-Col's Pulsing feature is what makes our vortexers stand apart from other mixers. The pulsing action allows the vortex to collapse, before throwing back a full vortex. This time delayed sequence helps to join the upper and lower strata for more thorough and reproducible mixing.



LARGE CAPACITY MIXER

The versatility of Glas-Col's Large Capacity Mixer makes it a perfect choice for any laboratory. The unique design of this system allows for a variety of mixing applications to be handled with one unit. Whether you need gentle, orbital-type shaking or more vigorous vortexing of a sample, the Large Capacity Mixer can fill both needs. The unit is also designed to handle a wide variety of vessels from micro-centrifuge tubes to large vessels, such as Erlenmeyer flasks. The interchangeable cartridge system allows the user to quickly switch from one type of vessel to another, or to mix more than one type of vessel at a time. Custom cartridges can also be designed for special applications. The cartridges are made of chemical resistant foam and ABS plastic.

- At the low end of the 100-2,000 rpm speed range, the sample is mixed with a gentle, orbital motion. The high end of the range will mix the sample with a vigorous vortexing action.
- Pulsing feature can be used to interrupt the mixing process, to join upper and lower strata, for more thorough mixing.
- DC motor, with filtered control, allows the Large Capacity Mixer to run smoothly and quietly, and prolongs the operating life of the unit.



Specifications

Size: 18.25"w x 12"d x 17.25"h.

Load Weight Capacity Maximum: 5 lbs.

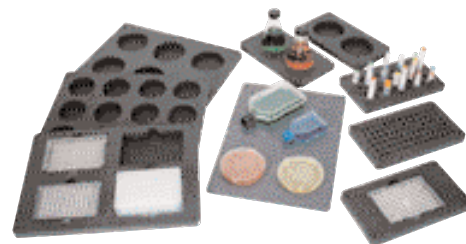
Electrical Rating: 1.5A, 50/60Hz.

CE units available contact Glas-Col.

Catalog Number	Description	Input Voltage	RPM	Product Weight (lbs)
099A LC1012	Mixer base	120V	100-2,000	77.0
099A LC1024	Mixer base	240V	100-2,000	77.0

Cartridges for Large Capacity Mixer

Catalog Number	Vessels Size and Type	Cartridge Capacity	Product Weight (lbs)
099A LC1000	Blank cartridge, 1/4"chem. res. foam		1.2
099A LC1001	Pair of blank cartridges, 1/2" thick Foam		1.2
099A VC9601	96 well plate	1	.8
099A VC9602	96 well plate	2	.8
099A LC9604	96 well plate	4	1.2
099A VC12502	125 ml Erlenmeyer flask	2	.8
099A VC25002	250 ml Erlenmeyer flask	2	.8
099A LC12512	125 ml Erlenmeyer flask	12	1.2
099A LC25006	250 ml Erlenmeyer flask	6	1.2
099A VC1084	10 mm Eppendorf tube	84	.8
099A VC10841	10 mm Eppendorf tube, 1" thick	84	1.2
099A VC1236	12 mm Cryo tube	36	.8



For custom size cartridges contact factory.



Vortexers - Volumetric Flask Mixer/ Touch Vortexer

VOLUMETRIC FLASK MIXER

Used for preparing dilutions and standard solutions.

- Aggressive mixing action allows for less mixing time.
- Mixer allows for less bench space.
- Pulsing feature interrupts action for more thorough mixing.

Specifications

Size: 18.25" w x 12" d x 17.25" h.
 Electrical Rating: 1.5A, 50/60HZ.
 Electrical: 6-ft., 3-wire grounded cord.
 Load Weight Capacity: Maximum of 5 lbs.



CE units available contact Glas-Col.

Catalog Number	Description	Number Of Flasks	Input Voltage	RPM	Product Weight (lbs)
099A LC1012050	50ml flask mixer	24	120V	100-1,500	80.0
099A LC1012100	100ml flask mixer	12	120V	100-1,500	80.0
099A LC1012250	250ml flask mixer	8	120V	100-1,500	80.0
099A LC1024050	50ml flask mixer	24	240V	100-1,500	80.0
099A LC1024100	100ml flask mixer	12	240V	100-1,500	80.0
099A LC1024250	250ml flask mixer	8	240V	100-1,500	80.0

TOUCH VORTEXER

The Touch Vortexer mixes test tube contents thoroughly and quickly with a vortexing action that swirls the liquid. The unit may be set to run continuously or to activate when any tube up to one inch diameter is touched to the cup.

Designed with a permanent-magnet, filtered DC motor, the Touch Vortexer will run cooler with less motor stress. The variable-speed motor produces constant power and is

less susceptible to overloading when excess pressure is applied. The Touch Vortexer is one of the most durable, user-friendly small vortexers available today.

Specifications

Size: 6-1/8" w x 7-1/8" d x 5-1/8" h
 (15.6 x 18.1 x 13 cm).
 Electrical Rating: 1.0A, 50/60Hz.



Catalog Number	Description	Input Voltage	RPM	Product Weight (lbs)
099A PV6	Vortexer base	120V	400-2,500	9.0
099A PV624	Vortexer base	240V	400-2,500	9.0

PULSING VORTEX MIXER

Glas-Col's pulsing feature is what makes these vortexers stand apart from other mixers. The pulsing actions allows the vortex to collapse, before throwing back a full vortex. This time delayed sequence helps to join the upper and lower strata for more thorough and reproducible mixing.

Features

- Variable speed: 100-2000rpm

- Pulsing feature interrupts action for more thorough mixing
- Pulse rate: 60-80ppm
- On/Off switch (power and pulse)
- Toggle clamp for securing deep well plates
- Contact us for custom clamping devices

Catalog Number	Description	Input Voltage	RPM	Product Weight (lbs)
099A PVM12	Vortex mixer	120V	100-2,000	22.0
099A PVM24	Vortex mixer	240V	100-2,000	22.0



Specifications

Size: 10" w x 7" d x 9" h
 driveplate 7" x 7-3/4"
 Electrical Rating: 1.0A, 50/60Hz.



Vortexers - Digital Pulse Mixer

DIGITAL PULSE MIXER

Glas-Col's Digital Pulse Mixer is capable of performing high or low speed pulse vortexing/mixing for most applications. This unit is able to accommodate a wide variety of glassware, racks, well plates or reactor blocks for accurate, repeatable results.

The microprocessor based control technology allows for display of speed, multi-function timer, and pulse profiling. Using the RS232 communication port and available Labnetix software package several units can be controlled through your personal computer.

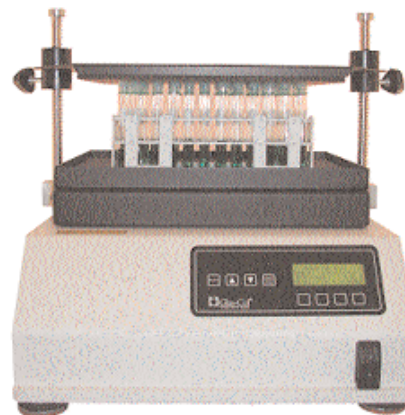
UL Approved

Features

- Pulse mode with selectable settings
- Heated top units heat up to 140°C
- Timer (Sec 1-60, Min 1-60, Hours 1-24)
- Optional PC control software
- Orbital offset .070"
- Chemical resistant foam on top and driveplate

Specifications

Size: 16" w x 18" d x 17" h



CE units available contact Glas-Col.

Platform: 11 5/8" x 14 1/4"

Electrical Rating: 3.0A, 50/60HZ.

Electrical: 5-ft., 3-wire grounded cord and on/off power switch.

Load Weight Capacity: Maximum of 10 lbs.

Catalog Number	Description	Input Voltage	RPM	Product Weight (lbs)
099A DPM12	Mixer base	120V	100-1,800	80
099A DPM24	Mixer base	240V	100-1,800	80
099A DPMH12	Mixer base heated	120V	100-1,800	80
099A DPMH24	Mixer base heated	240V	100-1,800	80

LABNETIX®

Labnetix® software gives you the flexibility to monitor and control a variety of Glas-Col mixing products. Operation is simple and intuitive, requiring no specialized training. If you're looking for a faster, easier way to automate your lab, Glas-Col products and Labnetix® software provide the answer.

With Labnetix®, instruments may be operated remotely from Labnetix® or locally from the front panel. You can quickly set speed of operation, run time, pulse rate, duty cycle and direction for all the instruments in your lab. As the units change speed and function, the icons representing them change color. You can oversee the entire lab operation at a glance.

Six separate profiles (recipes) can easily be setup with each profile having six lines of instructions.

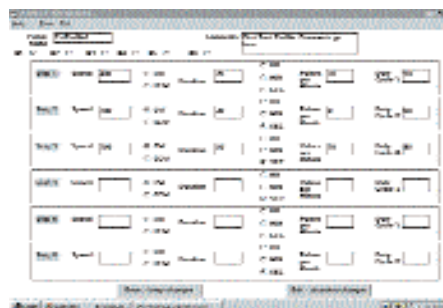
For either Local or Remote operation, each step of operation of any instrument is recorded in a master log for documentation. You have a permanent record of every operation of every instrument.

When started, Labnetix® auto-detects the type of instruments connected and displays the appropriate icon (i.e. mixer, stirrer, shaker, oven). Up to 10 different instruments can be connected and controlled at one time. No complicated wiring, configuring the network or setting of address options is required.

Inexpensive cables daisy chain the instruments to an existing PC port, there are no expensive hubs to buy or connect.



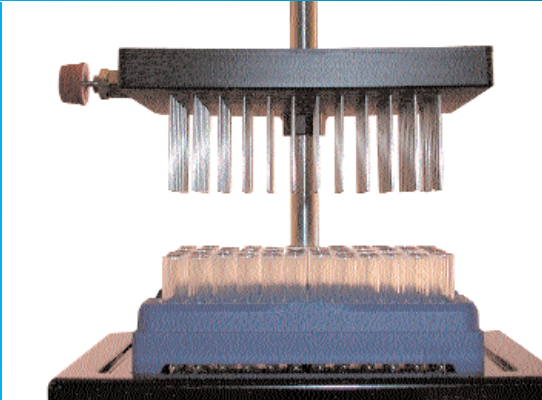
Labnetix® desktop view.



Labnetix® Profile View

Catalog Number	Description	Format	Product Weight (lbs)
099A LABNETIX®	One User License	PC	1

Evaporators



Evaporator

Evaporator System

**Digital Pulse Mixer
with Evaporator**



Evaporators - *Evaporator/Evaporator System*

EVAPORATOR

- Low cost solution for the concentration of microplate extractions and reactions.
- Each stainless steel needle delivers an equal flow of nitrogen or other gas.
- Gently speeds evaporation of excess liquid.

A fine needle valve controls the total flow to the equalizer manifold providing equal gas flow to each well. Each well has consistent

evaporation. Needle height is easily adjustable to enable most sizes and capacities of microplates.

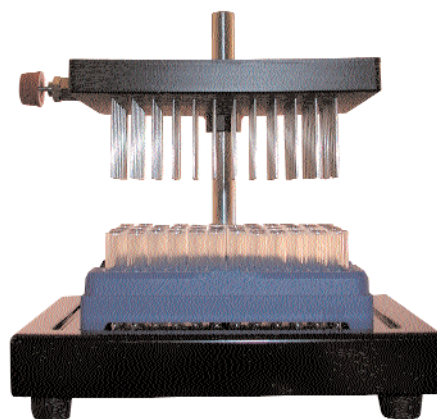
Specifications

Gas flow: 1 to 100 mL/needle

Size: 7" w x 5.5" d x 7.5" h

Body: Constructed of Nylon and can be sterilized by autoclaving.

Weight: 5 lbs.



Catalog Number	Description	Maximum PSI	Product Weight (lbs)
099A EV96	96 well evaporator	20	5.0
099A EV384	384 well evaporator	20	5.0

EVAPORATOR SYSTEM

- Low cost solution for the concentration of microplate extractions and reactions with heat block
- Each stainless steel needle delivers an equal flow of nitrogen or other gas.
- Gently speeds evaporation of excess liquid.
- Heats to 100°C for even faster drying times.
- Digital temperature control.

A fine needle valve controls the total flow to the equalizer manifold providing equal gas flow to each well. Each well has consistent

evaporation. Needle height is easily adjustable to enable most sizes and capacities of microplates.

Specifications

Gas flow: 1 to 100 mL/needle

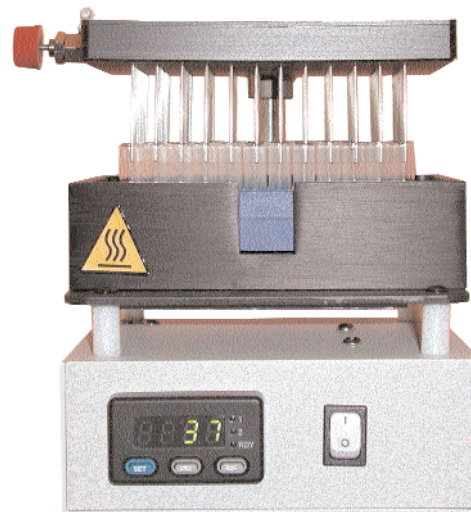
Size: Evap - 7" w x 5.5" d x 7.5" h
Control - 5.5" w x 7.5d x 2.25" h

Evap Body: Constructed of nylon and can be sterilized by autoclaving.

Weight: 8 lbs.

Electrical: 2.0A, 50/60Hz., ON/OFF power switch, fuse protection, 3-wire cord with molded plug.

Control Type: PID Parameters with auto



tune

Display: 4-Digit LED

Accuracy: ± 0.25% of Span

Catalog Number	Description	Input Voltage	Maximum PSI	Product Weight (lbs)
099A EV812S	8 well evaporator system	120V	20	8.0
099A EV824S	8 well evaporator system	240V	20	8.0
099A EV2012S	20 well evaporator system	120V	20	8.0
099A EV2024S	20 well evaporator system	240V	20	8.0
099A EV9612S	96 well evaporator system	120V	20	8.0
099A EV9624S	96 well evaporator system	240V	20	8.0
099A EV38412S	384 well evaporator system	120V	20	8.0
099A EV38424S	384 well evaporator system	240V	20	8.0

Evaporators - *Evaporator/Evaporator System*

DIGITAL PULSE MIXER WITH EVAPORATOR/CONCENTRATOR

This system is designed to rapidly evaporate/concentrate solvents by both heating the sample bottom and the incoming nitrogen. Each position is furnished with an individual orifice for the best possible delivery of gas. The pulsing feature allows a film of solvent to be thrown on the sidewall; then the vortex collapses. Next the vortex again is created and the process continues until the concentration level is achieved providing the quickest method of evaporation.

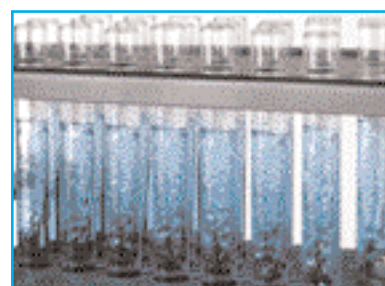
Features

- Pulse mode with selectable settings
- Heated top units heat up to 140°C
- Timer (Sec 1-60, Min 1-60, Hours 1-24)
- Optional PC control software
- Orbital offset .070"
- Chemical resistant foam on top and driveplate

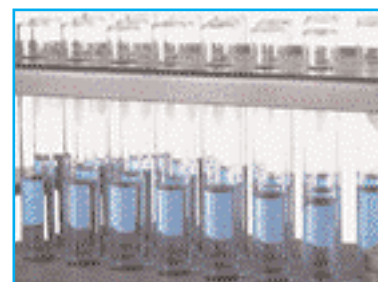
- Speed 100 to 1000 rpm, Speed Display Resolution: 0.1 RPM, Speed Setting Increment: 10 RPM
- Set point temperature for Manifold (80°C) and Bottom Blocks (140°C Max)

Specifications

Size: 16" w x 18" d x 9" h to drive plate
 Platform size: 10" x 12"
 Voltage: 120 or 240 volt models
 Mixer mounts: Vibration absorbing form minimum transfer to lab bench.
 On/Off switch: Located on right side of unit
 Finish: Light gray and black powder coat finish
 Cord: 3-wire 5' Long
 Load: Up to 10lbs.



Tube with Vortex



Vortex Stopped Momentary

Inexpensive cables daisy chain the instruments to an existing PC port, there are no expensive hubs to buy or connect.



Labnetix® desktop view.

Catalog Number	Description	Electrical Rating	Product Weight (lbs)
99A DPM12E6	6-Place Evaporator for 250ml bottle	120V, 60hz	80.0
099A DPM12E24	24-Place Evaporator EPA Vials	120V, 60hz	80.0

LABNETIX®

Labnetix® software gives you the flexibility to monitor and control a variety of Glas-Col mixing products. Operation is simple and intuitive, requiring no specialized training. If you're looking for a faster, easier way to automate your lab, Glas-Col products and Labnetix® software provide the answer.

With Labnetix®, instruments may be operated remotely from Labnetix® or locally from the front panel. You can quickly set speed of operation, run time, pulse rate, duty cycle and direction for all the instruments in your lab. As the units change speed and function, the icons representing them change color. You can oversee the entire lab operation at a glance.

Six separate profiles (recipes) can easily be setup with each profile having six lines of instructions.

For either Local or Remote operation, each step of operation of any instrument is recorded in a master log for documentation. You have a permanent record of every operation of every instrument.

When started, Labnetix® auto-detects the type of instruments connected and displays the appropriate icon (i.e. mixer, stirrer, shaker, oven). Up to 10 different instruments can be connected and controlled at one time. No complicated wiring, configuring the network or setting of address options is required.

Catalog Number	Description	Format	Product Weight (lbs)
099A LABNETIX®	One User License	PC	1

