

**OPERATING INSTRUCTIONS**  
**BELCO MICROCARRIER**  
**TWO POSITION MAGNETIC STIRRER**

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**CATALOG NUMBERS**

**7765-00202    115 Volt**  
**7765-22202    230 Volt**

**Belco Glass, Inc.**  
**340 Edrudo Road**  
**Vineland, N. J. 08360**

**Telephone: (856) 691-1075**  
**Fax:            (856) 691-3247**

**IS# 80**  
**Rev. 6/99**

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**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:**



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



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



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

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**Do not modify the unit in any way if you are not a trained certified electrician. All user modifications and/or repairs must receive prior 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 Micro-Carrier 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 to reduce stirrer heat-up along with solid state circuitry for precise RPM control. 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. Our 115 volt models feature a convenience outlet that allows daisy chaining of up to ten stirrers. Inquire about custom models to meet your particular requirements.

## **SPECIFICATIONS**

**Speed Range:** 5 - 150 RPM

**Dimensions:** 34 W x 26 D x 13 H (cm)

**Number of Positions:** Two (2)

**Weight:** 14.0 lbs (6.4 kg)

**Electrical Rating:** 7765-00202 115±10 VAC @ 60 Hz line voltage  
1.0 amp @ 115V, 60 Hz power consumption  
7765-22202 230±10 VAC @ 50/60 Hz line voltage  
0.5 amp @ 230V, 50/60 Hz power consumption

## **FEATURES**

- Sized for versatility, from research to production scale
- Provides stable, low speeds recommended by micro carrier bead manufacturers
- Front panel tachometer allows reproducible speed selection necessary for Suspension and Micro carrier cell culture
- Continuous duty rated
- Speed Range is 5 to 150 RPM
- Optional timer module available to intermittent stirring during attachment of cells to micro carriers

## UNPACKING INSTRUCTIONS


1. Unpack your Bellco Magnetic Two Position Magnetic Stirrer carefully. Note: Be sure to retain Warranty Information, all packing materials and these 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 Magnetic Stirrer is shipped fully assembled and ready for use. Plug into any appropriate AC outlet:

**115 VOLT FOR STOCK NO. 7765-00202**

**230 VOLT FOR STOCK NO. 7765-22202**

 **Note: 230V units require the attachment of a receptacle plug compatible 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 Two Position Magnetic Stirrer is designed to operate between the limits of 15 and approximately 150 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 warning:

## TROUBLE SHOOTING AND SERVICE:

**WARNING: Disconnect the power cord from electrical source.**

**In the event that any problem develops with your Bellco Magnetic Stirrer, DO NOT attempt to perform any service on the unit without first contacting the Bellco Equipment Service Department @ 1-800-257-7043. 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 from electrical source.**

#### **A. Unit will not operate or continually blows fuses when turned on:**

1. Blown fuse - blown fuse may occur if unit is turned on at high speed
2. Broken drive belt
3. Defective Circuit Board - have electrician check DC output voltage.
4. Worn Motor Brushes - brushes should be checked once every 4 months and should be replaced when worn to within 1/8" of spring.
5. Shorted Motor - have electrician check armature and commutator

#### **B. Replacement of Parts:**

⚡ ⚡ **Disconnect power cord from electrical source.**

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 (2AG-1AMP for 115V units & 3AG-1/2AMP for 230V units). Replace the fuse holder cap by inserting into the fuse holder base, depressing slightly and turning clockwise.

⚡

⚡ **Disconnect power cord from electrical source.**

#### **2. Replacement of motor brushes and/or motor:**

- 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 two screws securing the motor to the drive plate and remove drive plate.
- g. Remove the two screws securing the motor to the chassis and lift motor free of unit.
- h. Disconnect the lead wires to the circuit board noting their location.
- i. Connect the new motor leads and plug in unit. Turn unit "ON" and test motor operation prior assembly.
- j. Reassemble by reversing above disassembly procedures.

**⚡ Disconnect power cord from electrical source.**

**3. Replacement of Drive Belt:**

- 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 new drive belt on the magnet pulley and stretch over the drive pulley on the motor shaft.
- e. Test the operation of the unit prior to reassembly, then disconnect 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 Circuit Board:**

(See Circuit Board Installation Diagram for Reference)

**⚡ Disconnect power cord from electrical source.**

- a. Remove cover as described in Replacement of Motor above.
- b. Remove the control knob and replace with the new control knob.
- c. Loosen the set screw on the control knob and remove the control knob.
- d. Remove the 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 unit or reassembly.
- g. Reassemble unit as described in Replacement of Motor above.

**SEE THE FOLLOWING EXPLODED DRAWINGS  
FOR ADDITIONAL INFORMATION**

## REPLACEMENT PARTS LIST

A500-A73	1	Motor (230V)
A500-480	1	Motor (115V)
A508-125	1	Circuit Board
A500-486	2	Motor Brushes
A500-107	1	Rocker Switch (115V)
A500-68	1	Rocker Switch (230V)
A500-6	2	Drive Belt
A500-462	1	Timing Belt
A508-125B	1	(230V) Circuit Board
A500-234	1	Main Fuse (115V)
A432-3	1	Main Fuse (230V)
A421-16	1	Line Filter (230V)
A508-36	1	Meter
A432-12	1	Circuit Board Fuse (115V)
A432-16	1	Circuit Board Fuse (230V)

*To Order, Contact Belco's Service/Repair Department @ 1-800-257-7043*

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

The A508-125 & A508-125B Speed Control Board Fuse protects the speed control circuit 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.

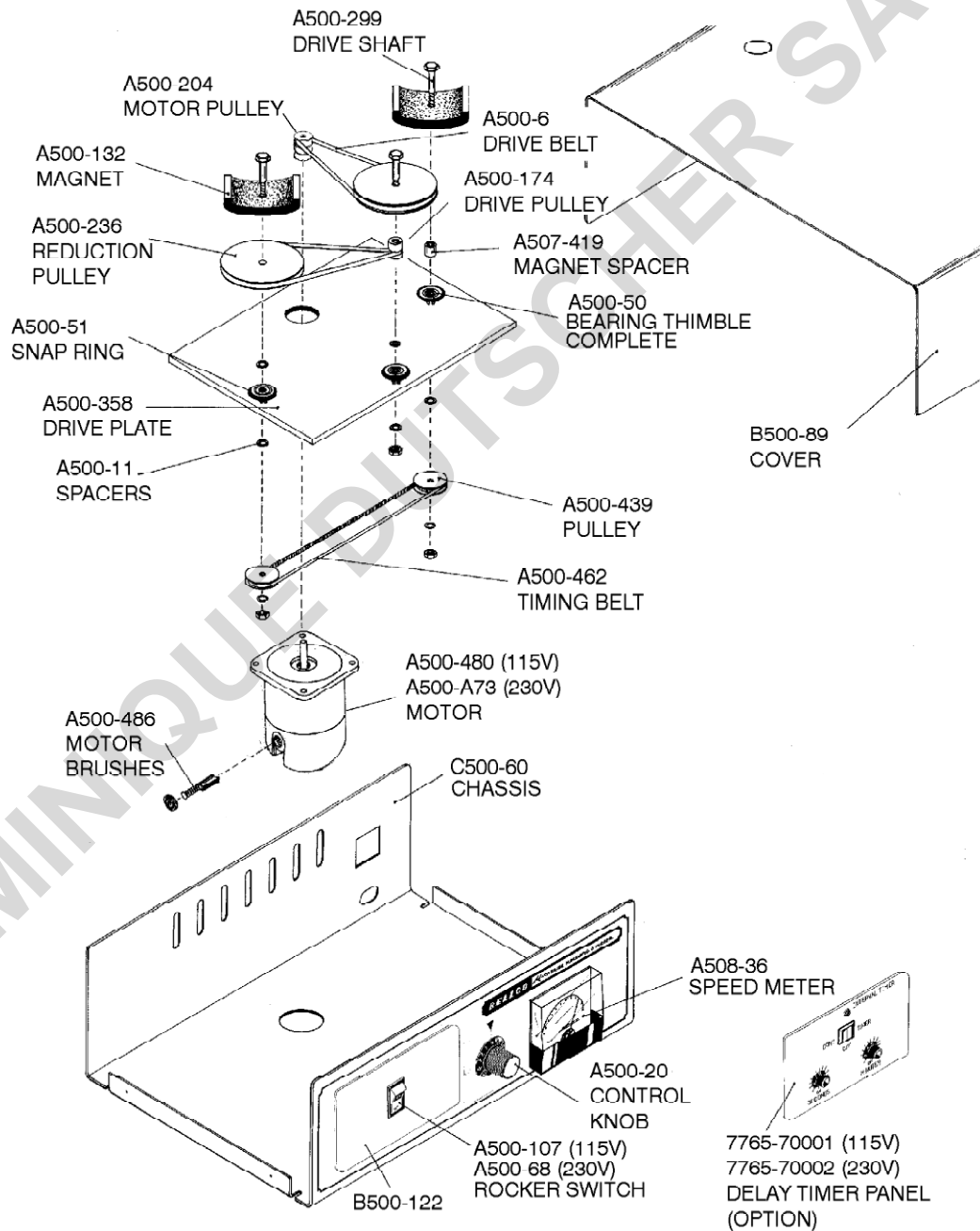
The Procedure for checking if the fuse needs replacement is given below.

1. Power Switch indicator does not light when the unit is switched **ON**. Check MAIN fuse and power source.
2. Power Switch indicator lights when the unit is ON, but the motor is not active when the speed control knob is advanced clockwise. The user should check for:

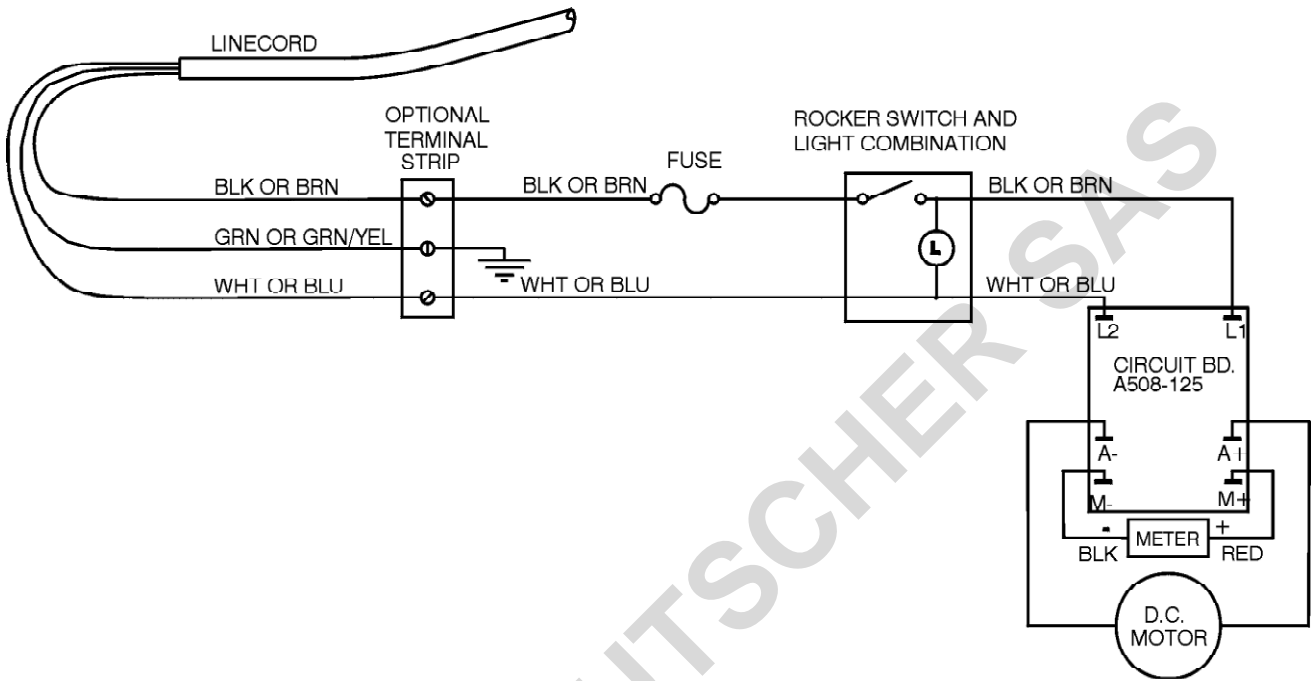
### **Disconnect Power Cord from electrical source.**

- 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 90 Volts DC. Have an electrician check motor voltage.
  - c. **Stalled Motor.** Check speed control board fuse. (ref. figure 3) 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 with part # A432-1 2 fuse for 115 volt and A432-16 for 230 volt models. Need for fuse replacement indicates other problems which should be resolved prior 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 DC voltage to the motor when the fuses are good indicates need for speed control board replacement. Have an electrician test it for you or contact the Service/Repair Department for repair and return instructions.

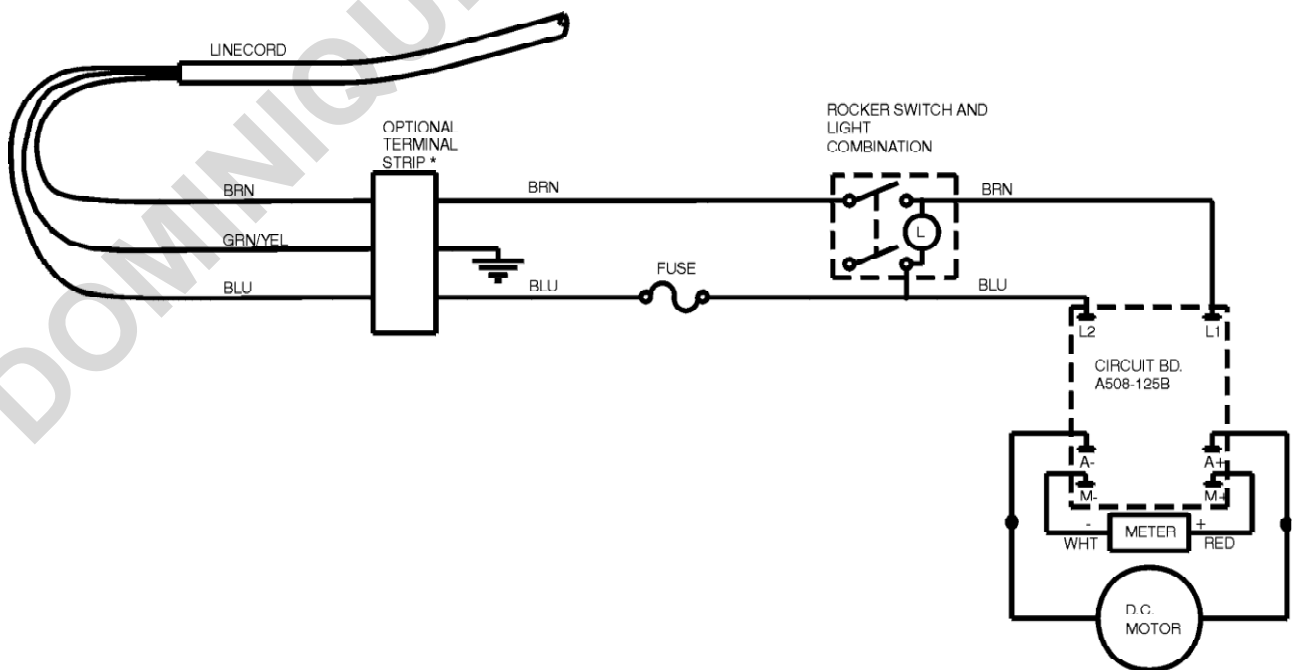
## TWO POSITION MICRO-CARRIER MAGNETIC STIRRER COMPACT MODEL (A500-A30)



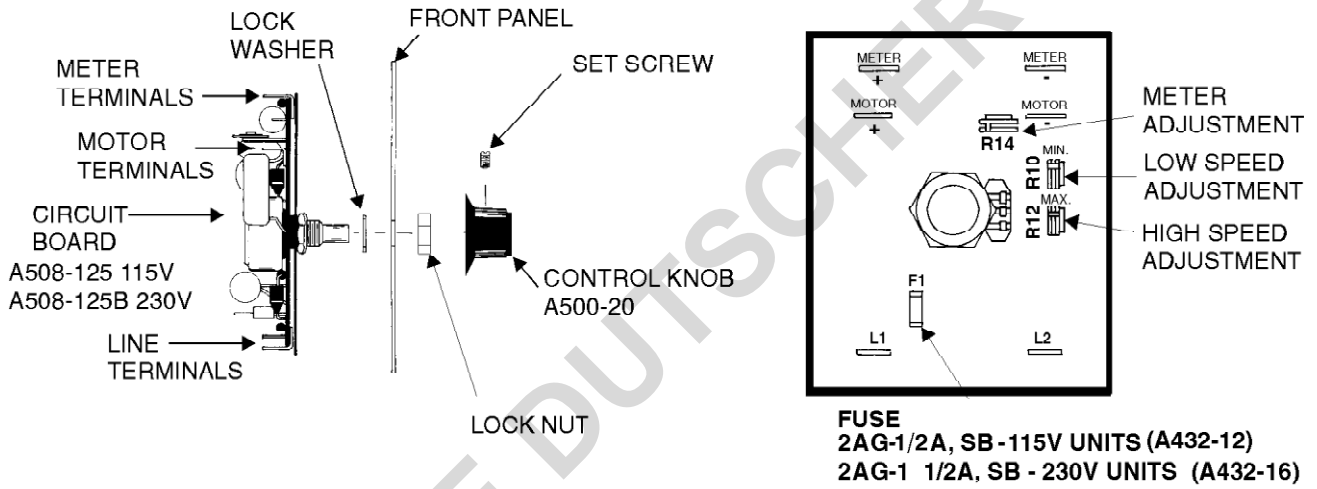
**FIGURE 1:  
WIRING DIAGRAM 115VAC (A500-42)**



**FIGURE 2:  
WIRING DIAGRAM 230VAC (A500-674)**



**Figure 4:  
CIRCUIT BOARD INSTALLATION (A508-125)**



## **BELCO WARRANTY AND LIMITATION OF LIABILITY**

Bellco Glass, Inc. warrants to the original purchaser, its products to be free from defects in material and workmanship for a **period of 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 packaging 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.