Senator™ Electronic Bingo System

Operator's Manual

Arrow International
Capitol Bingo
Equipment Division

48209

Thank you for choosing to purchase Arrow International's Capitol Bingo Equipment. We are confident that you will be completely satisfied with our high quality, durable bingo equipment. Our Capitol Bingo Equipment has the most technologically advanced electronics and is designed for easy and reliable operations and trouble-free maintenance by the operator.

Arrow manufactures the highest furniture quality, hand crafted equipment consoles in the industry. Our metal fabricated steel products are constructed of the finest, heavy duty materials available and guaranteed to withstand many years of use. The Designer Series consoles offer durable Formica® top and bottom and interchangeable front panels.

This bingo equipment manual introduces you to the many features of the Senator™ not found in competitive bingo systems. It will take you step by step through unpacking and installing the system. It will show you how to program and run games easily, and how to operate your new bingo system. Easy to follow instructions and illustrations also guide you through routine service and maintenance.

Arrow's hard work and dedication enable us to offer you a breadth of product line that continues to grow. We are proud to offer you the most extensive charitable fundraising product line including Popp-Opens™ pull tabs, bingo markers and bingo paper. This dedication to providing an extensive line of high quality products is accompanied by our commitment to satisfying your product needs with fast and trouble-free service. Please visit us online at www.arrowinternational.com for the latest in all of our product lines.

We value you as a customer and always welcome and appreciate your comments and suggestions to help improve our products. Our best suggestions always come from our game operators and distributors. We want you to always be a satisfied customer and we will continue to design and improve our products through the valuable feedback received from you and our outstanding network of Arrow distributors.

Once again, thank you for choosing Arrow International/Capitol for your charitable fundraising needs.

Arrow International

troduction

Your new CAPITOL Senator™ Bingo System was designed using state-of-the-art technology. It's modern design, console with real oak veneer and exceptional quality and ease of use have set it apart from the competition. The Senator™ is the economical entry level electronic system offered in a wood cabinet.

Digital communication from the console to the flashboard eliminates bulky, complicated cabling between the components. The Senator™ Bingo System was specially designed with the operator in mind. For example, all system controls are placed on a single control panel. The Senator™ will provide years of trouble-free service. However, if a problem should arise, our service personnel will provide timely response on repairs, spare parts and technical support.

This revised manual will guide you through unpacking, installation, programming, running games and sessions with easy-to-follow instructions and corresponding illustrations.

Damage Action Process

Your Capitol Bingo Equipment contains delicate electronic equipment. It is imperative that you thoroughly inspect the contents of the package before accepting product delivery from the carrier.

In case of severe damage, refuse the equipment from the carrier. Contact your distributor or Arrow International for immediate replacement.

If the product is damaged but acceptable, make a note on the bill of lading before accepting. Take a photo of the damage before and after unpacking as a record of the damage. Keep the packaging to aid in recovering the amount of claim against the carrier. Contact the carriers agent immediately for inspection. Be sure to obtain a copy of the inspection report for your records.

If these precautions are not taken, we cannot assist you in recovering the amount of the claim against the carrier.

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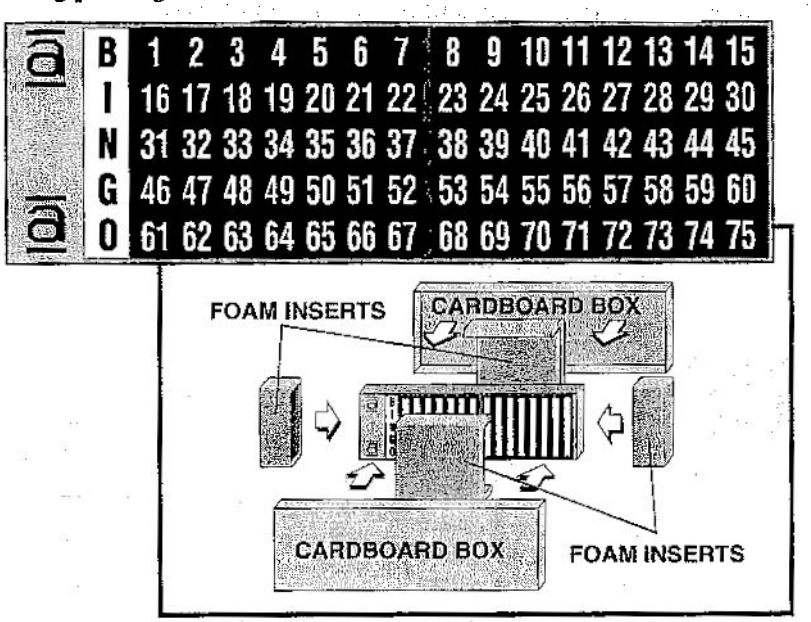
Getting Started

A. Unpacking

Arrow International designed your Senator™ Bingo System to have a distinctively attractive appearance, and we used careful manufacturing and assembly techniques to preserve this appearance. Each Senator™ system is inspected for scratches, bumps or abrasions during packing, and is warranted to be free from defects.

Caution: This flashboard weighs approximately 106 pounds. Use care and get assistance before unpacking and lifting. A minimum of two individuals is required for unpacking.



1. Flashboard

The flashboard is banded into a heavy cardboard enclosure with foam inserts at each end and in the middle. This carton is marked with various warning labels and stampings. Lay the carton flat, observing that the outside overlapping cover of the flashboard is on the top side.

Note: Included with the flashboard is a 100 ft. data cable, 3-flashboard mounting brackets and a customer parts kit consisting of:

4- #1820 Light bulbs

2- 4 AMP Slo Blo 250V fuses

2- 3.2 AMP Slo Blo 250V fuses

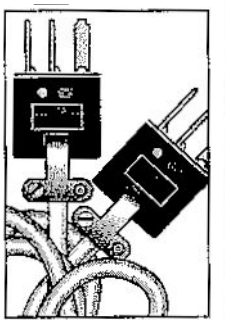
Before opening, closely inspect the carton for evidence of shipping damage such as puncture holes, tears, and crushed edges or corners. Damage to the carton may alert you to damage to the flashboard. If damage is detected refer to the Damage Action Process section (p. 3) for procedures.

Use scissors to cut all straps. Carefully lift off the carton top. Cut the tape on the four corners of the carton bottom and lay the carton flaps down flat. Slide both ends and the top center foam pieces off to allow access to the flashboard. To prevent scratches, make sure the flashboard remains on cardboard prior to actual installation. Obtain assistance in setting the flashboard upright.

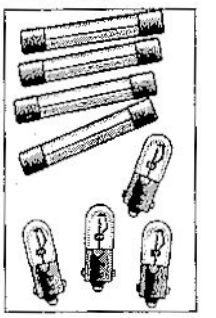
Do not destroy or discard carton materials until after final inspection and testing.

Inspect the flashboard to insure that all acrylic panels are in

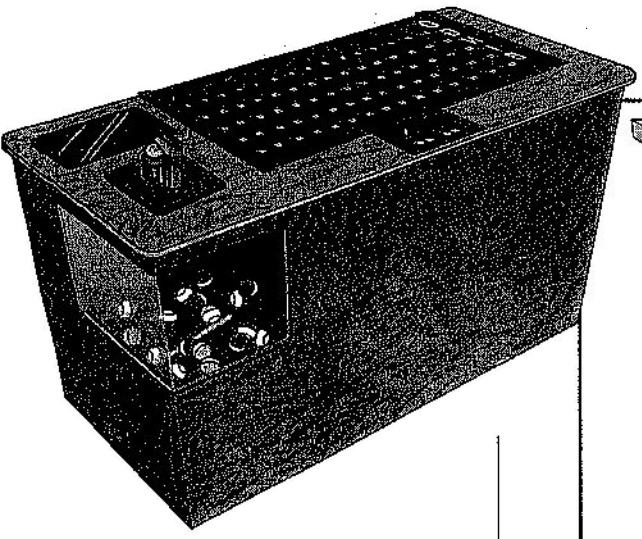
100 FT. DATA CABLE



PARTS KIT

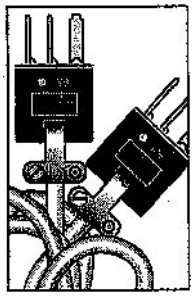


Caution: This console weighs approximately 160 pounds - get assistance before lifting. A minimum of two individuals is required for unpacking.

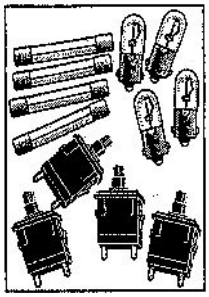


Note: Do not destroy or discard carton materials until after final inspection and testing.

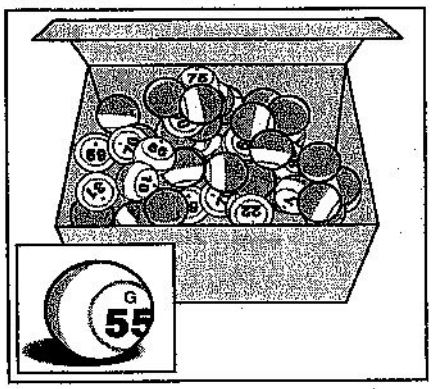
25 FT. DATA CABLE



PARTS KITS



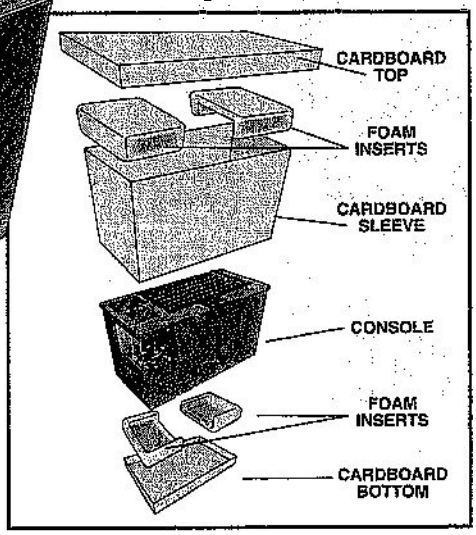
DOUBLE NUMBERED SAMSON™ BALLS



place and free of cracks or heavy scratches. Inspect the masonite panels for damage. If damage to your equipment is evident, or if you have problems in any of the above areas, contact your area distributor immediately for advice and refer to the Damage Action Process section (p. 3) for procedures.

2. Console

The Senator™ console is packed with foam protectors in a cardboard carton and is skid-mounted. Once again, check the carton for possible signs of damage. If damage is detected refer to the Damage Action Process section (p.3) for procedures.



Use scissors to cut the straps from the skid only, taking care not to cut the straps protecting the console. With the help of at least one assistant, carefully lift the console from the skid and place it on solid flooring. Cut the remaining four straps from the console and remove the cardboard top.

Remove the two foam protectors inside the top and slide the cardboard tube up and off the console. A minimum of two people are required to safely unpack the console. With one person lifting from the top of the ball-blower end and another individual grasping the two handles on the opposite end, raise the console up and out from the carton and foam inserts. Check that all casters are in place. Set unpacked console on solid flooring. Do not destroy or discard carton material until after final inspection and testing.

At this point you should inspect the console for shipping damage. All acrylic panels should be in place. Metal panels and their associated switches and parts should be operational. If problems are found in any of these areas, immediately contact your distributor for advice and refer to the Damage Action Process section (p.3) for procedures.

The following can be found inside the left door of the console:

(1) Set of superior quality Double Numbered Samson™ balls
(1) Standard 25 ft. data cable (other lengths optional)
(1) Customer part kit, which includes:
- (4) Low-voltage ball switches
- (4) #1820 28V light bulbs
- (2) 0.3 AMP MDL 250V fuses
- (2) 6 AMP AGC/3AG 250V fuses

Open the box of Doubled Numbered Samson™ balls, check each ball for damage and insert each ball into its corresponding slot in the console ball tray. If a ball has a flat spot, immerse it in hot water. Usually the flat area will pop out. If it does not, contact your distributor for a replacement.

B. Warranty Assurance

At this time, please verify the serial numbers located on the output panel in the left side of the console, on the left side of the flashboard. Check them against those shown on the enclosed warranty card, please fill out all requested information and return the completed warranty card to Arrow International within 30 days of purchase along with proof of purchase date.

A second warranty card appears on the back cover of this manual. We suggest that you fill out this card and keep the information on hand for future reference.

To validate your warranty, you must complete the enclosed warranty card and return it to Arrow International, Inc. within 30 days of purchase from your Capitol Bingo Equipment Distributor.

C. Console Compatibility

The Senator™ console is fully compatible with the following:

- Capitol Statesman™ Verifiers #462210 and #462220
- Capitol Aluminum Extruded Flashboard #46826
- Capitol Senator™ and 600 LV-3 flashboards
- Inquire regarding other manufacturers

Note: Be sure to allow adequate air flow for the console on carpeted surfaces. If necessary, elevate the console on planks or other rigid forms.

II. Installation

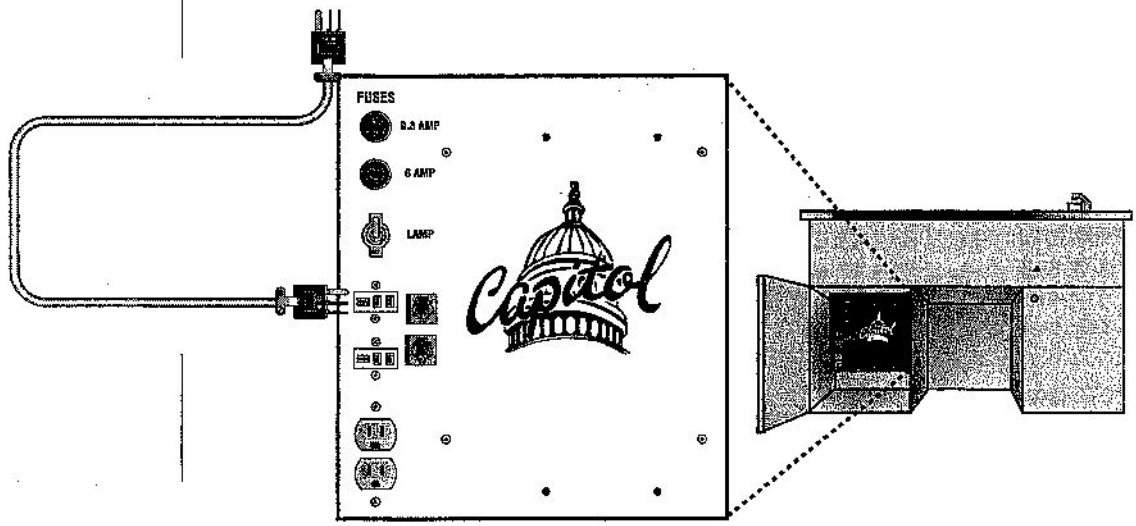
A. Electrical Installation

1. Plug the bingo console and flashboard(s) into any 110/120 VAC 60HZ grounded power outlet. Refer to page 29.

2. Once the system has been completely setup, turn the "POWER" switches on. Use the other controls as needed.

B. Flashboard Installation

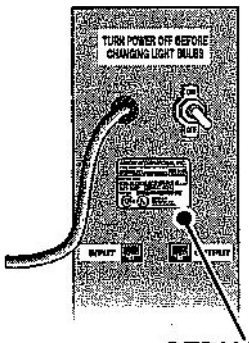
1. Data connections for the Bingo flashboards are made with the console data cable output connectors, located on the Senator™ Input/Output panel, in the left hand compartment of the console. Permanent installations use the 3" x 1" access hole under the I/O panel to run the cables. Temporary installation utilize the gap between the bottom of the left hand console door and the bottom of the console to run the cables.



SENATOR SERVICE PANEL

FLASHBOARD DATA CONNECTIONS

ALUMINUM EXTRUDED FLASHBOARD UPPER LEFT SIDE PANEL



SERIAL NO.

METAL FABRICATED FLASHBOARD LEFT SIDE PANEL

2. Install the flashboard data cable. When possible, we recommend using a one-piece cable avoiding splices, adapters and other mating devices. Wiring to the flashboard may be permanently installed using a wire mold. Where a permanent installation is not possible, install the flashboard data cable through the walls and/or ceiling to where the console can be rolled in and easily connected with all data and power cables. Avoid running the flashboard cable next to high-current lines such as smoke eaters, air conditioners, etc.

3. For metal fabricated style flashboards, plug the 3-pin male data connector into the lower connector labeled "INPUT." For aluminum extruded-style flashboards, utilize the telephone style data cable provided with the aluminum extruded flashboard and plug the data cable into the Senator™ input/output panel and then the rear telephone jack on the left side of the flashboard labeled "INPUT."

4. You may have an installation that requires hook up of more than one flashboard. In such an instance, the second and subsequent flashboards may be daisy chained by connecting the data cable to the "OUTPUT" connection on the first flashboard to the "INPUT" connection on the second flashboard, and so on. This allows virtually an unlimited number of Capitol Bingo flashboards to be added. A 3-pin Jones-style to a 6-pin telephone-style data cable adapter is supplied with the aluminum extruded flashboards for when daisy chaining aluminum extruded flashboards with metal fabricated flashboards. We recommend utilizing two console data outputs if using three or more flashboards.

Caution: Before attempting any installation, have a qualified, licensed and bonded rigger and electrician verify the type of installation. In many cases, the local building inspector may require a permit as well as an inspection of the site for structural stability.

C. Video Installation (optional)

1. If utilizing Capitol Bingo Equipment Video components, please refer at this time to the Capitol Bingo Equipment Video Components Manual for further instructions.

D. Suggested Number of Flashboard Mounting Assemblies

	ARROW PART NO.	NUMBERS ONLY	NO. & GAME INDICATOR	NO., GAME INDICATOR & DOLLAR VALUE
2" Wall Mount	45253	2	2	3
J Bracket	415805	2	2	3
Eye Bolt Assemblies	46515	2	2	3
4" Wall Mount	45254	3	3	4
J Bracket	415805	3	3	5
Eye Bolt Assemblies	46515	3	3	4

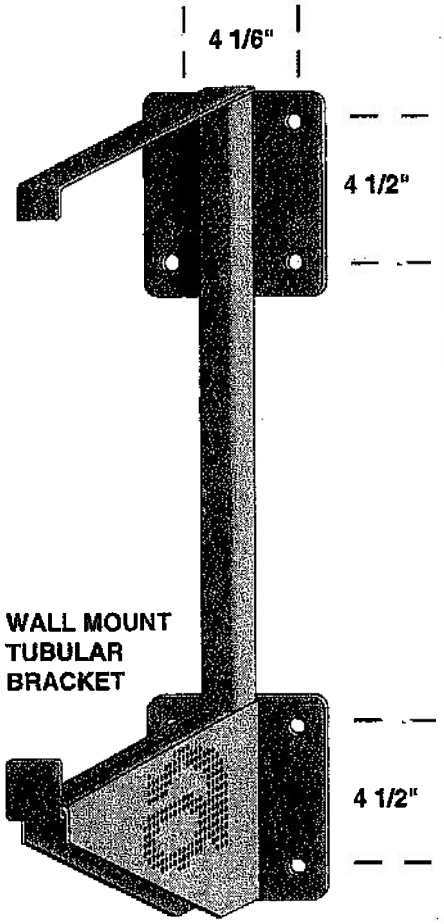
E. Wall Mounting Preparation for Flashboard(s)

Before attempting to mount any flashboard to the wall, you must first determine the type of wall construction. For hollow walls, we recommend that the flashboard mounting brackets be fastened directly into wall studs. For concrete, brick and cinder-block construction, the mounting brackets should be fastened using a bolt and anchor method (moly bolt). If other methods of wall construction are used, consider ceiling mounting or consult the Capitol Bingo Equipment Service department for advice. Place flashboards to offer maximum player visibility with minimal effort.

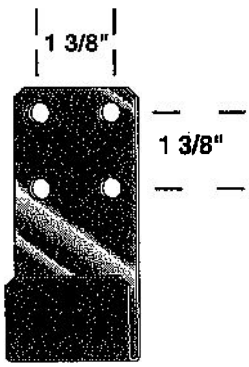
Caution: Do not suspend the flashboards using the handles. The handles are to be used for handling purposes only.

Before drilling any holes, check for possible electrical or plumbing interference behind the mounting holes and make sure that the flashboard is level from side to side.

Note: When choosing the location for mounting your flashboard(s), consider not only visibility but protection against tampering, vandalism and pedestrian traffic. We suggest that your flashboard be mounted at least 7' above the floor.



WALL MOUNT TUBULAR BRACKET



WALL MOUNT J BRACKET

F. Wall Mounting Instructions

For hollow-wall construction use $^3/_8$" x 3 $^1/_2$" lag bolts. Fasten brackets directly into wall studs. For masonry construction, use a $^3/_8$" or larger lag-screw expansion shield with suitable-length lag screw.

1. Tubular Bracket (optional)

(2" and 4" aluminum extruded and 4" fabricated flashboards)

Choose the proper height for easy viewing and mark the location on the wall. This mounting bracket supports the flashboard from the bottom and may be used to mark the mounting holes. Locate brackets 9" from each end; make sure the brackets are level; and check for possible electrical or plumbing interference behind the mounting holes. Equally space the remaining brackets between the end brackets insuring that all supporting surfaces are level. Drill the proper clearance holes for the mounting method appropriate for your wall.

2. Wall-Mount J Bracket

(2" & 4" aluminum extruded flashboards)

Supplied with the 4" aluminum extruded Numbers Only Style flashboard are three J-shaped wall brackets (other flashboards may vary). Each bracket has four mounting holes for $^3/_8$" bolts. Choose a height that allows for easy viewing and mark the location on the wall. Then, measure in 8 $^1/_2$" and 9 $^7/_8$" from each end of the flashboard and mark the vertical center lines. Next, from the top of the flashboard, measure up 2" and 3 $^3/_8$" from the horizontal center lines.

Next, space any additional brackets equally between the previous brackets and locate the mounting holes, again checking for level. Drill the proper clearance holes for the method of mounting appropriate for your wall as described above.

Note: Before attempting any installation, have a qualified, licensed and bonded rigger and electrician verify the type for installation. In many cases, the local building inspector may require a permit as well as an inspection of the site for structural stability.

G. Ceiling Mounted Flashboard(s)

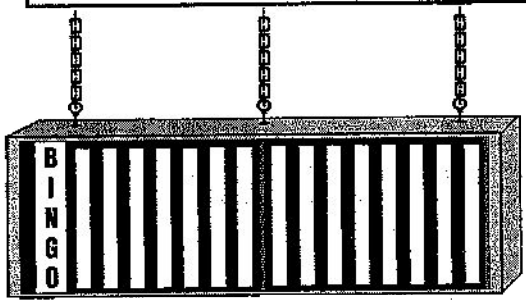
In any ceiling mount application, the chain or wire must be attached to the steel building frame or girder. In addition, check with the local building inspector for local codes governing weight restrictions and mounting methods. Eyebolts are optional on 2" and 4" flashboards and are available upon request. If installing own eyebolts refer to chart. Inspect for electrical interference before drilling and thoroughly vacuum metal shavings from inside the flashboard when complete.

There are two different methods for suspending these flashboards from the ceiling.

1. **Chain**
   Use a high-quality 3/8" minimum-diameter chain link made of high-strength alloy steel grade 80 or its equivalent. Bolt the chain together with a 3/8" 18 NC 1 3/4" bolt with two flatwashers, a lockwasher and a hex nut.

2. **Cable**
   Use a high-strength 1/8" minimum-diameter 7x19 strand steel aircraft cable or its equivalent and appropriate cable clamps.

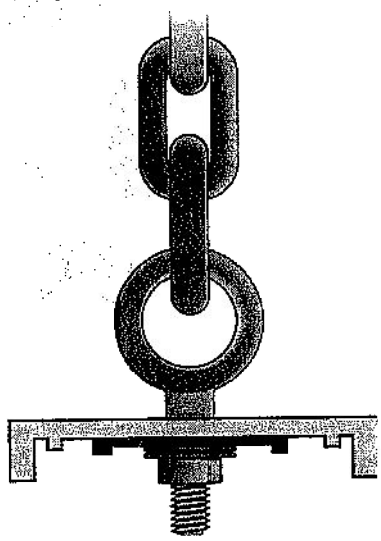
ALUMINUM EXTRUDED FLASHBOARDS	EYEBOLT LOCATIONS MEASURED FROM LEFT END			
4" Game Indicator	22"	38 3/4"	55 1/2"	72 1/4"
4" Numbers Only	17"	49"	76"	
2" Game Indicator	18"	47"		
2" Numbers Only	12"	44"		



Caution: Do not suspend the flashboards using the handles. The handles are to be used for handling purposes only.

Note: See Capitol Bingo Equipment 8" & 12" Aluminum Extruded Flashboard Manual for additional information on these products.

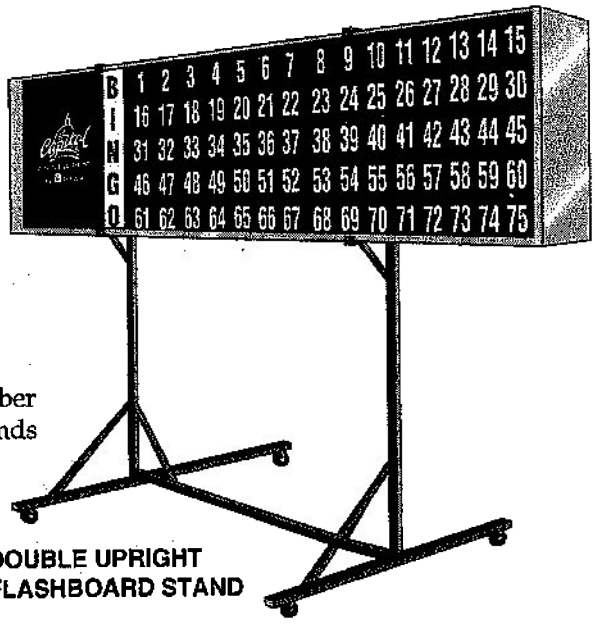
EYEBOLT FOR CHAIN MOUNT (ARROW PART #46515)



H. Flashboard Stand (optional)

A flashboard stand allows for easy mobility and storage of your flashboard. Capitol offers a double upright flashboard stand for all 4" and 2" Numbers only or Number and Game Pattern Indicator Style flashboards. These stands may be ordered through your distributor.

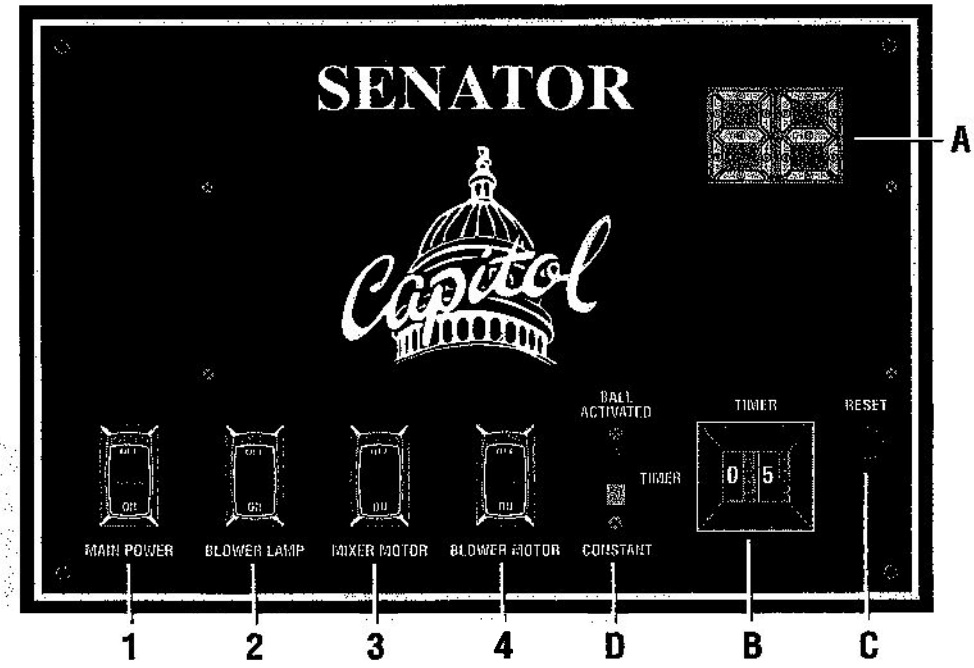
Please refer to the Arrow International Inc./Capitol Bingo Equipment catalog for other optional equipment and accessories.



DOUBLE UPRIGHT FLASHBOARD STAND

III. Controls

These primary controls are found on the Senator™ console control panel.



A. Basic Controls

1. Power—Power switch for system controls.
2. Blower Lamp—On/Off control for the blower chamber lamp.
3. Mixer—On/Off control for the ball mixing arm.
4. Blower—On/Off control for the ball blower motor.

B. Console Display Controls

1. Ball Timing Indicator Display—(A) This L.E.D. displays the time interval before the next ball is to be called and counts down to zero from the time set on the Ball Timer Interval Thumbwheel. (B) The beeper will indicate when it is time for the next call.

2. Ball Timer Interval Thumbwheel—(B) This thumbwheel sets the time interval the operator chooses between ball calls.

3. Ball Timer Reset Switch—(C) This button restarts the timing sequence at the Timer Interval set on the Ball Timer Interval Thumbwheel. (B)

4. Timer Ball Activate/Constant Switch—(D) In the Ball Activate mode the timer counts down from its preset value (B) to zero, signal with a beep to indicate to the operator that it is time to call the next ball and start its count down again. In the Ball Activated Timer mode, the timer will also count down from it preset timer interval to zero and give an audible signal; but, it will not reset until the next ball is inserted into the ball tray.

V. Operation

To begin a bingo session, turn on the console power switch, the blower lamp switch , mixer motor switch, and blower motor switch on the Senator™ console. You will notice that the balls immediately go up the ball tube and held in the ball catcher available for play.

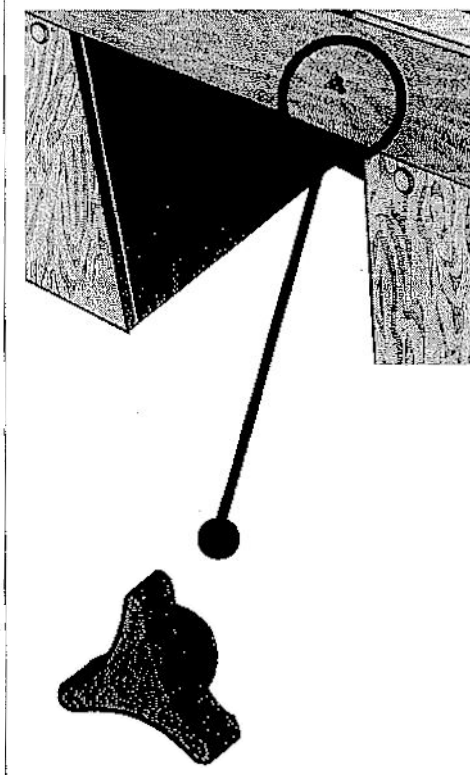
Next, turn on the power switches to any additional flashboards connected to your console. Start calling balls at a nice steady pace and place them into the corresponding ball tray slot.

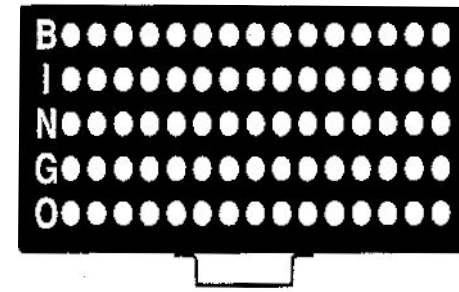
The timer will evenly pace your ball calling, adjust the pace of the game and build player confidence to play additional bingo faces, thus increasing revenues. Until you find a time that's most comfortable for you and your players, a good calling time might be every 14 to 20 seconds. When the beeper sounds, it is time to call the next ball.

At this time, verify all the bingos that have been called. It is usually best if the floor worker calls out the serial number of the bingo paper to verify purchase from your hall. Then have the floor worker call out each number in the bingo pattern from the bingo card with caller confirming each call.

At the end of the game, firmly pull the handle at the bottom of the ball tray towards you against the stops to clear the ball tray and reset the flashboard to game ready status. The ball release gate knob must be turned counterclockwise to dump the balls back into the ball blower chamber. This gate acts as a security barrier in order to prevent accidently dropped ball from reentering the blower during the game. Air pressure in the ball chamber may occasionally prevent the cleared balls from dumping normally. If this happens, briefly turn off the blower, allow the balls to drop, and then turn the blower back on. Be sure to visually check the ball return to verify that all the balls have returned to the blower.

With a little time and practice, you will be operating your Senator™ system with ease and really come to appreciate the outstanding features, convenience and quality designed into the Senator™ Bingo system.





Note: to clear ball tray, pull handle towards you, turn the blower motor switch off, and open ball gate.

Caution: Always unplug the Senator™ console and flashboard before performing any type of maintenance.

Note: Old English® brand furniture polish may be used to cover or hide any minor wood surface imperfection.

Caution: The front of the flashboard acrylic is a painted surface.

V. Periodic Customer Servicing

A. Cleaning Your Senator™ Bingo System

Periodic servicing of your Senator™ Bingo System should include cleaning, polishing and light bulb replacement. Recommended cleaning agents for the console and flashboard are as follows:

Console, Wood Surface

Use any high-quality wood and furniture polish. Liberally apply with a clean soft cloth. Polish frequently.

Console, Painted Metal Surface

Use a mild soap solution or mild cleanser. Harsh cleansers or solvents may damage the paint or lettering. Follow with an automotive-style polish for additional protection.

Console and Flashboard, Acrylic Surfaces

Use only a mild soap solution such as liquid detergent with a clean soft cloth for best results and protection of the surfaces. Ammonia based cleaners may dull the acrylic.

Flashboard, Brass Anodized Aluminum Extruded and Painted Metal Surfaces

Use a mild soap solution or mild cleanser. Harsh cleansers or solvents may damage the paint or lettering. Follow with an automotive-style polish for additional protection.

Bingo Balls

Clean with a mild soap solution such as a liquid detergent. Harsh cleansers or solvents may damage finish or lettering. Dry the balls thoroughly using a towel. Insert towel-dried balls into a paper bag with a small amount of talcum powder, agitate the balls and shake off the excess powder.

Static Treatment

Lightly spray antistatic aerosol compound over the blower base pan foam and inside the blower chamber windows to eliminate static. **(Caution: Be sure not to apply antistatic compound to the ball-catcher acrylic tube – this may cause the ball tube to shatter.)** Perform this treatment every few months or when you notice balls sticking together or to the windows.

Inspect the antistatic tinsel surrounding the two sides of the blower base pan . If torn or worn, replace with Arrow part #41208 Anti-Static Tinsel.

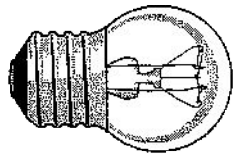
Use vacuum with wand attachment to clean ball chute and inside both cabinet doors.

B. Changing the Mixing Chamber Light Bulb

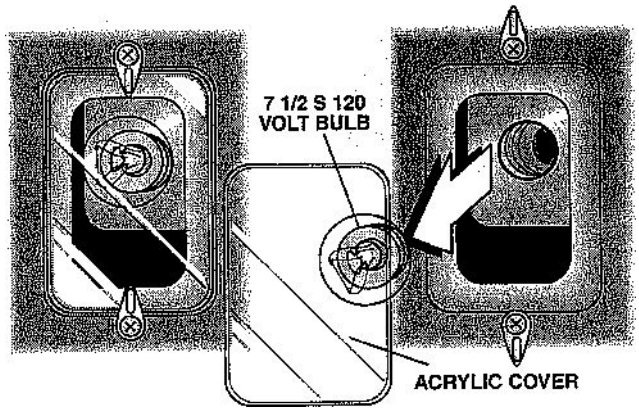
1. Unlock and open the right hand side blower compartment door.
2. Remove the acrylic panel covering the lamp by turning the two plastic retaining tabs 180° for clearance.
3. Unscrew the light bulb counterclockwise to remove it.
4. Insert the new 7 1/2 S clear 120 volt light bulb and turn it clockwise until it is snug. Do not overtighten the light bulb.
5. Replace the acrylic cover and lock it into position with the two plastic retaining tabs.
6. Close and lock the blower compartment door.

Caution: Always unplug the Senator console and flashboard before performing any type of maintenance.

Caution: Always turn the power off when changing light bulbs.



7 1/2 S 120 VOLT LIGHT BULB

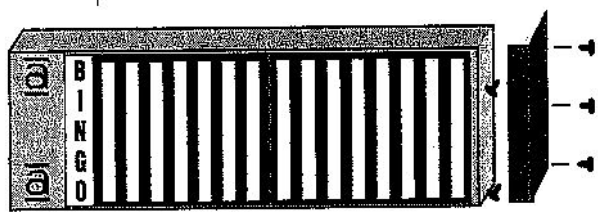


C. Changing Light Bulbs in the Flashboard

1. Metal Fabricated Style Flashboard(s)

a. Low Side Light Bulbs(B-7):
Remove six Phillips screws from the front of the power pack panel. Gently slide the acrylic panel to the left. (Refer to drawing A.) Change the light bulb(s) as necessary. (Refer to Section C-3 p. 17).

b. High Side Light Bulbs (8-15):
Remove the metal trim from the right end of the flashboard by removing the five Phillips screws. Gently slide the acrylic panel to the right. (Refer to drawing A.) Change the light bulb(s) necessary. (Refer to section C-3 p. 17).

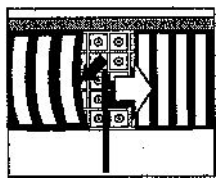


A

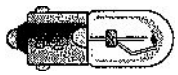
Caution: Always unplug the Senator console and flashboard before performing any type of maintenance.

Caution: Always turn the power off when changing light bulbs.

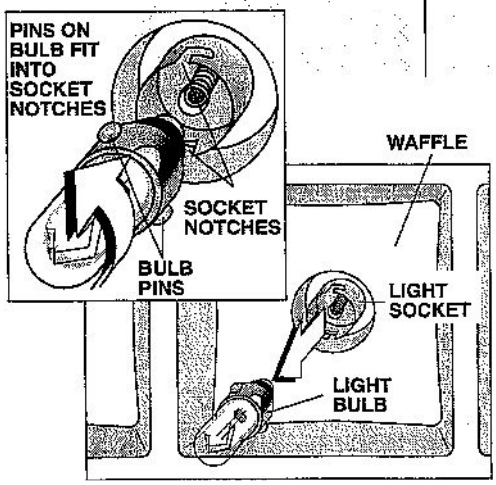
B



C



28-VOLT MINIATURE BAYONET LIGHT BULB



2. Brass Anodized Aluminum Extruded Style Flashboards

a. 2" and 4" large numbered flashboards:

1. Remove the retaining strip between the low and high side panels. This is accomplished by gently pushing in the high side acrylic panel while grasping the retaining strip and gently pulling it out and to the right. (Refer to drawing B.) Once the strip is removed, slide the acrylic panels to gain access to the light bulbs needing replaced. (Refer to drawing C).

2. Change the light bulb(s) as necessary. (Refer to Section C-3 - Changing Flashboard Light Bulbs, p. 17).

3. Slide the acrylic panels to their home position.

4. Reinsert the retaining strip.

b. 8" and 12" large numbered flashboards:

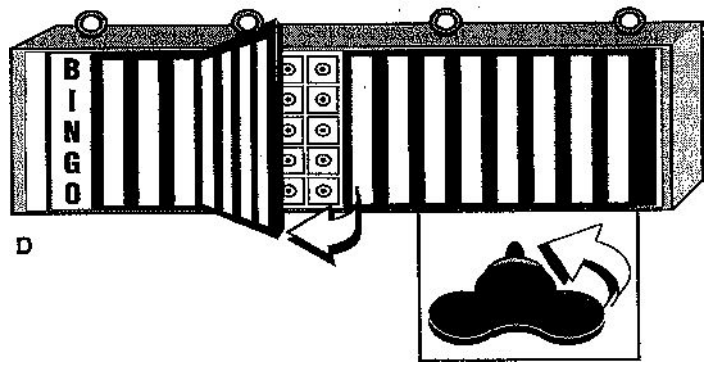
1. Open individual acrylic panels by locating the two 1/4 turn fasteners for each panel and twisting each a 1/4 turn counterclockwise while gently pushing in. Note: Capitol Game Logo sections require the use of a Phillips screwdriver. (Refer to drawing D.)

2. Gently open the acrylic panels allowing the velcro tabs to release.

3. Change the light bulb(s) as necessary. (Refer to section C-3 - Changing Flashboard Light Bulbs p. 17)

4. Close the acrylic panels and apply gentle pressure to lock the velcro tabs.

5. Lock the acrylic panels in place by gently pushing in the 1/4 turn fastener, compressing the spring and twisting 1/4 turn clockwise.



D

3. Changing Flashboard Light Bulbs

1. Gently push light bulb in while turning counterclockwise. Socket is spring loaded and only requires a 1/4 turn to release the light bulb from the socket.

2. Remove the light bulb from the socket.

3. Insert the new light bulb by aligning light bulb pins with the light socket notches and gently pushing in and turning clockwise. Twist a 1/4 turn to secure the light bulb in place.

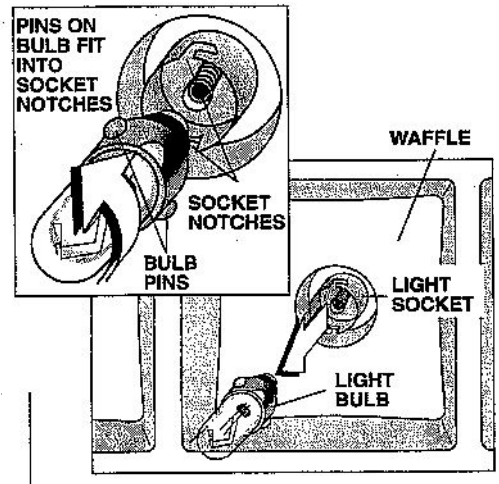
4. Additional light bulbs may be purchased from your Arrow distributor or a local electrical or electronics supply house. We recommend using only high quality replacement light bulbs for extended life and to minimize the chance of printed circuit board failures.

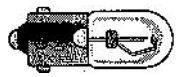
   When ordering replacement light bulbs for 2" high number-style flashboards, ask for #1829 28-volt miniature bayonet light bulbs. Arrow part #41305

   When ordering replacement light bulbs for all other electronic flashboards, ask for #1820 28-volt miniature bayonet light bulbs. Arrow part #41303

Caution: Always unplug the Senator™ console and flashboard before performing any type of maintenance.

Caution: Always turn the power off when changing light bulbs.





28 VOLT MINIATURE BAYONET LIGHT BULB

4. Changing Fuses

When changing fuses in a fuse block the following steps should be followed:

1. Determine which fuse is defective by referring to the fuse block diagram (pp.40-41) or with the use of a voltmeter.

2. Unplug the unit from the wall outlet.

3. Gain access to the fuse block by removing the six Phillips screws from the front of the power pack panel and remove the panel.

4. Remove the fuse with a fuse puller or with a small flat blade screwdriver by carefully prying one end of the fuse up, grasping the end and removing the fuse.

5. Replace the bad fuse with a properly rated fuse. Refer to the fuse illustration (pp.40-41).

6. Reassemble the unit.

7. Plug the unit into a 120 volt grounded wall outlet.

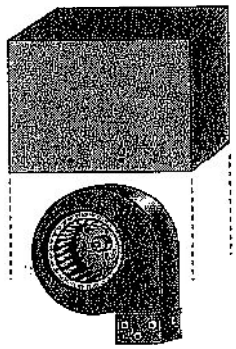
Caution: Always unplug the Senator™ console and flashboard before performing any type of maintenance.

D. Servicing the Blower and Mixer Base Pan Assembly

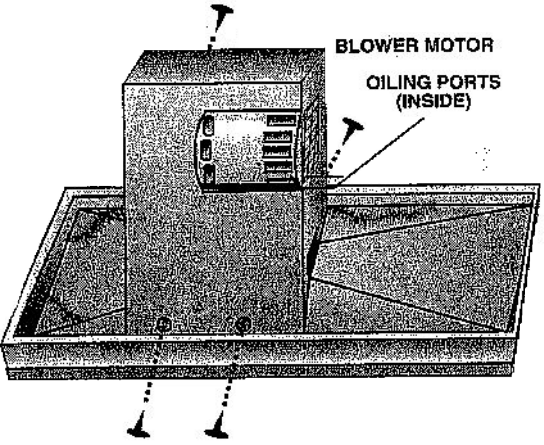
The blower motor and mixer motor should be serviced every four months or every 200 operating hours.

1. Unplug the console power cord from the wall outlet.
2. Unlock and open the right-hand-side blower compartment door. Remove any balls that may be on the blower base pan assembly.
3. Disconnect the power plug located below the blower base pan and pull the assembly out of the console.
4. Lay the removed blower base pan assembly upside down on a flat surface, remove the four Phillips screws (two from each side) from the protective guard, and lay the protective guard on its side.
5. Put a few drops of 20W oil into the two oiling ports located on the top side at each end of the blower motor. (Refer to illustration.)
6. Oil the mixer motor by removing the two 1/4" bolts from the rear plate of the mixer motor. Oil the felt pad with 20W oil, replace plate and reinsert the bolts, being careful not to overtighten them.
7. Check the blower motor squirrel cage blades for debris. If dirty, loosen the cage from the shaft with an 1/8"Allen wrench and remove from the shaft. Clean the blades with a small stiff brush, using soap and water, towel dry. Reinstall the squirrel cage and check that the blades are free wheeling and not binding.
9. Reassemble and carefully slide the base pan back into the console with the mixer arm pointing towards the front of the console.
10. Inspect the air filter and replace if necessary.
11. Make sure to reconnect the four-pin power plug. Reinsert bingo balls onto blower base pan assembly, close and lock blower compartment door.

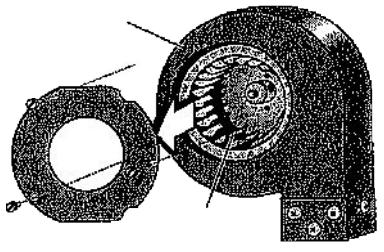
NEW STYLE (UL®) BLOWER ASSEMBLY



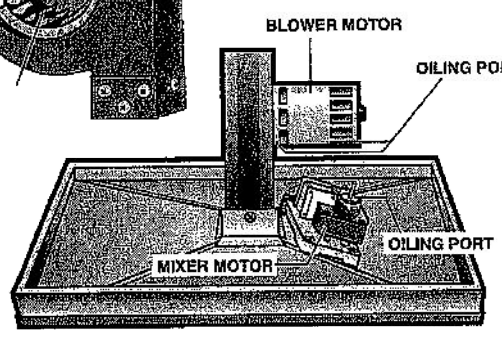
SQUIRREL CAGE BLADES



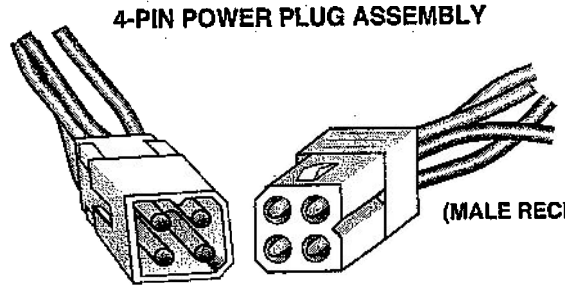
OLD STYLE BLOWER ASSEMBLY



SQUIRREL CAGE BLADES



4-PIN POWER PLUG ASSEMBLY



(MALE RECEPTACLE)

PIN 1 (GREEN) GND
PIN 2 (WHITE) MIXER MOTOR
PIN 3 (WHITE) BLOWER MOTOR
PIN 4 (BLACK) NEUTRAL

(Refer to p. 30 for details)

VI. Troubleshooting

This troubleshooting section will help you, your distributor or a local electrician locate electrical problems that may arise with the Senator™ Bingo System. Several diagrams and schematics have been included to help you trace any problems that may occur. Problems that are not covered in this section should be directed to your local distributor or directly to Arrow International as listed on p. 42. Please have the unit's serial number and distributor name readily available when calling for assistance.

Before referring to the troubleshooting table, please check to see that the following conditions are met:

1. Check that all power and data connections to the system are properly installed. Look for loose connectors or broken wires. Do not attempt to service the control panel in the Senator™ console. Only trained service personnel are qualified to work in this area.

2. If flashboard difficulties arise, check the power and data cable connections to the flashboard. If the power is being supplied to the flashboards, the vertical BINGO lamps should be on. If these lamps are not on, check the primary power to the flashboards.

3. Consult the Troubleshooting Table (pp. 20-27)

4. If further difficulties arise, consult the factory service center or an authorized distributor as listed on p. 42.

   The Troubleshooting Table begins on the next page.

This troubleshooting table assumes the following conditions:

1. The system is plugged into a 110/120 VAC 60Hz grounded power outlet.
2. The power switches are turned on.
3. All balls are in the ball tray.

Troubleshooting table begins on the next page.

This manual was accurate at the time of printing. Arrow International reserves the right to make changes due to changing technology and regulations. Please consult your distributor or Arrow International Inc.

Troubleshooting Table — Console

PROBLEM	CAUSE	CORRECTIVE ACTION
• Cabinet lights off; blower inoperative	• Console unplugged	• Plug into a 120VAC grounded power outlet
	• No voltage from power outlet	• Check outlet with good household appliance, lamp or voltmeter, reset circuit breaker at fusebox, replace defective fuse, or consult electrician.
	• 6 AMP fuse defective	• Replace fuse with 6 Amp ACG/3AG.
• Blower operating; no cabinet lamp	• Bulb burned out	• Change bulb with a 7 1/2 S light bulb. Refer to page 15.
	• Defective cabinet lamp switch	• Replace switch with proper rated switch (22A at 125VAC) 16A at 250VAC Tungsten rated). Arrow part #425232
• Blower motor inoperative	• Blower motor switch off	• Turn blower motor switch on.
	• Blower cable loose	• Check 4 prong blower cable on all console and all wiring on blower. Refer to page 18.
	• Blower motor requires servicing	• Service motor. Refer to page 18 for instructions.
	• Defective blower motor	• Check wiring and connection at motor. Refer to page 18 for instructions. Replace blower motor if necessary. Part #41620
	• Defective blower motor switch	• Replace switch with proper rated switch (16A at 125VAC 10A at 250VAC). Arrow part #42523
• Blower motor operates slowly	• Blockage of air intake	• Check air filter in console. If blower is on carpeting, raise the unit.
	• Blower motor requires servicing	• Oil blower motor. Refer to page 18 for instructions.
		• Check for debris or excessive dirt in blower end service as necessary. Refer to page 18 for instructions.

Troubleshooting Table — Console Continued

PROBLEM	CAUSE	CORRECTIVE ACTION
• 6 Amp fuse open	• Loose or defective wiring	• Unplug console, open PCB panel in lower left compartment and examine wiring on fuseholders and outlet.
	• Defective fuse	• Replace fuse with a 6 Amp AGC/3AG.
	• Defective motor or lamp	• Turn off all power switches. Plug console in and turn each switch on, one at a time, until fuse opens. Test and replace the item which opens fuse.
	• Defective EMI filter	• Unplug console and replace filter with Arrow part #42740.
• 0.3 Amp fuse open	• Defective fuse	• Replace fuse with a 0.3 Amp MDL/3AG.
	• Defective PCB	• Disconnect power connector from all PCBs. Replace one power connector at a time. When fuse opens, replace circuit board. (ALX or ALT)
	• Defective logic transformer	• Disconnect power connector from all PCBs and replace fuse. If continues, replace transformer Arrow part #42710.
• Ball switch will not illuminate corresponding bulb	• Ball switch defective	• Remove ball tray and the two screws holding the inoperative switch bar in place. Short out the two contacts on the switch. If bulb lights, replace switch with Arrow part #42504. If ball switch activates timer switch is good.
	• Defective ribbon cable	• Replace ribbon cable.
	• Defective console PCB	• Swap switch bar ribbon cables on the console/MB ALX PCB with one from a known good row. If row continues to malfunction, replace PCB in console.

Troubleshooting Table — Console Continued

PROBLEM	CAUSE	CORRECTIVE ACTION
• All console displays normal, but no flashboard response	• Defective data cable	• Check all data cables for loose connectors or frayed wires, replace cable.
	• Defective console PCB	• Test all console functions. Replace transmitter ALX PCB in console.
• Lights on flashboard flicker	• Loose connector	• Test output sockets for proper fit. Replace as necessary. Check data cable for frayed wires and dirty contacts.
	• Defective console PCB	• Replace defective ALX PCB.
• Incorrect last number called	• Defective ball switch	• Clean defective switch(es) with plastic safe contact cleaner. Replace any intermittent switch. Check for switch bar support brackets.
	• Defective retainer spring	• Replace any spring that is stretched or loose with part #42210.
	• Defective MB/console PCB	• Replace ALX PCB.
• No console display	• Power wire not connected to timer	• Remove four screws holding control panel. Tilt forward and check connections.
	• 0.3 Amp fuse	• Replace defective fuse with 0.3 Amp MDL 250V.

PROBLEM	CAUSE	CORRECTIVE ACTION
• Timer not counting down	• Check constant/ball activated and reset switch	• Insure switch is in proper position. Insure reset switch is functioning correctly.
	• Defective PCB	• Replace defective ALT PCB.
• Time not consistant	• Defective time select Thumbwheel	• Replace defective Thumbwheel.
	• Defective timer PCB	• Replace defective ALT PCB.
	• Defective console PCB	• Replace defective ALX PCB.
• Ball drop prematurely	• Defective return spring	• Replace with Arrow part #42225.
	• Switches not centered in ball tray.	• Remove ball tray and loosen all 5 switchbars. Slide tray back into place and align bars. Remove tray and tighten bars. Replace tray.

Troubleshooting Table — Senator Flashboard

PROBLEM	CAUSE	CORRECTIVE ACTION
• B-O lamps on with no response from console	• Defective data cable	• Repair or replace data cable. Check for loose or dirty connections and frayed or broken wires.
	• 1 Amp logic fuse blown	• Replace fuse with a 1 Amp Slo Blo ACG/3AG on ACRD PCB. Refer to page 15 for access details.
	• Defective PCB	• Replace ACRD PCB in flashboard. Refer to page 15 for access details.
• No response to ball insertion in tray	• Lamp failure	• Replace lamp in FB (use #1820 for 4" or #1829 for 2" board). Refer to page 15 for access details.
	• SCR/Darlington failure	• Refer to map corresponding to style of PCB. Change SCR/Darlington. SCR's must be desoldered to be replaced. To replace a Darlington, use an IC puller or small screw driver to gently pry the darlington out of the socket. Use #41947 for darlington.
	• Lamp socket failure	• Check connections on back of lamp socket. Use ohm meter to check for a shorted lamp socket. (0 ohms) Replace defective socket. If good, meter will read about 22 ohms with bulb installed.
	• ACRD PCB failure	• Replace ACRD PCB. Refer to page 15 for access details.
	• Defective crimp on ribbon cable	• Check both ends of ribbon cable, recrimp connection or replace ribbon cable.
• Lamp stays illuminated when ball tray is cleared	• Defective SCR/Darlington	• Refer to appropriate map on pp. 33-35. Change SCR/Darlington. Use #41947 for darlington, #41946 for SCR
	• Defective ACRD PCB	• Change ACRD PCB. Refer to page 15 for access details.

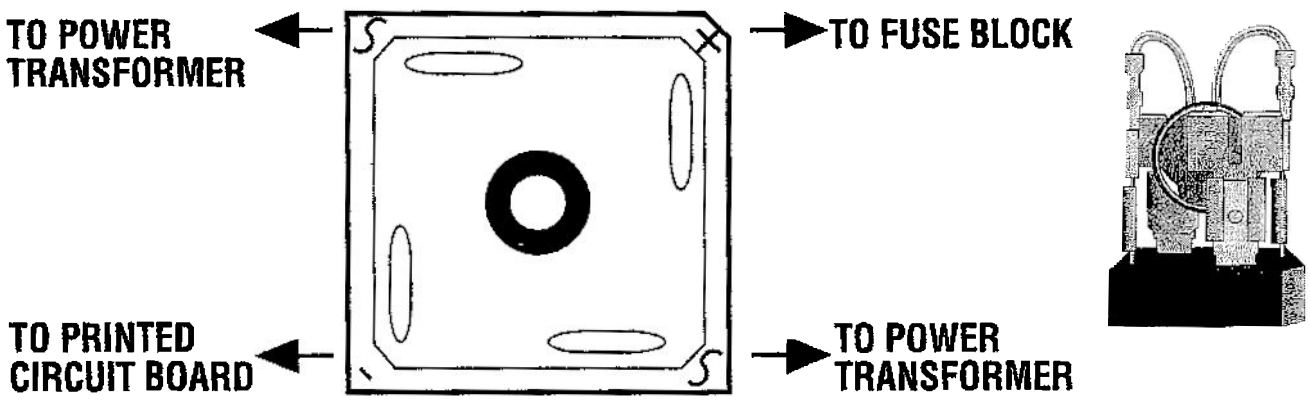
Troubleshooting Table — Senator Flashboard Continued

PROBLEM	CAUSE	CORRECTIVE ACTION
• No flashboard power	• Power switch off	• Turn switch on (up position).
	• Unit not plugged into outlet	• Plug unit into a 120 VAC grounded outlet.
	• No voltage at power outlet	• Check outlet with test lamp or voltmeter, reset circuit breaker, replace defective fuse,or consult electrician.
	• Primary fuse defective	• Replace with a 4 Amp Slo Blo ACG/3AG.
	• Defective bridge rectifier	• Test bridge rectifier with a voltmeter. There should be a reading of 28VDC between the + & - terminals of bridge rectifier. Replace defective bridge rectifier with (35 Amp 800PIV) Arrow part #41940.
	• Defective power switch	• Replace switch with 6 Amp 125VAC. Arrow part #42506
	• Defective power transformer	• Test transformer with a voltmeter. 28VAC should be read across the unmarked terminals of the bridge rectifier. If the voltage varies + / - 20%, replace transformer. Arrow part #42720
• Primary fuse defective	• Defective fuse	• Replace fuse with with a 4 Amp Slo Blo ACG/3AG. Arrow part #409013.
	• Defective socket in vertical bingo lights	• Disconnect the + lead off bridge rectifier. If fuse quits opening, examine lamp sockets for shorted sockets or crossed wires. Will read about 22 ohms if good with bulb installed.
	• Defective bridge rectifier	• Remove unmarked terminals from bridge. Do not let touch. If quits, change bridge (35 Amp 800PIV). Arrow part #41940
	• Defective power transformer	• Remove unmarked terminals from bridge. Do not let touch. If continues, change power transformer Arrow part #42720.

Troubleshooting Table — Senator Flashboard Continued

PROBLEM	CAUSE	CORRECTIVE ACTION
• Flashboard blinks or lights flicker	• Loose data cable	• Check both ends of the data cable for loose connections or frayed wires. Replace sockets or cable as necessary.
	• Incorrect PCB configuration	• Refer to Darlington map for corresponding PCB configuration. Set jumpers on ACRD PCB for specific application.
	• Defective ACRD PCB	• Replace ACRD PCB. Refer to page 15 for access. If ALR PCB, adjust strobe adjustment.
• Lights dim	• Dirty acrylic	• Refer to page 14 for cleaning instructions.
	• Defective bridge rectifier	• Check meter. Should read 28VDC + / -20% between the + and - terminal. Replace with 35A 800PIV Arrow part #41940.
	• Low line voltage	• Should read above 105VAC. Consult electrician.
• Group of 30 lights out	• Defective secondary fuse	• Refer to fuse map on pp. 40-41. Replace with a 3.2 Amp Slo Blo 3AGC/3AG fuse.

Bridge Rectifier



NOTES

VII. Electrical Requirements

For indoor use only. Do not defeat the ground terminal of the power cord.

Caution: For continued protection against risk of fire, replace only with same type of fuse having the same electrical ratings.

Attention: Replacer par un fusible de meme type.

2" and 4" numbers only flashboard: 120VAC at 60Hz, 3.0Amps
Primary: 4 Amp Slo Blo 250V
Secondary: 3.2 Amp Slo Blo 250V
Logic: 1 Amp Slo Blo 250V

Senator Flashboards: 120VAC 3AMP MAX
Primary Fuse: 4 Amp 3AG Slo blo
Secondary fuse: 3.2 Amp 3AG Slo blo

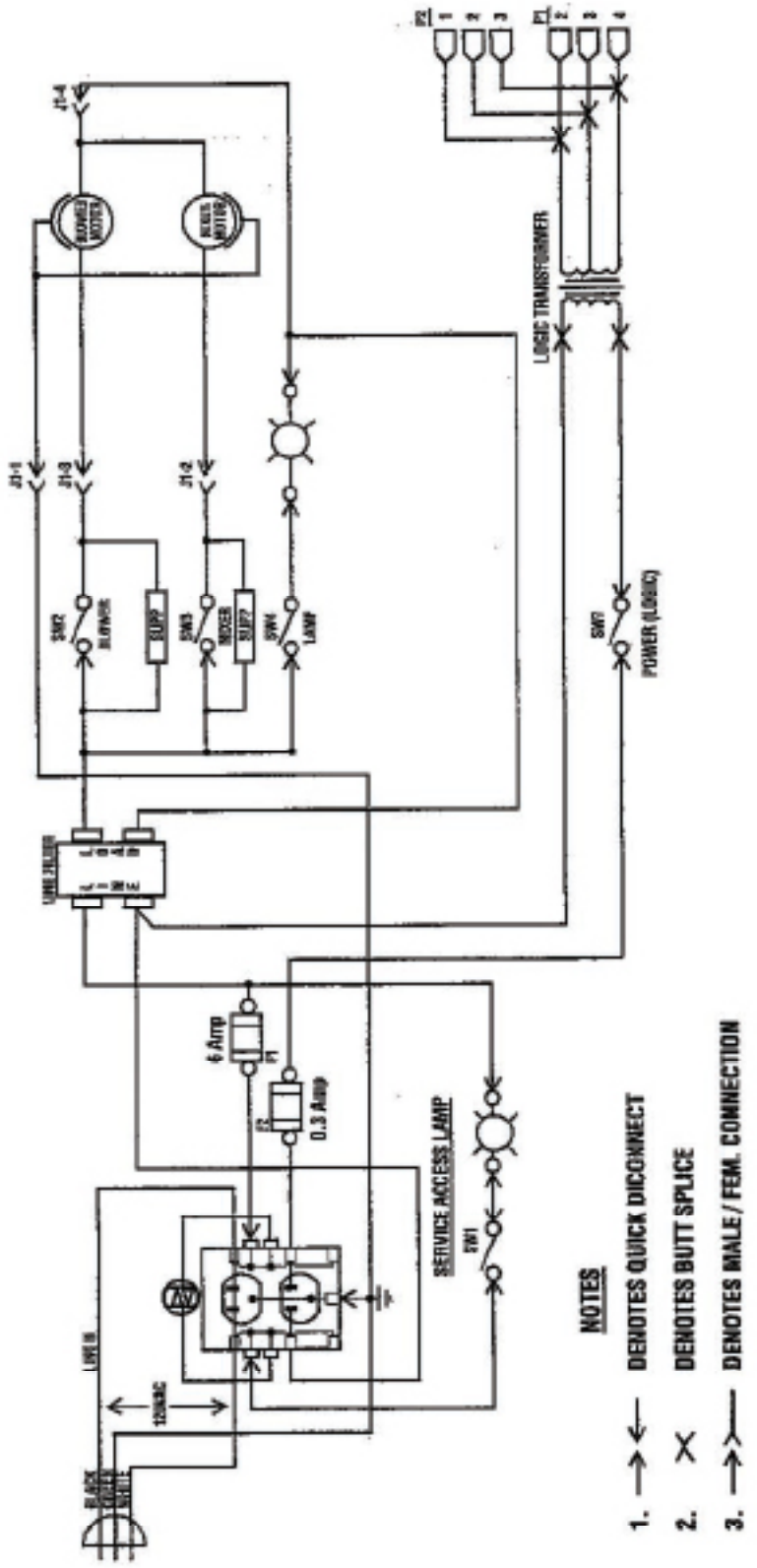
Senator Console: 120VAC 60 Hz
12 Amps with service outlet
Blower Fuse: 6 Amp AGC-3AG 250V
Logic Fuse: .3 Amp MDL 250V

#46050 Weight 106 lbs.
29" x 91" x 6"

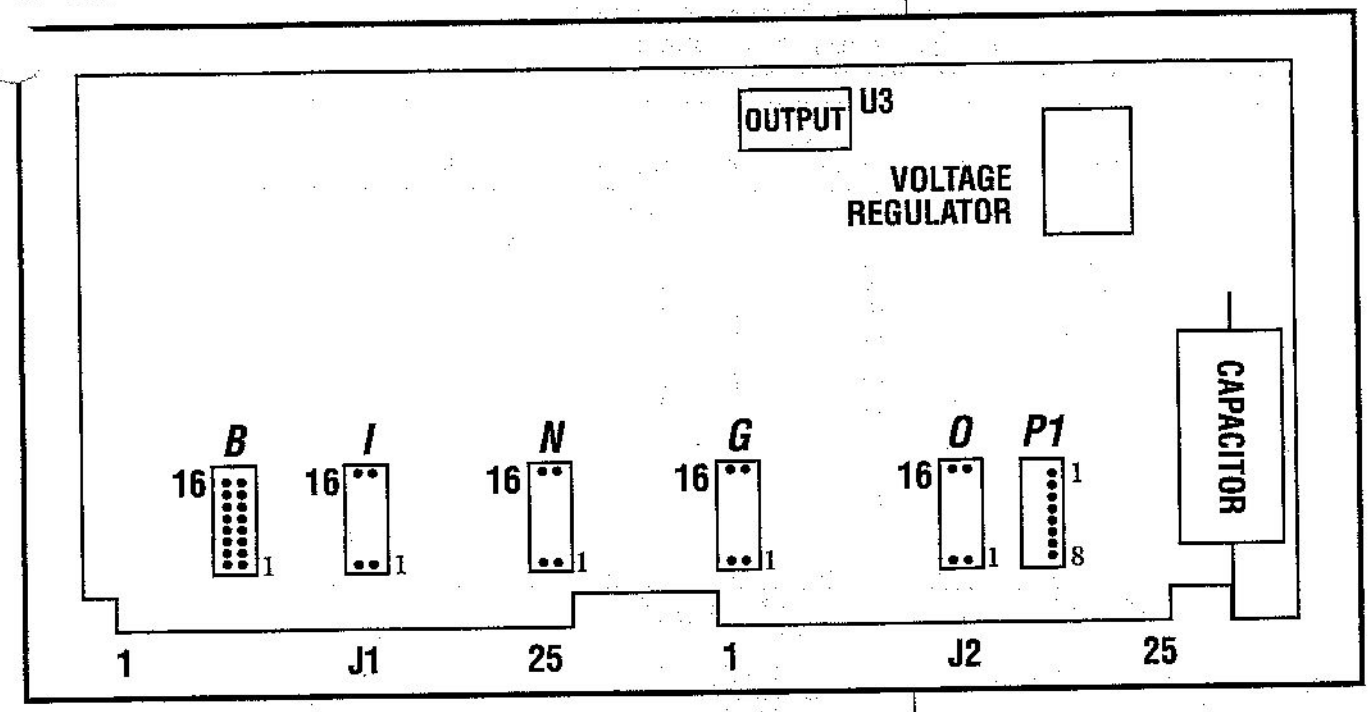
#46025 Weight 206 lbs.
37" x 51" x 24"

VIII. WIRING DIAGRAMS

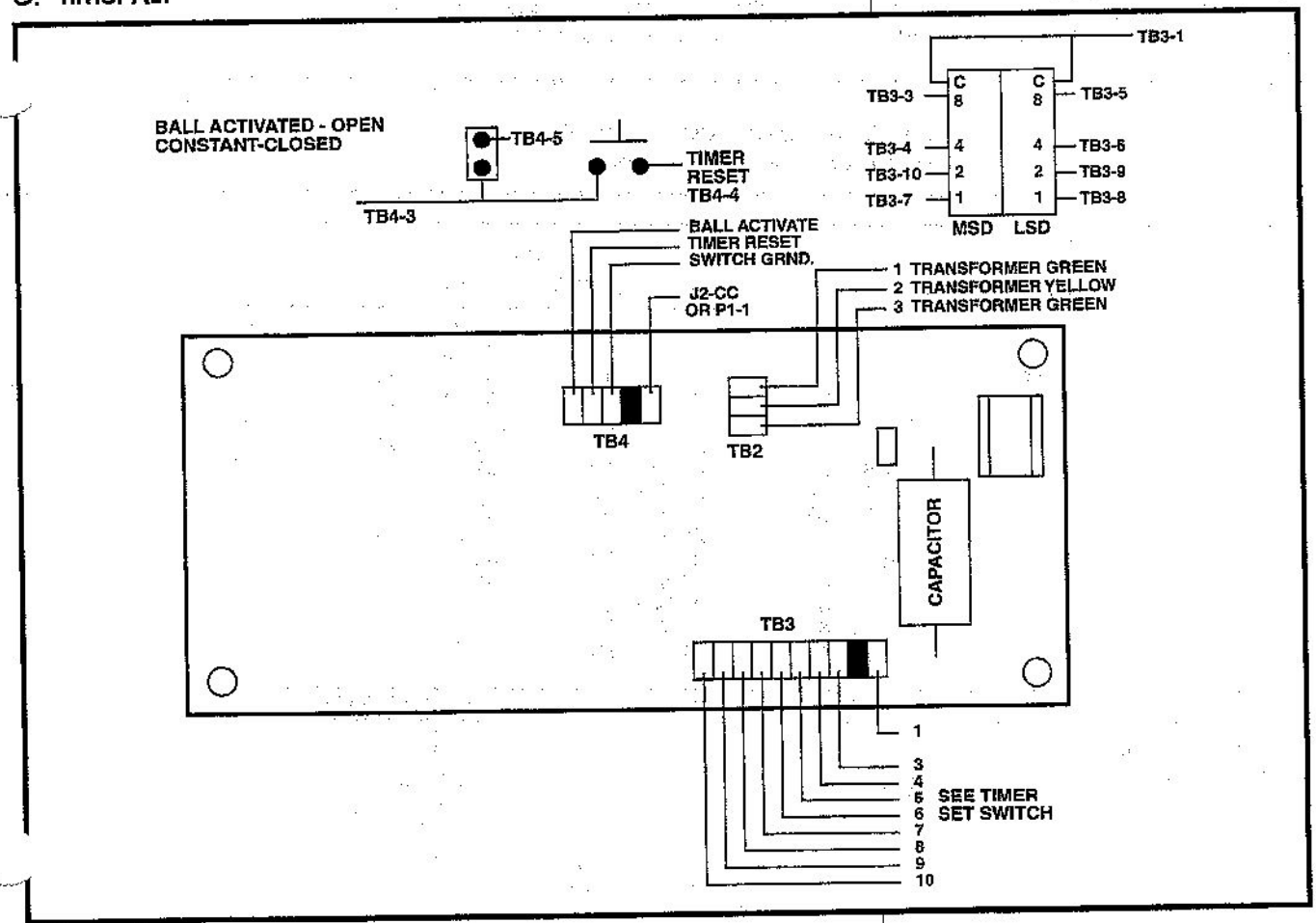
A. Console Wiring Diagram (Current Model) UL[3]



B. Masterboard ALX



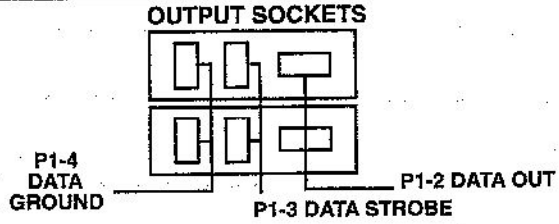
C. Timer ALT



D. Ribbon Cable Masterboard Connectors for Low Voltage 3-Wire System

B		I		N		G		O	
SWITCH	PIN	SWITCH	PIN	SWITCH	PIN	SWITCH	PIN	SWITCH	PIN
1	1	16	1	31	1	46	1	61	1
2	2	17	2	32	2	47	2	62	2
3	3	18	3	33	3	48	3	63	3
4	4	19	4	34	4	49	4	64	4
5	5	20	5	35	5	50	5	65	5
6	6	21	6	36	6	51	6	66	6
7	7	22	7	37	7	52	7	67	7
8	8	23	8	38	8	53	8	68	8
9	9	24	9	39	9	54	9	69	9
10	10	25	10	40	10	55	10	70	10
11	11	26	11	41	11	56	11	71	11
12	12	27	12	42	12	57	12	72	12
13	13	28	13	43	13	58	13	73	13
14	14	29	14	44	14	59	14	74	14
15	15	30	15	45	15	60	15	75	15
GROUND	16	GROUND	16	GROUND	16	GROUND	16	GROUND	16

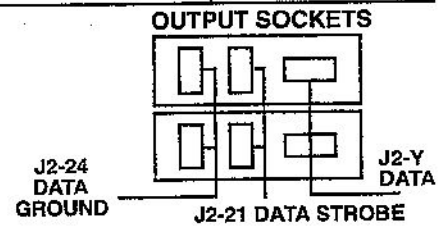
P1	POWER PLUG
1	N.C.
2	DATA OUT
3	DATA STROBE
4	DATA GROUND
5	GROUND
6	GROUND XFMR GRAY
7	+14VAC XFMR YELLOW
8	+14VAC XFMR YELLOW



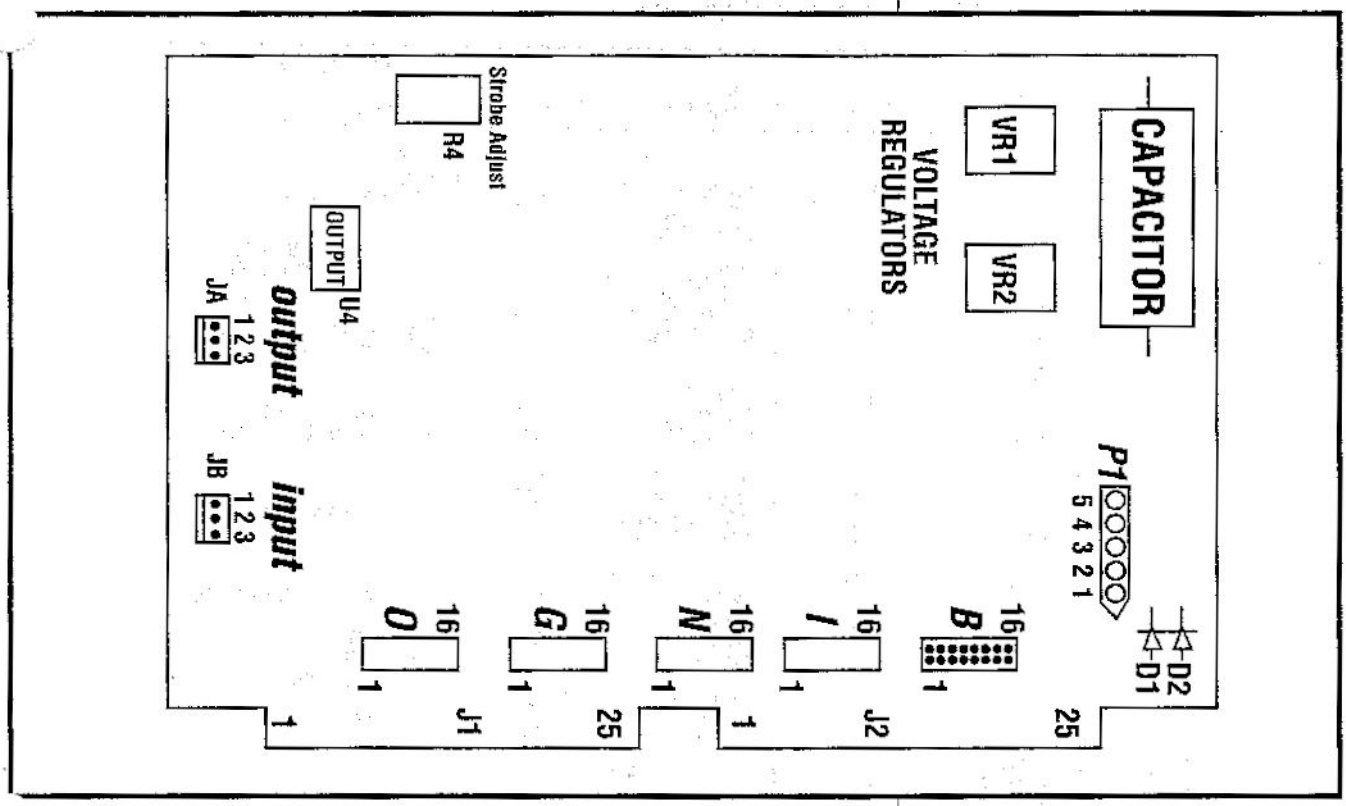
E. Edge Connector Masterboard Pinouts for Low Voltage 3-Wire System

B		I		N		G		O	
SWITCH	PIN	SWITCH	PIN	SWITCH	PIN	SWITCH	PIN	SWITCH	PIN
1	J1-1	16	J1-J	31	J1-S	46	J1-Z	61	J2-D
2	J1-2	17	J1-9	32	J1-T	47	J1-AA	62	J2-E
3	J1-3	18	J1-10	33	J1-17	48	J1-BB	63	J2-F
4	J1-4	19	J1-11	34	J1-18	49	J1-25	64	J2-H
5	J1-5	20	J1-12	35	J1-19	50	J2-1	65	J2-8
6	J1-6	21	J1-13	36	J1-20	51	J2-2	66	J2-9
7	J1-7	22	J1-14	37	J1-21	52	J2-3	67	J2-10
8	J1-8	23	J1-15	38	J1-22	53	J2-4	68	J2-11
9	J1-A	24	J1-16	39	J1-23	54	J2-5	69	J2-12
10	J1-B	25	J1-K	40	J1-24	55	J2-6	70	J2-13
11	J1-C	26	J1-L	41	J1-U	56	J2-7	71	J2-14
12	J1-D	27	J1-M	42	J1-V	57	J1-CC	72	J2-15
13	J1-E	28	J1-N	43	J1-W	58	J2-A	73	J2-J
14	J1-F	29	J1-P	44	J1-X	59	J2-B	74	J2-K
15	J1-H	30	J1-R	45	J1-Y	60	J2-C	75	J2-L

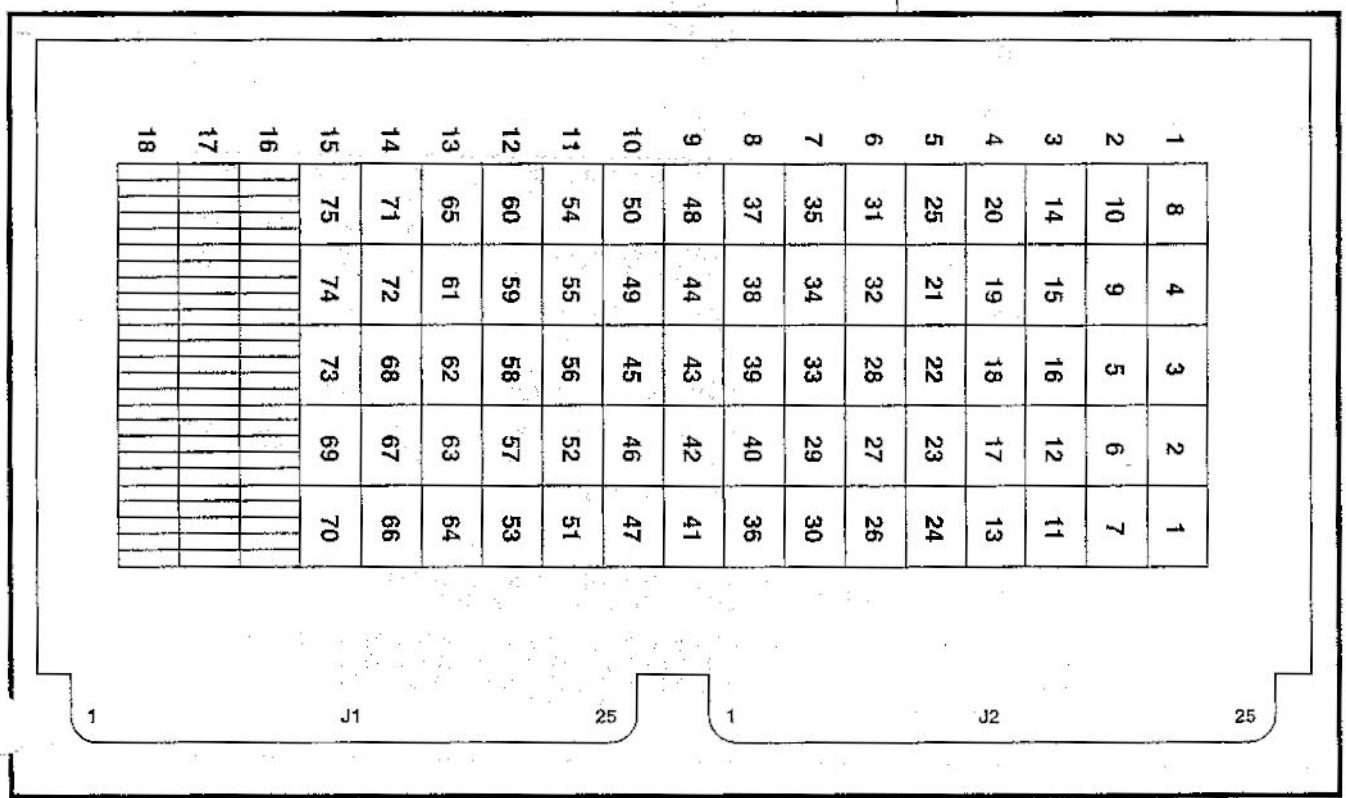
POWER		OUTPUTS	
XFMR YELLOW	J2-AA	DATA	J2-Y
XFMR YELLOW	J2-22	STROBE	J2-21
XFMR GRAY	J2-25	DATA GROUND	J2-24
MASTERBOARD GROUND	J2-25		



F. Flashboard ALR



G. Low Voltage 3-Wire System Driver Map



SCRs 2N5062

H. ACRD Darlington Map Detail

LAMP NUMBERS	DRIVER
B1	U38
B2-4	U37
B5-6	U38
B7	U37
B8	U38
B9-10	U40
B11-12	U39
B13	U40
B14	U39
B15	U40
I16	U44
I17-19	U43
I20-21	U44
I22	U43
I23	U44
I24-25	U46
I26-27	U45
I28	U46
I29	U45
I30	U46
N31	U50
N32-34	U49
N35-36	U50
N37	U49
N38	U50
N39-40	U52
N41-42	U51
N43	U52
N44	U51
N45	U52
G46	U56
G47-49	U55
G50-51	U56
G52	U55
G53	U56
G54-55	U58
G56-57	U57
G58	U58
G59	U57
G60	U58
O61	U62
O62-64	U61
O65-66	U62
O67	U61
O68	U62
O69-70	U64
O71-72	U63
O73	U64
O74	U63
O75	U64

LAMP NUMBERS	DRIVER
X76-78	U77
X79	U76
X80	U77
X81-83	U76
X84	U78
X85	U74
X86-87	U78
X88-89	U74
X90	U78
GP1	U8
GP2-4	7
GP5-6	U8
GP7	U7
GP8	U8
GP9-10	U10
GP11-12	U9
GP13	U10
GP14	U9
GP15	U10
GP16	U9
GP17	U2
GP18-20	U1
GP21-22	U2
GP23	U1
GP24	U2
GP25	U4
AUX	
B LMP	U67
I LMP	U67
N LMP	U68
G LMP	U67
O LMP	U68

SPARES
U3, U77, U78

OUTPUT - U83

If Darlington is cracked or burnt, check associated lamp sockets before changing the darlington.

LAMP NUMBERS	DRIVER
GAME #	
1'S NO. BALLS A-C	U13
1'S NO. BALLS D-F	U14
1'S NO. BALLS G	U13
10'S NO. BALLS A	U15
10'S NO. BALLS B-C	U16
10'S NO. BALLS D-E	U15
10'S NO. BALLS F-G	U16
LAST #	
1'S LAST A-C	U19
1'S LAST D-F	U20
1'S LAST G	U19
10'S LAST A	U21
10'S LAST B-C	U22
10'S LAST D-E	U21
10'S LAST F-G	U22
DOLLAR H	
10K'S DV A	U25
10K'S DV B-C	U26
10K'S DV D-E	U25
10K'S DV F-G	U26
1000'S DV A-C	U23
1000'S DV D-F	U24
1000'S DV G	U23
DOLLAR L	
100'S DV A	U29
100'S DV B-C	U30
100'S DV D-E	U29
100'S DV F-G	U30
10'S DV A-C	U27
10'S DV D-F	U28
10'S DV G	U27
AUX	
1'S DV A-D	U70
1'S DV E-G	U69

CONFIGURATION FOR ACR REV D WITH VERSION 3.4 FIRMWARE

DIP SWITCH POSTION	CONFIGURATION
SW 1	
ON	CONTINUOUS TEST
OFF	STANDARD OPERATION
SW 2	
ON	LAMP SAVER DISABLED
OFF	STANDARD OPERATION
SW 3	
ON	SMALL SYNC PACKET
OFF	LARGE SYNC PACKET
SW 4	
XX	SEE CONFIGURATION TABLE
SW 5	
XX	SEE CONFIGURATION TABLE
SW 6	
ON	TIMEOUT
OFF	TIMEOUT DISABLED (SEE TABLE FOR OPTIONS)
SW 7	NOT USED

CONFIGURATION TABLE WITHOUT LOGIC TRANSFORMER
(Labeled SW 1 on PCB illustration D, p. 39)

	SW 3	SW 4	SW 5	SW 6
SENATOR-LV3 W/TIMEOUT	XX	ON	OFF	ON
SENATOR-LV3 W/O TIMEOUT	XX	ON	OFF	OFF
PRES-2001 W/TIMEOUT	ON	OFF	ON	ON
PRES-2001 W/O TIMEOUT	ON	OFF	ON	OFF
STATESMAN (GI) W/O TIMEOUT	OFF	OFF	ON	OFF
STATESMAN (GI) W/ TIMEOUT	OFF	OFF	ON	ON
STATESMAN (DV) W/O TIMEOUT	OFF	OFF	OFF	OFF
STATESMAN (DV) W/ TIMEOUT	OFF	OFF	OFF	ON

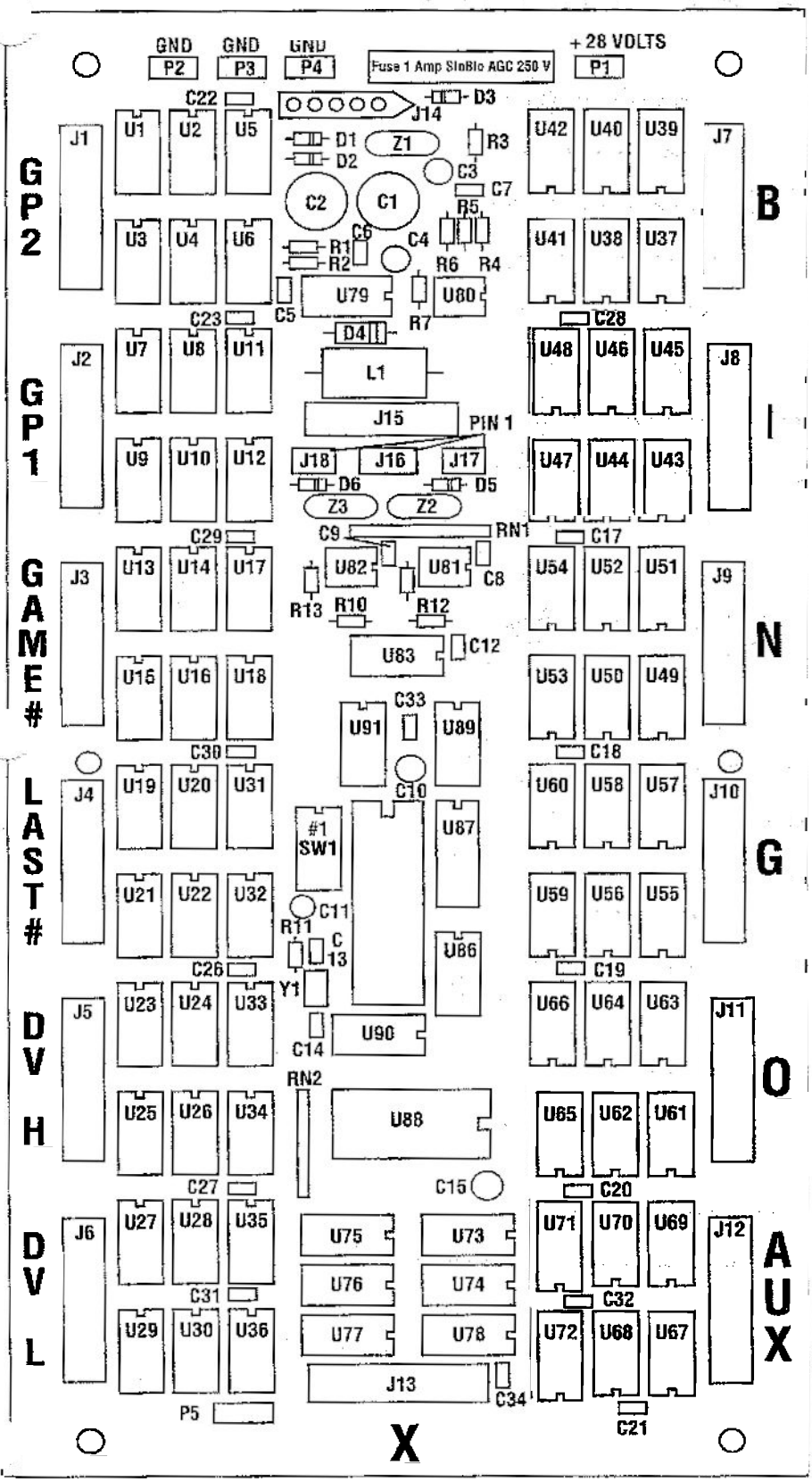
(XX = DOES NOT MATTER)

NOTE 1 : IF USING FLASHBOARD AS TEAR OPEN, SET SW 6 TO OFF. THIS WILL DISABLE THE TIMEOUT.

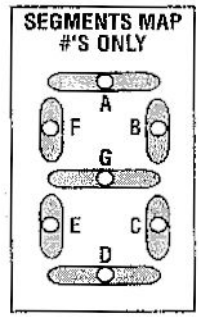
NOTE 2: IF USING REV D IN OLDER PRESIDENTIAL 5-PIN POWER CONFIGURATION, SET SW 3 TO OFF AND SET SW 2 TO ON. THIS WILL DISABLE THE LAMP SAVER OPTION. FOR ALL OTHER APPLICATIONS SET SW 2 TO OFF.

ALL DARLINGTONS ULN2068

ACRC Darlington Map

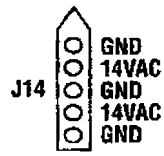


FRONT VIEW SEGMENTS



FRONT VIEW

B	I	N	G	O
1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

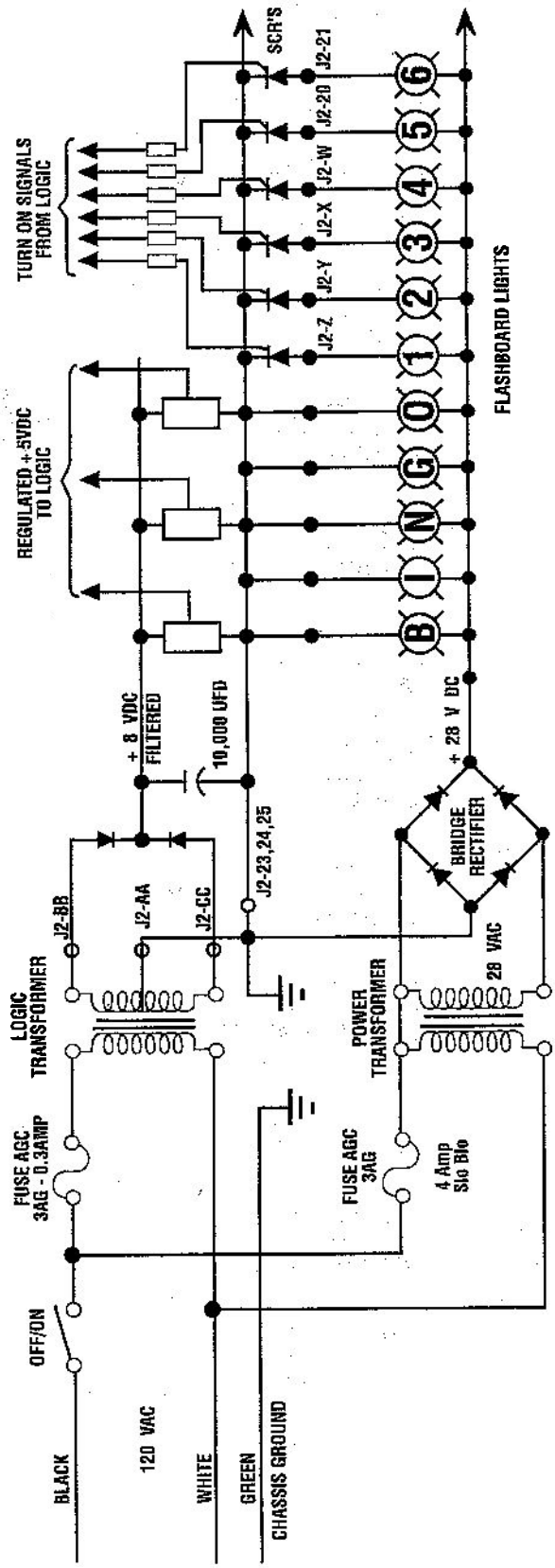


NOTE: FOR SENATOR AND LV3 FLASHBOARDS

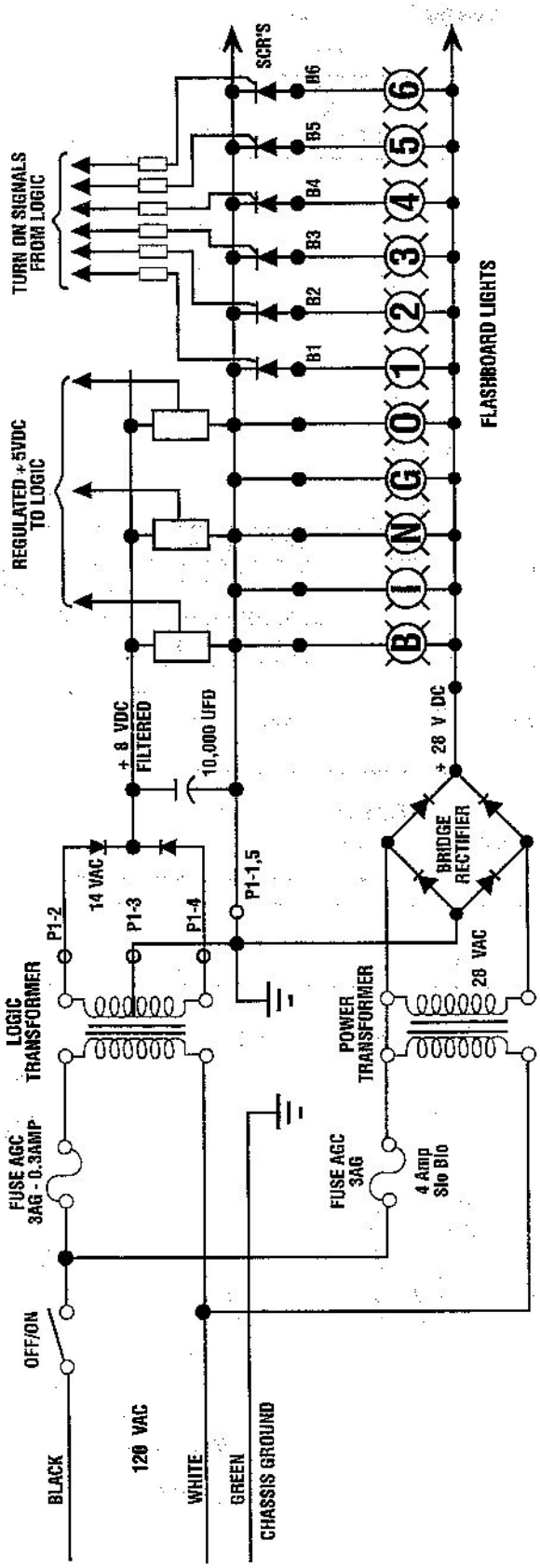
INPUT = J18
OUTPUT = J17

POWER OFF WHEN RESETTING ANY SWITCH ON SW1

J. Edge Connector Electrical Schematic-Flashboard



K. Ribbon Cable Electrical Schematic-Flashboard



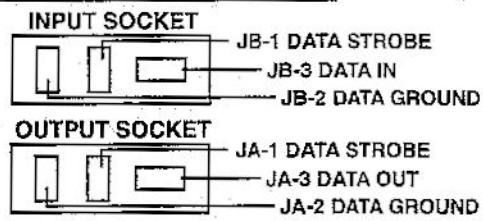
L. Ribbon Cable Flashboard Connectors for Low Voltage 3-Wire System

B		I		N		G		O	
BULB #	PIN	BULB #	PIN	BULB #	PIN	BULB #	PIN	BULB #	PIN
1	1	16	1	31	1	46	1	61	1
2	2	17	2	32	2	47	2	62	2
3	3	18	3	33	3	48	3	63	3
4	4	19	4	34	4	49	4	64	4
5	5	20	5	35	5	50	5	65	5
6	6	21	6	36	6	51	6	66	6
7	7	22	7	37	7	52	7	67	7
8	8	23	8	38	8	53	8	68	8
9	9	24	9	39	9	54	9	69	9
10	10	25	10	40	10	55	10	70	10
11	11	26	11	41	11	56	11	71	11
12	12	27	12	42	12	57	12	72	12
13	13	28	13	43	13	58	13	73	13
14	14	29	14	44	14	59	14	74	14
15	15	30	15	45	15	60	15	75	15
N.C.	16	N.C.	16	N.C.	16	N.C.	16	N.C.	16

POWER (P1)	
1 BRIDGE	(-)
2 XFMR YELLOW	(+14V)
3 XFMR GRAY	(C.T.)
4 XFMR YELLOW	(+14V)
5 BRIDGE	(-)

INPUT HEADER JB
1 DATA STROBE
2 DATA GROUND
3 DATA IN

OUTPUT HEADER JA
1 DATA STROBE
2 DATA GROUND
3 DATA OUT



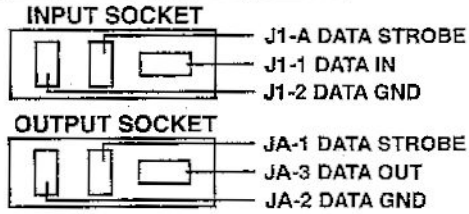
M. Edge Connector Flashboard Pinouts for Low Voltage 3-Wire System

B		I		N		G		O	
BULB #	PIN	BULB #	PIN	BULB #	PIN	BULB #	PIN	BULB #	PIN
1	J2-Z	16	J2-S	31	J2-8	46	J2-1	61	J1-R
2	J2-Y	17	J2-16	32	J2-9	47	J2-2	62	J1-S
3	J2-X	18	J2-15	33	J2-E	48	J1-AA	63	J1-T
4	J2-W	19	J2-14	34	J2-D	49	J1-24	64	J1-U
5	J2-20	20	J2-13	35	J2-C	50	J1-23	65	J1-P
6	J2-21	21	J2-K	36	J2-7	51	J1-Z	66	J1-17
7	J2-22	22	J2-L	37	J2-3	52	J1-Y	67	J1-16
8	J2-V	23	J2-M	38	J2-4	53	J1-22	68	J1-15
9	J2-19	24	J2-N	39	J2-5	54	J1-V	69	J1-M
10	J2-18	25	J2-J	40	J2-6	55	J1-W	70	J1-N
11	J2-U	26	J2-12	41	J2-B	56	J1-X	71	J1-13
12	J2-T	27	J2-11	42	J2-A	57	J1-21	72	J1-14
13	J2-17	28	J2-10	43	J1-CC	58	J1-20	73	J1-L
14	J2-P	29	J2-F	44	J1-BB	59	J1-19	74	J1-K
15	J2-R	30	J2-H	45	J1-25	60	J1-18	75	J1-J

POWER	
XFMR YELLOW	J2-BB
XFMR YELLOW	J2-CC
XFMR GRAY	J2-AA
BRIDGE (-)	J2-23, J2-24, J2-25
V. BINGO	J2-23

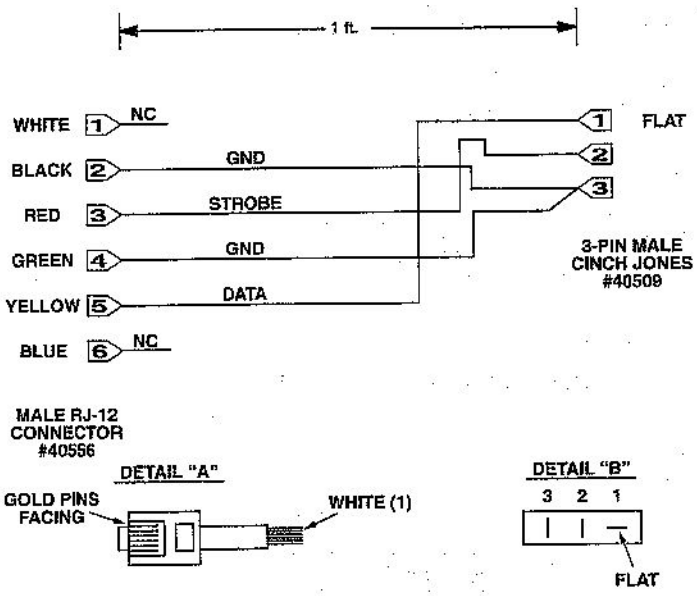
INPUT	
DATA IN	J1-1
STROBE	J1-A
DATA GROUND	J1-2

OUTPUT HEADER JA	
DATA OUT	JA-3
STROBE	JA-1
DATA GROUND	JA-2

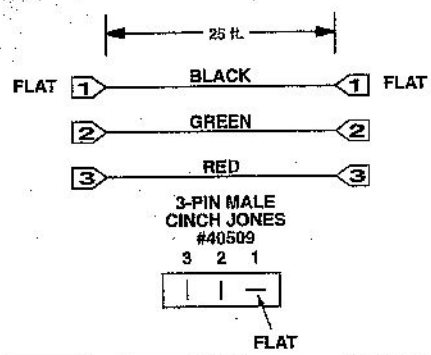


N. Flashboard Data Cable Diagram

FLASHBOARD DATA CABLE ADAPTER - RJ12 TO JONES PLUG



FLASHBOARD DATA CABLE - JONES STYLE

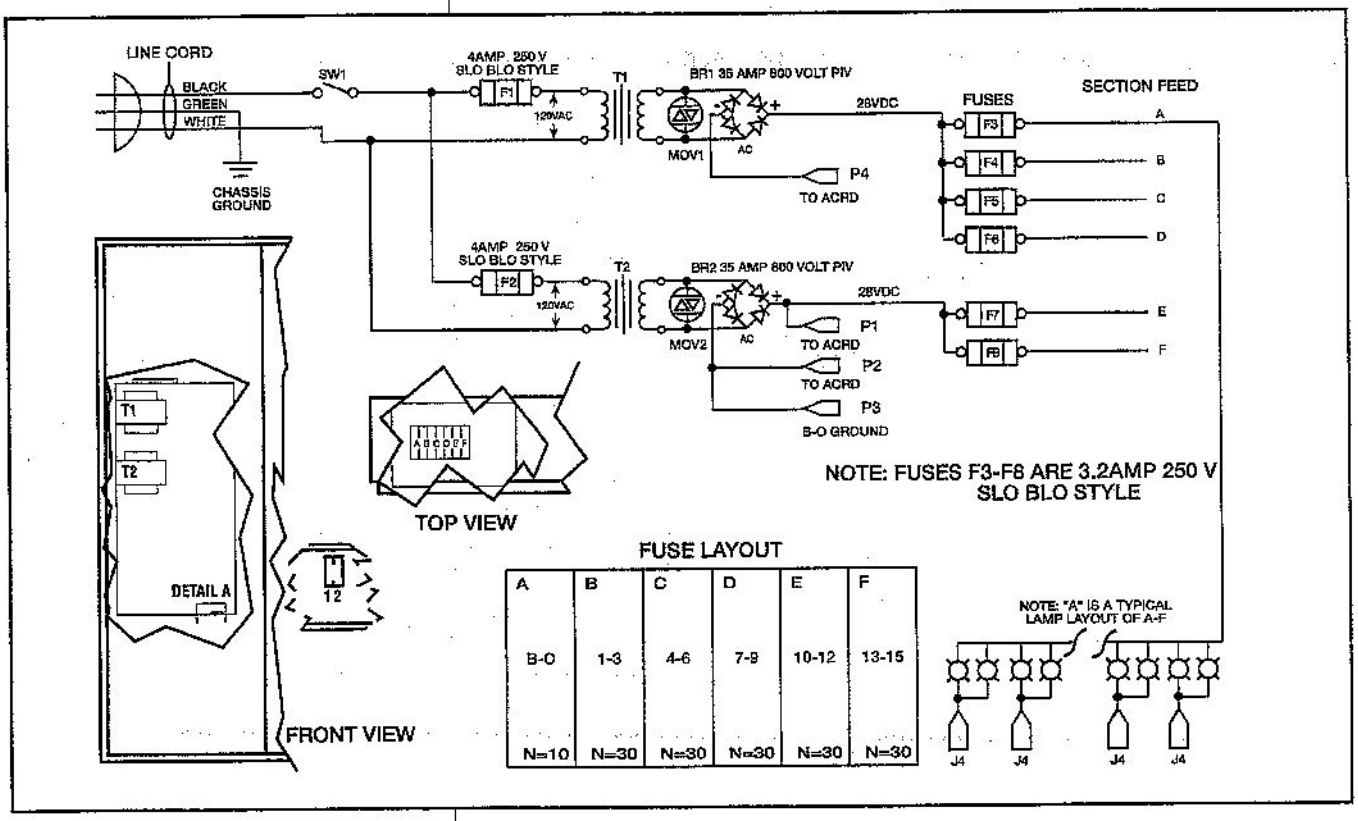


FLASHBOARD DATA CABLE

RJ-12 TO RJ12

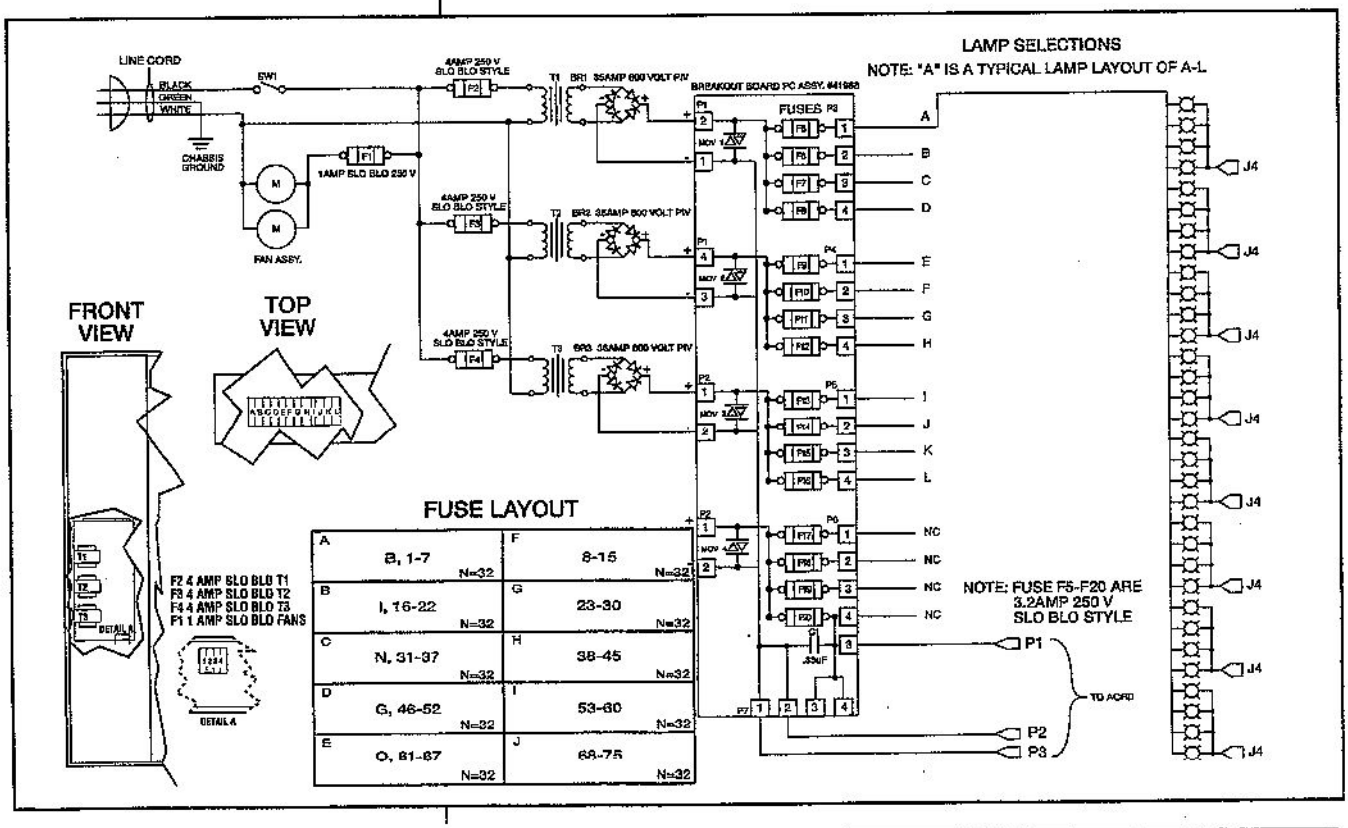
ALL PINS 1 TO 1
CORRESPONDENCE

O. 8" FB Primary Wiring Schematic - Numbers Only



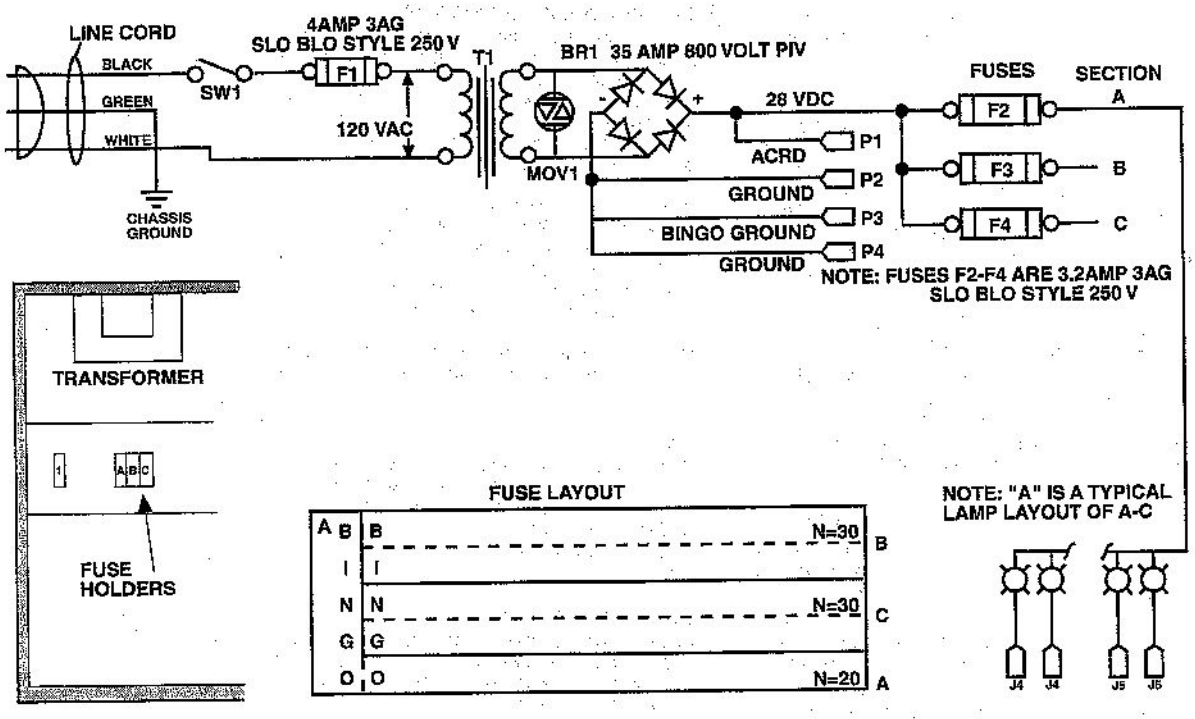
A	B	C	D	E	F
B-O	1-3	4-6	7-9	10-12	13-15
N=10	N=30	N=30	N=30	N=30	N=30

P. 12" FB Primary Wiring Schematic - Numbers Only

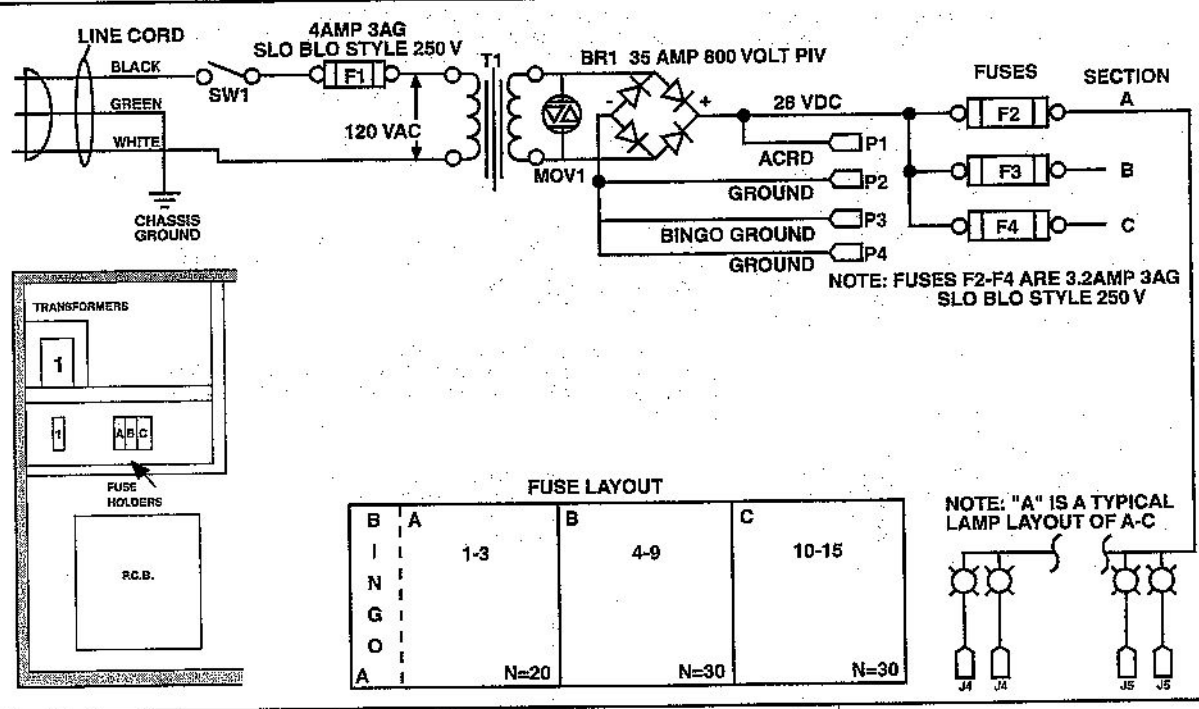


A	F
B, 1-7 N=32	8-15 N=32
B	G
I, 16-22 N=32	23-30 N=32
C	H
N, 31-37 N=32	38-45 N=32
D	I
G, 46-52 N=32	53-60 N=32
E	J
O, 61-67 N=32	68-75 N=32

Q. 2" FB Primary Wiring Schematic - Numbers Only



R. 4" FB Primary Wiring Schematic - Numbers Only



Capitol Bingo Equipment Limited Warranty

Set out below are the terms of the Limited Warranty made by Arrow International, Inc. ("Arrow") in connection with the sale of the Capitol Bingo Equipment (the "Equipment").

1. Limited Warranty

Arrow warrants to the original purchaser ("Purchaser") that the Equipment will, for a period of ONE YEAR from the date of original purchase of any equipment in the product line from an authorized Arrow dealer, be free from manufacturing defects in material and workmanship. Purchaser represents to Arrow that no employee, agent, or representative of Arrow (or of an Arrow dealer) has made any representation or warranty regarding the Equipment except as set out herein. Does not include consumable items such as filters or bulbs.

THE WARRANTY CARD MUST BE COMPLETED AND RETURNED TO ARROW WITHIN 30 DAYS OF PURCHASE FROM AN AUTHORIZED CAPITOL BINGO EQUIPMENT DISTRIBUTOR FOR THIS LIMITED WARRANTY TO BE EFFECTIVE. A purchase receipt or other proof of date of original purchase must be submitted with the Warranty Card and will be required before warranty service is rendered.

This Limited Warranty applies to normal commercial use and does not cover damage which occurs in shipment; failures which are caused by products not supplied by Arrow, failures which result from accident, misuse, abuse, neglect, mishandling, misapplication, alteration, set-up adjustments or modifications. This Limited Warranty does not cover any damage to the Equipment resulting from failure to install in strict conformity with both local fire and building codes and regulations, or if installation does not comply with the installation instructions provided by Arrow.

2. Disclaimer of Warranties

Arrow makes no warranties, express or implied (including, without limitation, merchantability, fitness for particular purpose, or against infringement of any patent), except as expressly provided herein. The express warranties provided herein are in lieu of and exclude all other warranties, guarantees or representations, express or implied, whether arising by operation of law or otherwise.

3. Limitation of Remedies

If the Equipment supplied does not conform to the Limited Warranty set out above, Arrow will, at its option, (a) repair or replace the Equipment, or part thereof, which is defective or (b) refund so much of the purchase price as Purchaser has paid for the defective Equipment, less 1/12 of the purchase price for each month between the date of the purchase from an authorized Arrow dealer and the date of the discovery of the defect, provided that written notice of the defect and its nature is given to Arrow as soon as practical after discovery of the defect, but in no event later than 90 days from the date of the discovery of the defect.

4. Limitation of Liability

The remedy of repair, replacement, or refund of the purchase price is Purchaser's sole and exclusive remedy and will satisfy all of Arrow's liabilities, whether based on contract, negligence, tort, product liability, strict liability, or otherwise. IN NO EVENT WILL ARROW BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, NOR WILL ITS INABILITY IN CONNECTION WITH ANY EQUIPMENT OR SERVICE SOLD (INCLUDING NONDELIVERY OR LATE DELIVERY THEREOF) EXCEED THE SALES PRICE OF SUCH EQUIPMENT OR SERVICE.

5. Warranty Voided

Any obligations of Arrow under this Limited Warranty will be deemed to have been satisfied if anyone other than an authorized Capitol Bingo Equipment Dealer services the Equipment.

6. Transfer of Limited Warranty

Purchaser may transfer its rights under this Limited Warranty, subject to the terms and conditions hereof, to a buyer ("Buyer") from Purchaser of the Equipment. Thereafter, the rights under this Limited Warranty are not transferable. For the transfer by Purchaser of the Limited Warranty to be effective, the following conditions must have occurred no later than the 30th day following the date of resale to Buyer:

A. Purchaser must have complied with all requirements to make the Limited Warranty effective as to Purchaser;
B. The Equipment (as an entire unit and as purchased by Purchaser) must be transferred to Buyer; and
C. Buyer must have submitted a new warranty card together with proof of purchase by Buyer from Purchaser.

Upon an effective transfer of this Limited Warranty, Buyer will be considered to be "Purchaser" for paragraphs 1 and 4 hereof.

7. Inspection

With respect to any claim that the Equipment is defective, Arrow will be allowed a reasonable time to inspect the Equipment, in place. If the Equipment is altered or removed before Arrow has made such inspection or waived its right to do so, the obligations of Arrow will be deemed to have been satisfied.

8. Limitation of Actions

Any legal action against Arrow for a default of its obligations under this Limited Warranty must be commenced within two years from the date the Equipment was sold by an authorized dealer of the Equipment.

9. How to Obtain Service

If a problem with this Equipment develops during or after the warranty period, proceed as follows:

A. Refer to your Operator's Manual and follow the Troubleshooting Table within the "Service Section."
B. Contact the authorized Capitol Bingo Equipment Distributor from whom you purchased the Equipment.
C. Contact the Capitol Bingo Equipment Service Manager at the most convenient phone number listed below:

1 (800) 321-0757 outside Ohio, but within the U.S.A.
1 (800) 537-3479 within the state of Ohio
1 (216) 961-3500 within the 216 area code or outside the continental U.S.A.
1 (216) 961-3641 fax number in Cleveland, Ohio

SERVICE CALLS WHICH DO NOT INVOLVE DEFECTIVE MATERIALS OR WORKMANSHIP AS DETERMINED BY ARROW IN ITS SOLE DISCRETION, ARE NOT COVERED. COST OF SUCH SERVICE CALLS ARE THE RESPONSIBILITY OF THE PURCHASER.

Arrow wants you to remain a satisfied customer. If a problem occurs that cannot be resolved to your satisfaction, please contact us immediately. Phone one of the numbers listed above or write to:

Capitol Bingo Equipment Division
c/o National Service Manager
9900 Clinton Rd.
Cleveland, Ohio 44144

Please be sure to include the name, model number, serial number, date of original purchase, and the distributor from whom you purchased the Equipment, as well as any actions taken to correct the problem.

CAPITOL BINGO EQUIPMENT
From Arrow International, Inc.

HIGH QUALITY EQUIPMENT MANUFACTURED TO BE YOUR FOUNDATION FOR SAFETY, RELIABILITY AND SERVICE

This manual was accurate at the time of printing. Arrow International reserves the right to make changes due to the changing technology and regulations.

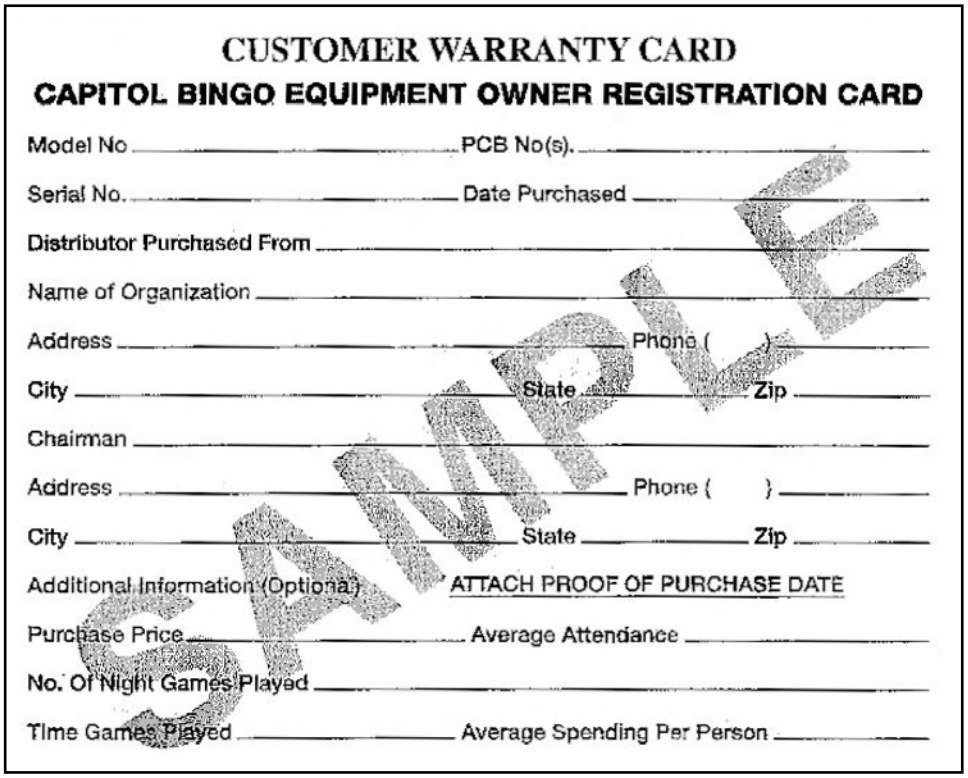
Please consult your distributor or Arrow International, Inc. for any discrepancies.

MANUAL SENATOR SYSTEM

48209

WARNING:

You must complete and return the enclosed warranty card immediately in order to insure proper warranty coverage.



CUSTOMER WARRANTY CARD

CAPITOL BINGO EQUIPMENT OWNER REGISTRATION CARD

Model No _____ PCB No(s). _____

Serial No. _____ Date Purchased _____

Distributor Purchased From _____

Name of Organization _____

Address _____ Phone ( ) _____

City _____ State _____ Zip _____

Chairman _____

Address _____ Phone ( ) _____

City _____ State _____ Zip _____

Additional Information (Optional) ATTACH PROOF OF PURCHASE DATE

Purchase Price _____ Average Attendance _____

No. Of Night Games Played _____

Time Games Played _____ Average Spending Per Person _____

SAMPLE

ARROW INTERNATIONAL, INC.
ARROW GAMES (CANADA) INC.

9900 Clinton Road, Cleveland, Ohio 44144

(800) 321-0757 outside Ohio, but within the U.S.A.
(800) 537-3479 within the state of Ohio
(216) 961-3500 within the 216 area code or outside the continental U.S.A.
(216) 961-3641 U.S. FAX
(800) 387-7621 within Ontario
(519) 770-4621 outside Ontario, but within Canada
(519) 770-4872 Canada FAX

www.arrowinternational.com
www.arrowgames.com