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OPERATING INSTRUCTIONS

BELLCO FOUR POSITION

MAGNETIC STIRRERS

4 x 1 (In - Line)

CATALOG NUMBERS:

7760-01104	100V
7760-00104	115V
7760-00324	230V

Bellco Glass, Inc.
340 Edrudo Road
Vineland, N. J. 08360

Phone: (856) 691-1075
Fax: (856) 691-3247

IS #59
Rev. 6/01

****

WARNING:

Use of this equipment is limited to conventional laboratory applications. It is not intended for use in adverse environments outside the environmental conditions listed below. It is also not intended for use with corrosive or explosive solutions.

Environmental Conditions, operating: indoor use, pollution degree 2, 4° to 50° C
relative humidity 0-90% non-condensing

Environmental Conditions, non-operating: -10° to 60° C, relative humidity 95% maximum

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SAFETY SYMBOL DEFINITIONS:


unit is if

Electrical Hazard. Be extremely careful. Do not remove cover while the connected to a power supply. There are voltages within the unit which could, contacted, cause personal injury.


is loose

Protective Earth Ground (Safety Ground): Do not operate if green screw or missing. Screw provides an uninterruptible safety earth ground from the mains. (power source)


procedures

Caution or Warning Note. Denotes a hazard. Included text gives proper Failure to follow directions could result in minor personal injury and/or property damage.

****


prior

Do not modify the unit in any way if you are not a trained certified electrician. All user modifications and/or repairs must receive approval from Bellco Glass Service & Repair Department. Failure

to do so

not only voids the warranty, but also presents the risks of shock, fire and electrical damage.

DESCRIPTION:

Bellco Magnetic Stirrers are specifically designed for growing both mammalian and bacterial cultures where minimal heat transfer from the magnetic stirrer to the culture vessel is essential. They are ideal for tissue cultures grown in spinner flasks. Bellco incorporates low wattage DC motors. Independent power and speed controls allow unit to maintain a speed setting when switched on and off. Powerful magnets rotate on ball bearing shafts for increased coupling and continuous maintenance free service. Polyurethane drive belts resist humidity and temperature. The 100 volt & 115 volt models feature a convenience outlet that allows daisy chaining of up to ten stirrers. This is advantageous when using stirrers in an incubator. Inquire about custom models to meet your particular requirements.

NOTE: Use of this equipment is limited to conventional laboratory stirring of vessels. It is not intended for use in adverse environments outside the environmental conditions listed. It is also not intended for use with corrosive or explosive solutions.

SPECIFICATIONS:

Configuration:	(4) four positions, 4x1	
Max. Flask Size:	1 Liter (Standard Bellco Spinner Flasks)	
Speed Range:	30 - 800 rpm	
Dimensions:	24.41 in L x 24.41 in D x 5.51 in H 62 cm L x 62 cm D x 14 cm H	
Weight:	13 lbs (5.9)Kg.	
Power:	7760-01104	100±10 VAC @50/60 Hz line voltage 1.0 amp @ 100, 50 Hz power consumption
	7760-00104	115±10 VAC @50/60 Hz line voltage 1.0 amp @ 115, 60 Hz power consumption
	7760-00324	230V±10 VAC @50/60 Hz line voltage 0.5 amp @ 230V, 50 Hz power consumption

Features:
- 4 x 1 (in-line) configuration
- Independent power & variable speed controls
- Continuous duty rated
- Low wattage DC motor to reduce stirrer heat up
- Powerful magnets rotate on ball bearing shafts
- Polyurethane drive belts resist wear due to humidity & temperature
- 100V & 115V models feature a convenience outlet for daisy chaining

UNPACKING INSTRUCTIONS:

Unpack your Bellco Four Position Magnetic Stirrer carefully. Be certain to retain Warranty Information, all packing material and these Operating Instructions. Claims for damages require that packing material be retained for inspection. ***All damage claims must be initiated with the delivering carrier within five (5) days of receipt of merchandise.***

OPERATING INSTRUCTIONS:

1. Your new Bellco Four Position Magnetic Stirrer is shipped fully assembled and ready for use. Plug into any appropriate AC outlet:

   100 VOLT FOR STOCK NO. 7760-01104
   115 VOLT FOR STOCK NO. 7760-00104
   230 VOLT FOR STOCK NO. 7760-00324

Note: 230V units require the attachment of a receptacle plug compatable with local supply.

2. Press the power switch to the "ON" position. The neon indicator lamp will light, indicating that the unit is in operation. All Bellco magnetic stirrers are designed to hold their speed at any selected setting to approximately +/- 5%. The Bellco Four Position Magnetic Stirrer is designed to operate between the limits of 30 and approximately 800 stirring revolutions per minute.
3. All Bellco Magnetic Stirrers will not start at exactly the same reference point on the speed control dial; some may start at the second line, some at the third, etc. This may be due to one or more of the following factors:
   a. Inherent characteristics of the motor and controlling circuits.
   b. Material being stirred.
   c. Variation and fluctuations in voltage coming into the unit.
4. To operate, turn the speed control dial to the lowest reading, then place the vessel to be stirred over an "X" on the top of the stirrer. A drive magnet is located directly below this point. Increase the speed until the desired rate of stirring is achieved.

5. Observe all warnings.

TROUBLE SHOOTING AND SERVICE:

WARNING: POTENTIAL SHOCK HAZARD EXISTS WHEN COVER IS REMOVED.

In the event that any problem develops with your Bellco Four Position Magnetic Stirrer, **DO NOT** attempt to perform any service on the unit without first contacting the Bellco Service/Repair Department (tel. 800-257-7043). ***Unauthorized servicing may VOID WARRANTY.*** Bellco Glass will readily supply information regarding trouble shooting minor problems upon request.

In any correspondence with Bellco concerning your Magnetic Stirrer, please refer to the appropriate stock number and serial number. This information may be found on the warranty and on the serial label attached to the rear of the unit.

COMMON TROUBLE SHOOTING HINTS:

Disconnect Power Cord before removing cover or performing any service on unit.

1. Unit will not operate or continually blows fuses when turned on:
   a. Blown Fuse - blown fuse may occur if unit is turned on at high speed
   b. Broken Drive Belt
   c. Defective Circuit Board - check DC output voltage
   d. Worn Motor Brushes - brushes should be checked once every 4 months and should be replaced when worn to within 1/8" of spring
   e. Shorted Motor - check armature and commutator

REPLACEMENT OF PARTS:

1. **Replacement of Mains Fuse** - Grasp fuse holder with fingers and depress slightly while twisting counterclockwise. The fuse holder cap will pop free exposing the fuse. Replace the defective fuse with one of equal rating (3AG-1AMP for 100V/115 V, 3AG-1/2AMP for 230 V). Replace the fuse holder cap by inserting into the fuse holder base, depressing slightly and turning clockwise.

2. **Replacement of Motor or Motor Brushes**:

Disconnect Power Cord before removing cover or performing any service on unit

   a. Remove any vessels which may be on the unit
   b. Remove the two (2) screws on each side of the cover. Lift cover from unit exposing the interior of the chassis and the motor.
   c. On either side of the motor, you will observe the two motor brush screw caps.
   d. Brushes are easily accessible by removing the brush screw caps on the sides of the motor. Pull out worn brushes, install new brushes and replace brush screw caps.
   e. To replace motor, remove the drive belt located on top of the drive plate and remove the motor pulley.
   f. Remove the four screws securing the drive plate to its brackets and lift drive plate to expose the motor.
   g. Disconnect the lead wires to the circuit board noting their location.
   h. Connect the new motor leads and plug in unit. Turn unit "ON" and test motor operation prior to assembly.
   I. Unplug power cord and reassemble by reversing above disassembly procedures

3. **Replacement of Drive Belt:**

Disconnect Power Cord before removing cover or performing any service on unit

a. Remove cover as described under Replacement of Motor above.
b. With the cover removed from the chassis, the drive belt is accessible.
c. Remove the old belt by stretching it slightly with your fingers and remove it from the pulleys.
d. Place the drive belt on the magnet pulley and stretch over the pulley on the motor shaft.
e. Test the operation of the unit prior to reassemble, then disconnect the power cord.
f. Reassemble by reversing disassembly procedures.

NOTE: WHEN REPLACING THE DRIVE BELT, BE CAREFUL NOT TO GET ANY OILY OR GREASY SUBSTANCES ON THE BELT.

4. **Replacement of Timing Belt:**

Disconnect Power Cord before removing cover or performing any service on unit

a. Remove Drive Plate as described in Replacement of Motor. (see previous page)
b. Loosen the set screws on the timing pulleys on which the timing belt turns.
c. Lift one pulley with the timing belt free of its shaft. Remove the timing belt.
d. Replace with new timing belt, and reassemble by reversing disassembly instructions.

5. **Replacement of Circuit Board:** (ref. Figure 1)

Disconnect Power Cord before removing cover or performing any service on unit

a Remove cover and drive plate as described in Replacement of Motor. (see previous page)
b. Remove all leads from the circuit board, noting location of appropriate terminal and wire color.
c. Loosen the set screw on the control knob and remove the control knob.
d. Remove 1/2" lock nut on the front panel thereby loosening the circuit board.
e. Push the circuit board control pin through the front of the chassis, then lift the circuit board from the unit.
f. Replace with the new circuit board. Reassemble new circuit board into unit and connect appropriate line and motor leads prior to testing of the unit or reassemble.
g. Reassemble unit as described in Replacement of Motor.

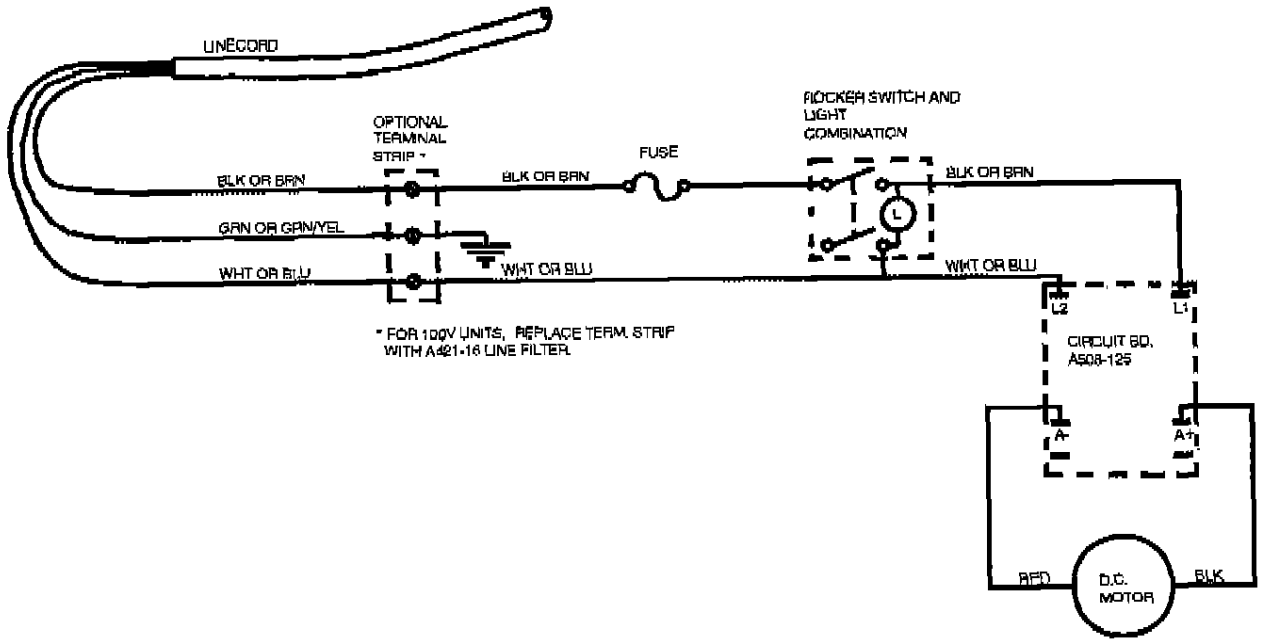
SEE ATTACHED EXPLODED DRAWINGS FOR ADDITIONAL INFORMATION

REPLACEMENT PARTS LIST:

Part #	Qty	Description
A500-480	1	Motor (115V)
A500-A73	1	Motor (100V,230V)
A508-125	1	Circuit Board (100V,115V)
A508-125B	1	Circuit Board (230V)
A500-486	2	Motor Brush
A500-107	1	Rocker Switch (100V,115V)
A500-68	1	Rocker Switch (230V)
A500-175	1	Drive Belt
A500-460	3	Timing Belts
A500-234	1	Mains Fuse (100V,115V)
A432-3	1	Mains Fuse (230V)
A432-12	1	Circuit Board Fuse (100V,115V)
A432-16	1	Circuit Board Fuse (230V)
A421-16	1	Line Filter (100V,230V)

To order, Contact Bellco Customer Service Department @
1-800-257-7043

FIGURE 1: 115V WIRING DIAGRAM (A500-41)



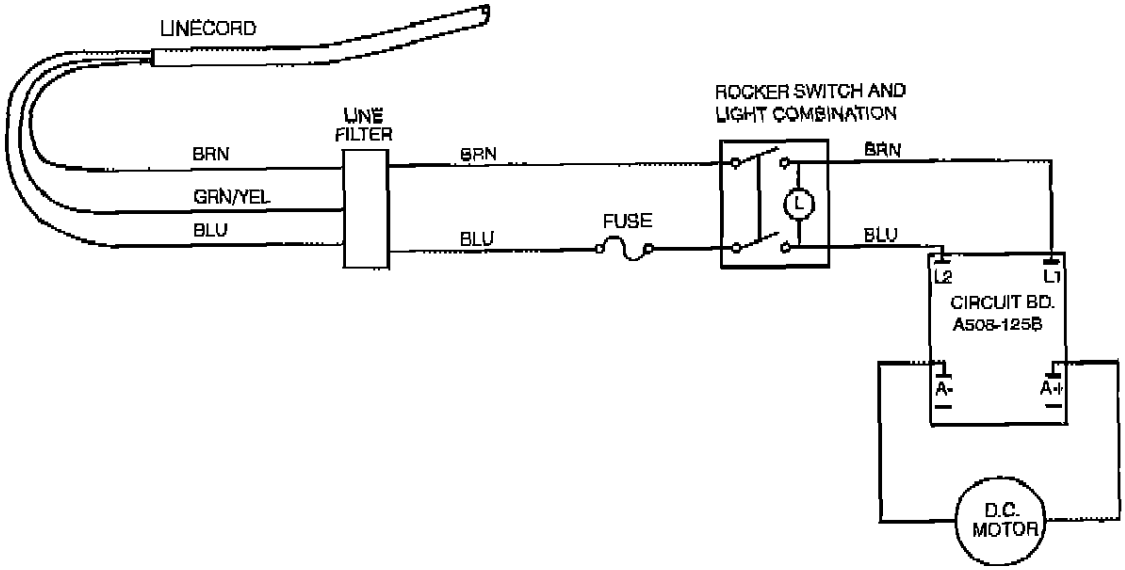


FIGURE 2: 230V WIRING DIAGRAM (A500-673)

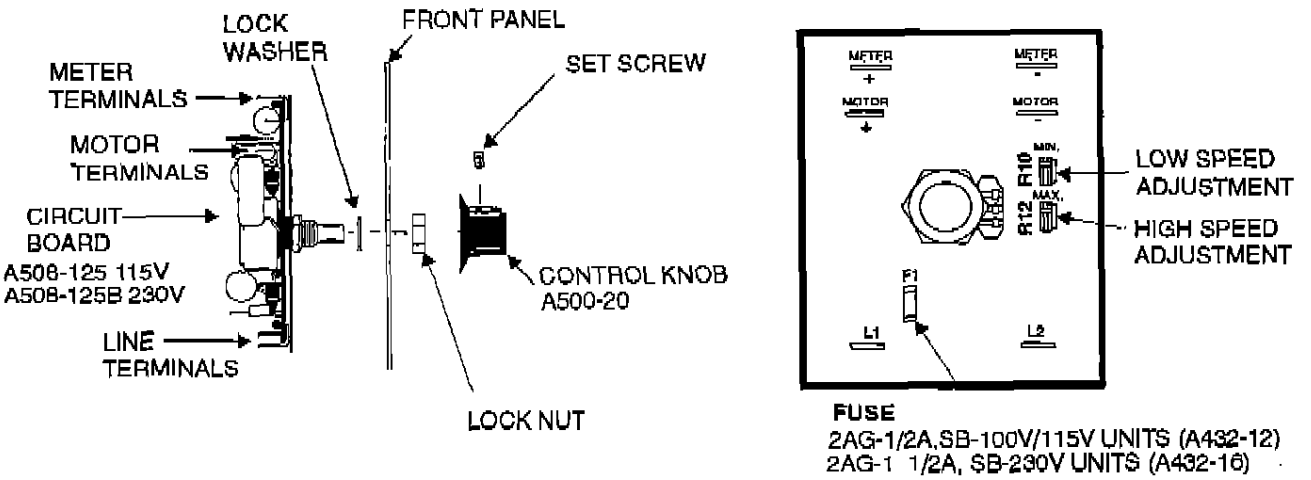
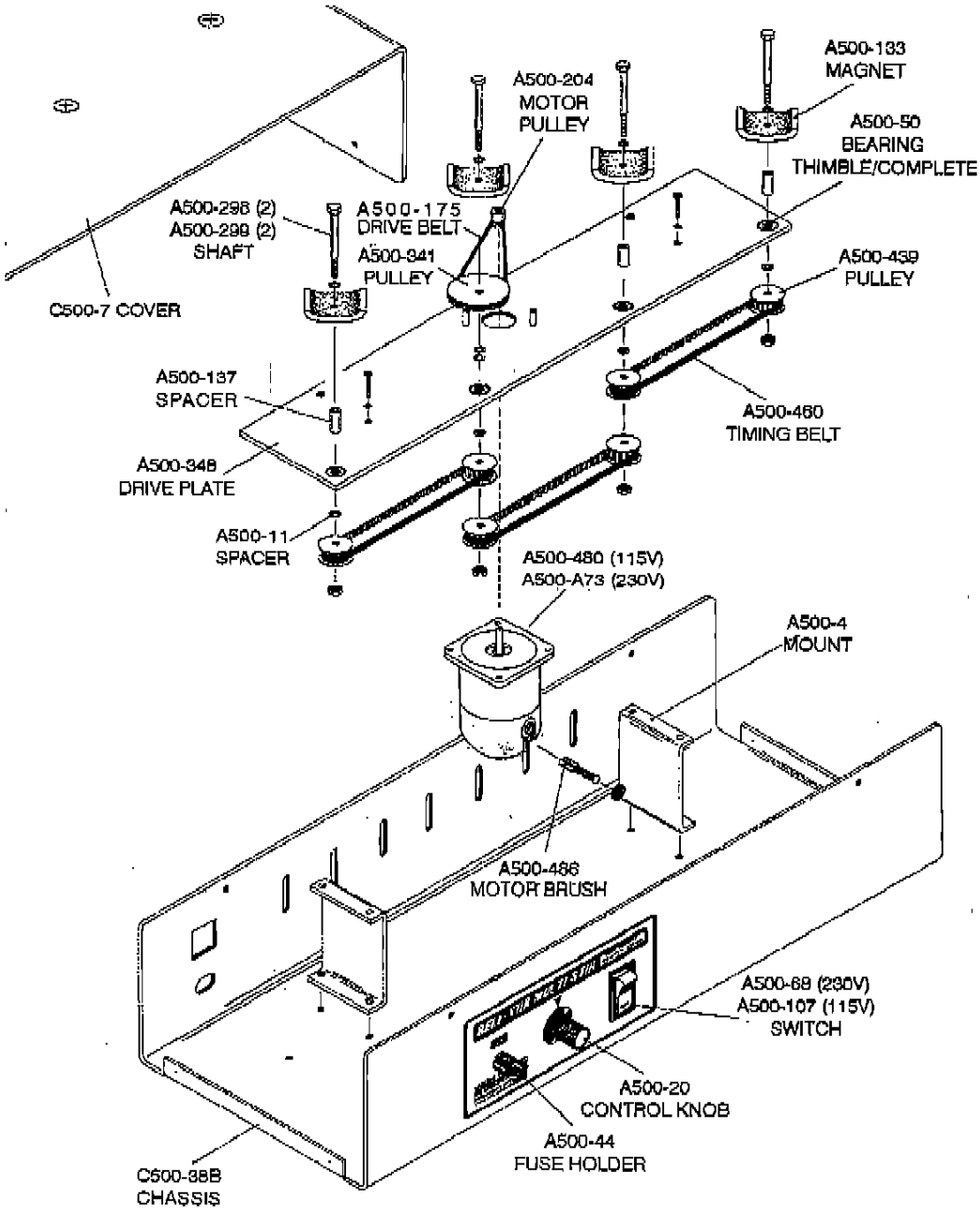


FIGURE 3: CIRCUIT BOARD INSTALLATION (A508-125)


A500-133
MAGNET
A500-204
MOTOR
PULLEY
A500-50
BEARING
THIMBLE/COMPLETE
A500-298 (2)
A500-299 (2)
SHAFT
A500-175
DRIVE BELT
A500-341
PULLEY
A500-459
PULLEY
C500-7 COVER
A500-137
SPACER
A500-460
TIMING BELT
A500-348
DRIVE PLATE
A500-11
SPACER
A500-480 (115V)
A500-A73 (230V)
A500-4
MOUNT
A500-486
MOTOR BRUSH
A500-68 (230V)
A500-107 (115V)
SWITCH
A500-20
CONTROL KNOB
A500-44
FUSE HOLDER
C500-38B
CHASSIS

A508-125 & A508-125B Speed Control Board Fuse:

The A508-125 & A508-125B Speed Control Board Fuse protects the speed control circuit from overload conditions such as a defective motor, needed brush replacement or a motor stalled due to obstructions or mechanical failures. The fuse eliminates the need for board replacement should one of the above conditions occur.

The procdure for checking if the fuse needs replacement is given below.

1. Power Switch indicator does not light when the unit is switched ON. On units with a detachable power cord; first check that power inlet module is switched ON (switch on 1 position) and then check the **MAINS** fuse. On units with attached power cord; Check **MAINS** fuse.

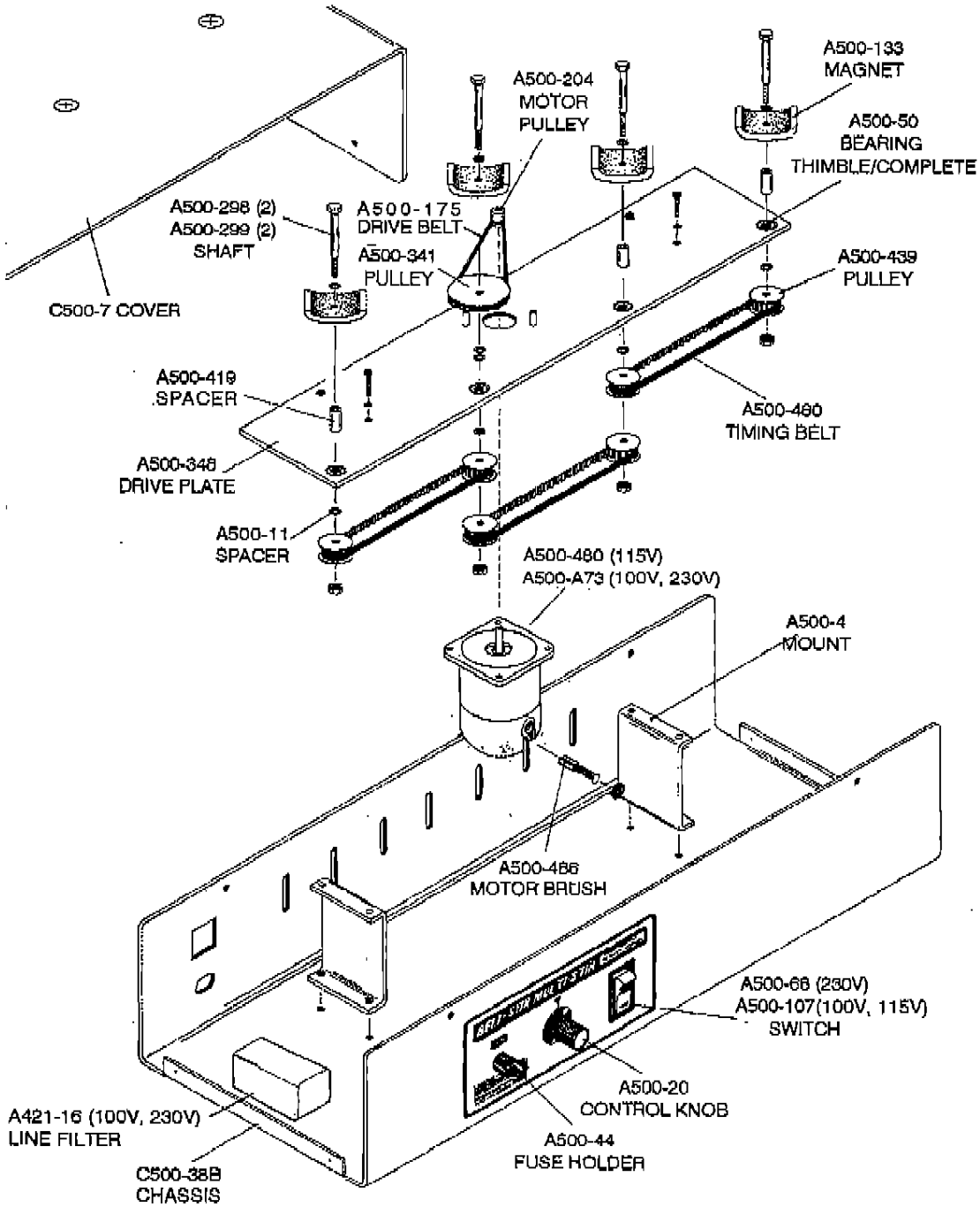
2. Power Switch indicator lights when the unit is ON but the motor is not active when the speed control knob is turned to 10 or fully clockwise. The user should check for:

   a. **Motor makes noise.** The motor runs or makes a humming noise. Check for a mechanical obstruction, loose linkage or broken belt. If no obstruction is apparent then it will be necessary to open the unit and check for an internal obstruction, loose linkage such as pulley set screws or broken belt. Disconnect from the line power source prior to servicing.

   b. **Motor is silent**. Check motor brushes to insure that they have adequate length. Disconnect from the line power source prior to servicing. The speed control output to the motor will be live and approximately 90VDC. Have an electrician check motor voltage.

   c. **Motor stalling.** Check speed control board fuse(F1). Disconnect from the line power source prior to servicing. The fuse can be visually inspected or checked for continuity with an ohm meter. If necessary replace the fuse with part #A432-12 for 100V/115V units and #A432-16 for 230V units. Need for fuse replacement indicates other problems which should be resolved prior to using

the unit. Again check for obstructions which may cause motor stalling or replace motor brushes. Check that all bearings rotate easily and lubricate or replace if necessary.



3. Inability to produce a DC voltage to the motor when the fuses are good indicates need for speed control board replacement. Have an electrician test for you or contact our Service and Repair Department for repair and return instructions

Figure 4
Exploded View A500-A5
7760-01104 100V, 7760-00104 115V, 7760-00324 230V

BELLCO WARRANTY AND LIMITATION OF LIABILITY

Bellco Glass, Inc. warrants to the original purchaser, its products to be free from detects in material and workmanship for a **period for one (1) year from the date of shipment, unless otherwise specified..** Our obligation under this warranty is limited to, at our option, repair, replace, or cause any necessary repairs to be made to, any defective part or parts, which shall be returned to us. **Bellco takes no responsibility for damage to merchandise in transit.** All such claims must be submitted to the carrier. This warranty shall not apply to any equipment or parts which shall have been repaired or altered outside our factory, or subjected to misuse, negligence, accidents, faulty installation by other parties, or **unauthorized** repairs or modifications. In addition, Bellco Glass, Inc., shall not be responsible to the original purchaser or any other party or parties for bodily or property loss, damages, or injuries of any kind or nature through either direct or indirect use of the product. This warranty is made expressly in lieu of any and all other warranties, expressed or implied, or statutory as to the merchantability, fitness for purpose sold, description, quality, productiveness or any other matter. All other such warranties are specifically excluded.

The provisions of this warranty and limitation of liability may not be modified in any respect except in writing signed by a duly authorized officer of Bellco. The liability of Bellco, if any, for damages relating to any allegedly defective product shall, under any legal or equitable theory be limited to the actual price paid by purchaser for such product and in no event include incidental or consequential damages of any kind.

SHIPMENTS

All items are shipped F.O.B. Vineland, New Jersey with the charges prepaid and added to the invoice. Special shipping instructions should accompany your order. We will select the best method if none is specified. Air shipments are available for an additional charge. Delivery of large products shall be to the customer's loading dock. **It is the customer's responsibility to arrange movement from the loading dock to the site of use, unless otherwise agreed to by Bellco Glass, Inc.** Products requiring special or crating may incur additional handling fees.

Bellco takes every reasonable precaution to ensure that its products arrive without damage. However, occasionally damage will occur during the shipment of a product. For this reason, it is imperative that Purchaser examine each product **immediately** upon receipt in order to determine

whether the product, has arrived in proper condition. In the event Purchaser detects any damage to the product, Purchaser shall **immediately** notify Bellco and the carrier who delivered the product. **Failure to notify Bellco and the carrier of any damage within five (5) days of receipt of the product shall constitute a waiver of any claim for damage to the product.** The freight carrier shall be exclusively responsible for any damage which occurs during shipment.

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