

# 2" AND 4" FLASHBOARDS OPERATOR'S MANUAL

ARROW INTERNATIONAL  
CAPITOL BINGO  
EQUIPMENT DIVISION



# ARROW INTERNATIONAL, INC. FLASHBOARD OPERATOR'S MANUAL

June 2010

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# UNPACKING

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## CHAPTER

# 1

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

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### DAMAGE ACTION PROCESS

Your Arrow International, Inc. 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 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 carrier's 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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## WARRANTY ASSURANCE

You must keep a copy of your receipt or invoice for proof of purchase. Please review the warranty information on page 18 of this manual.

If there are any questions, contact your distributor or call Technical Assistance at:

**800-277-6214**



### **TECHNICAL ASSISTANCE CENTER**

**Providing Proactive Solutions  
Through Quality Service and Support**

Support Hours: 8:00 AM to 12:00 AM EST

**800.277.6214 • [www.arrowinternational.com](http://www.arrowinternational.com)**



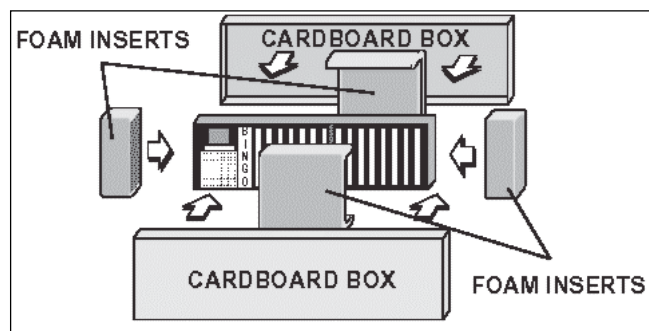
## FLASHBOARD

### CAUTION:

Please take great care when unpacking the flashboard from the packing material. Cutting the packing material too aggressively may lead to flashboard damage.



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.



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 mean damage to the flashboard. If damage is detected refer to the Damage Action Process section (pg. 2) 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 the retaining tape on the center foam insert then 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 the 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.

# FLASHBOARD CONNECTION/ INSTALLATION

## CHAPTER

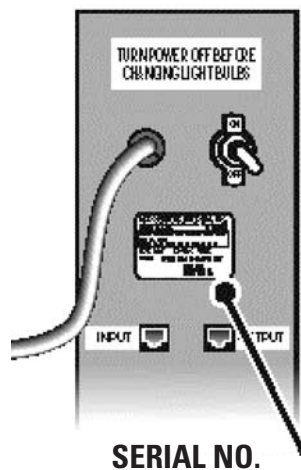
# 2

### Note:

The new style Arrow flashboards may require a signal adapter to properly work with older style or other manufacturer's equipment. Contact your Arrow distributor for more information.

1. Data connections for the bingo flashboards are made with your console's data cable output connectors, located on console's input/output 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.

### Flashboard side panel



### CAUTION:

Avoid running the flashboard cable next to high current lines such as smoke eaters, air conditioners, public address systems, etc.

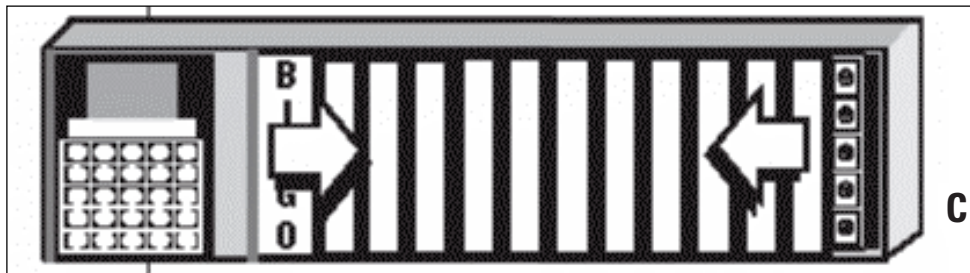
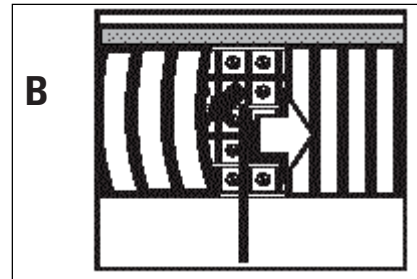
3. Utilize the telephone style data cable provided with the flashboard and plug the data cable into your console's I/O panel and then the telephone jack on side of the flashboard labeled "ALT INPUT."
4. You may have an installation that requires hook up of more than one flashboard. In such an instance, the second and subsequent flashboards may be daisy chained by connecting the data cable to the "ALT OUTPUT" connection on the first flashboard to the "ALT INPUT" connection on the second flashboard, and so on.
5. When mounting the flashboard to the wall or hanging from a ceiling, take great care to attach mounting hardware to solid wood, brick, or metal. Use only the manufacturer's approved hanging hardware. Hanging a flashboard by its handles may cause an unsafe condition.

**CAUTION:**

Flashboards can weigh anywhere from 80 to 600 pounds. If you are not confident in hanging your flashboard(s) safely, please contact a qualified and licensed rigger and electrician for proper installation. In many cases, the local building inspector may require a permit as well as an inspection of the site for structural stability.

## ACCESSING 4" FLASHBOARDS LAMPS

1. Remove the retaining strip next to the vertical bingo lamps. This is accomplished by gently pushing in the low 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 Flashboard Light Bulb section, pg. 8).
3. Slide the acrylic panels to their home position.
4. Re-insert the retaining strip.



**Note:**



**28-VOLT  
MINIATURE BAYONET  
LIGHT BULB**

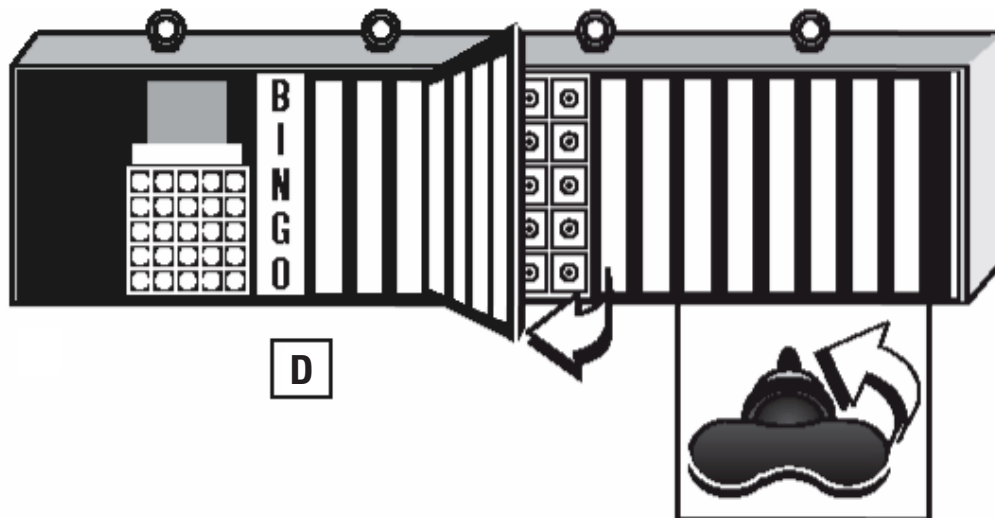
The 1820 miniature bayonet lamp is standard on most manufacturers' flashboards. (Check individual flashboard specifications). A good lamp should have a resistance measurement of about 28 ohms. Inexpensive lamps often have a poor quality and do not have consistent resistance ratings. Using a lamp that is too far out of specifications could produce too much heat and draw too much current, causing premature failure and possible damage to your flashboard electronics and/or plexiglass.



**CAUTION:**

Turn off and unplug your console and/or flashboard before performing any maintenance. Failing to perform this very important step could lead to equipment damage and/or personal injury!

## ACCESSING 8" FLASHBOARDS LAMPS



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:**

Power Pack/Game Indicator sections require the use of a Phillips screwdriver.

2. Gently open the acrylic panels allowing the velcro tabs to release.
3. Change the light bulb(s) as necessary (refer to Flashboard Light Bulb section, pg. 8).
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.

## CHANGING FLASHBOARD LIGHT BULBS

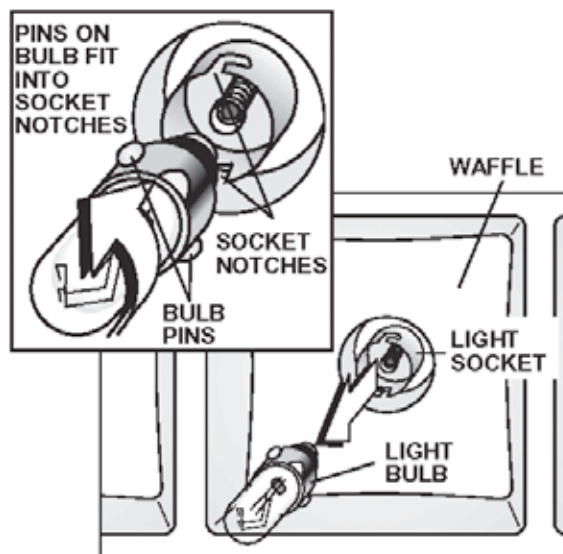
### CAUTION:

Turn off and unplug your console and/or flashboard before performing any maintenance. Failing to perform this very important step could lead to equipment damage and/or personal injury!

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 1/4 turn to secure the light bulb in place.
4. Additional light bulbs may be purchased from your 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.

### Note:

The 1820 miniature bayonet lamp is standard on most manufacturers' flashboards. (Check individual flashboard specifications). A good lamp should have a resistance measurement of about 28 ohms. Poor quality lamps often do not have a consistent resistance rating. Using a lamp that is out of specifications could produce too much heat and draw too much current causing premature failure and possible damage to your flashboard electronics and/or plexiglass.



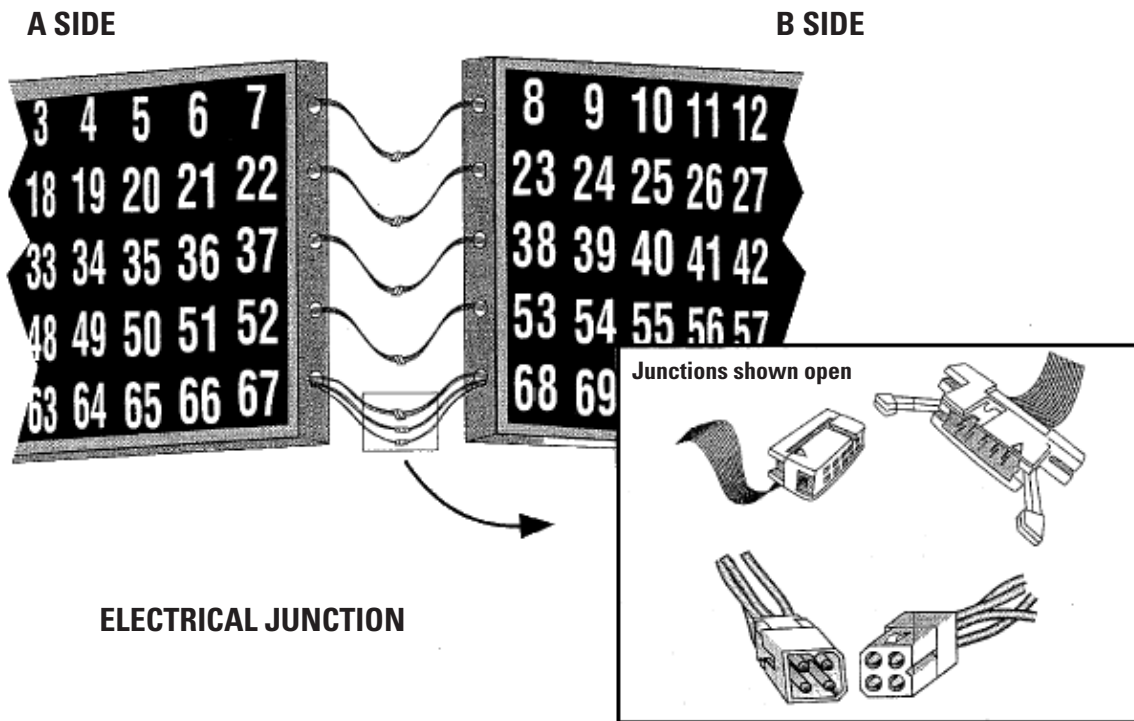
**28-VOLT  
MINIATURE BAYONET  
LIGHT BULB**

# 8" FLASHBOARD ASSEMBLY

## Electrical Connections

When the two flashboard halves are positioned so the open ends are adjacent to each other, connect each 10 pin data connector with its corresponding half (male/female connector junction). Be careful to position the key and arrow marks so they align with each other and lock together.

Next, connect the 4 pin power connectors located in the lower section of each half. These connectors are keyed and labeled to insure positive connection.



## Mechanical/Electrical Assembly

Once the electrical connections have been made on your flashboard, remove the masonite backing near the unfinished or open halves on each flashboard section. Each masonite panel maybe slightly different, so take notice of which panel goes on which half for easier reinstallation.

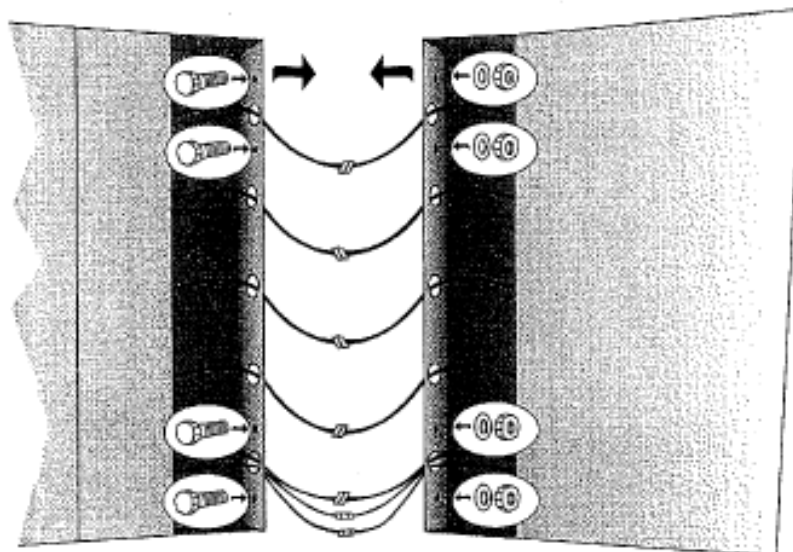
Move the flashboard halves together and remove the interconnecting cable slack by pulling the excess cable back into the each of the flashboard halves. Fasten the flashboard halves together using the four (4) 1/4 -20 bolts, washers and nuts.

### Note:

At this point it is a good idea to test the flashboard(s) before reattaching the masonite panels and hanging the flashboard to assure the cabling has been assembled properly.

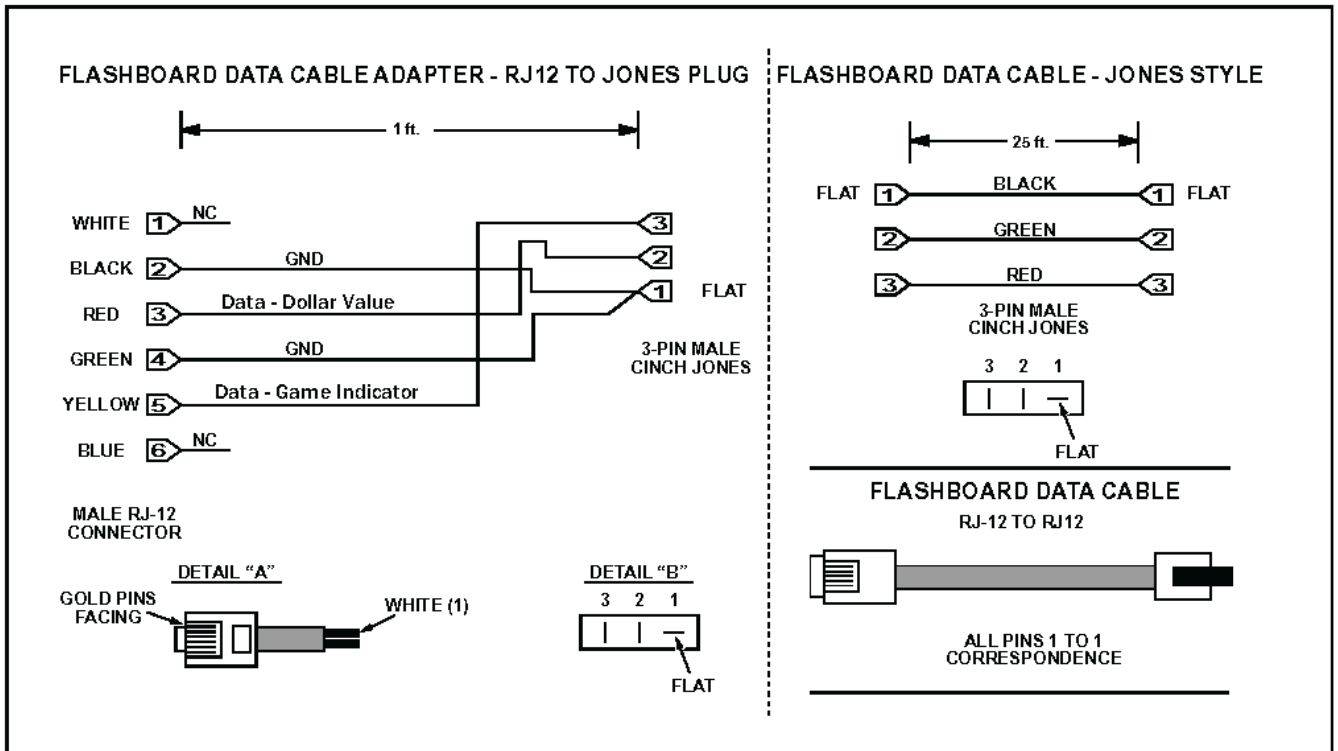
Place the masonite panels back in place and fasten.

The flashboard is now ready for hanging. When moving the flashboard, please make sure the cables are in the flashboard and are not pinched between the halves.



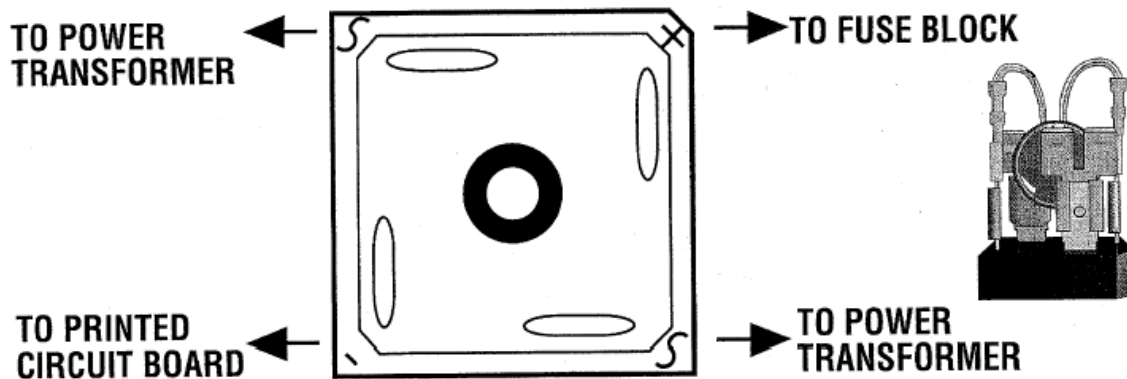
**BACK VIEW OF FLASHBOARD**

### Data Cable Diagram



## Bridge Rectifier

The bridge rectifier supplies the DC voltage to the flashboard which powers the printed circuit board and lights the lamps. The power transformer knocks the line voltage down to about 28 to 30 volts AC and then the bridge rectifier will rectify or convert this AC voltage into a DC voltage.



### CAUTION:

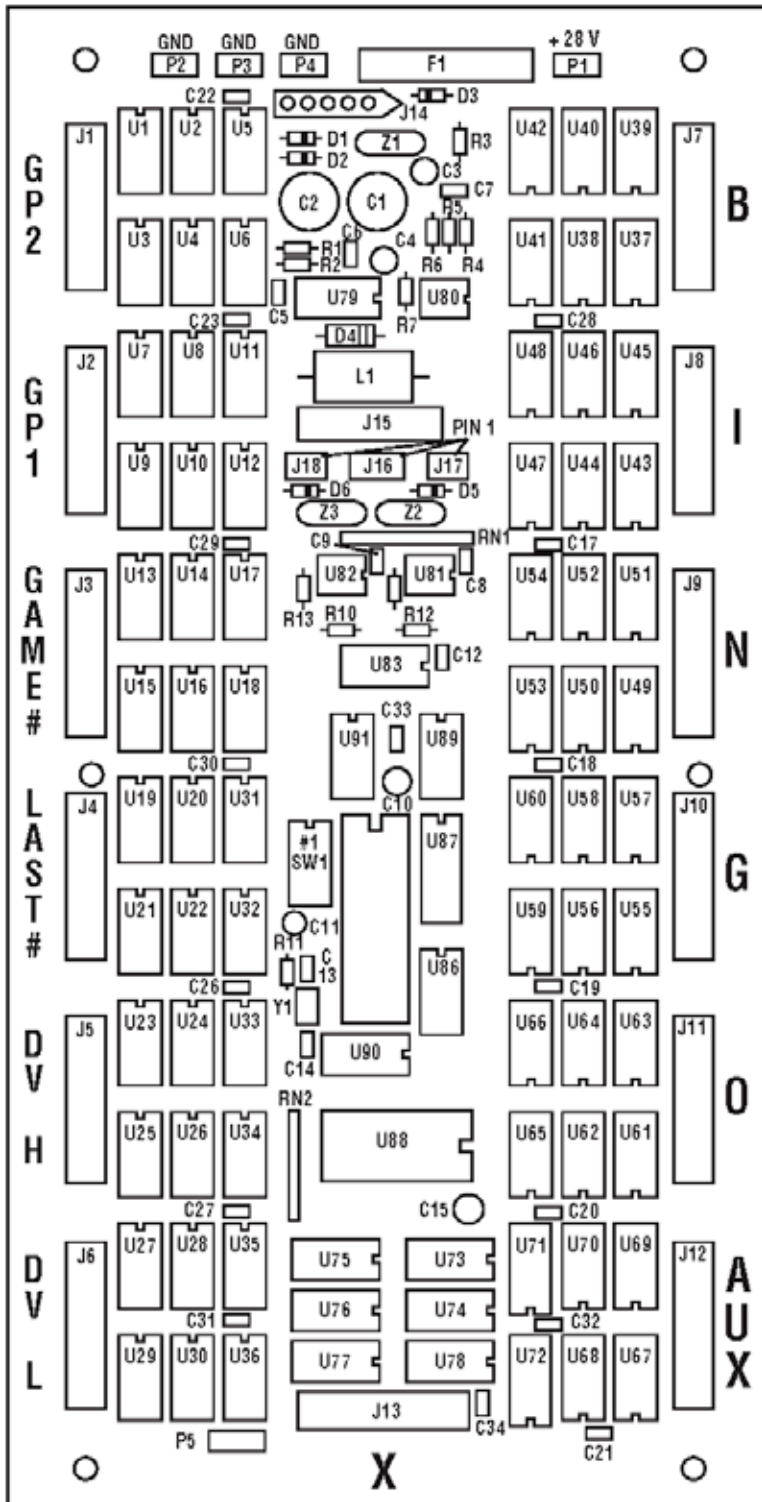
If you are unsure about working with electricity, please consult your distributor or an electrician. Although the voltage on a bridge rectifier is only 28 volts, there is line voltage (110 volts AC) inside of the flashboard, and this can cause injury or even death. Also, if the bridge rectifier is improperly replaced it could cause other damage to your flashboard and/or circuitry.

The component attached to the top of the bridge rectifier is a metal oxide varistor (MOV) spike protector. This component helps to ease incoming voltage spikes to protect your quality bingo equipment. If this fails, it may short and cause the fuse to blow. It can be disconnected for troubleshooting, but should be replaced as soon as possible. Contact your Arrow distributor for replacement details.

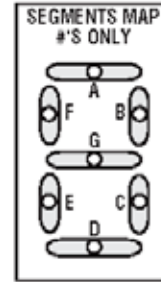
The MOV should be connected across the AC lines coming into the bridge rectifier.



# Printed Circuit Board Diagram

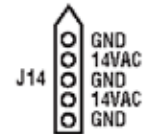


## FRONT VIEW SEGMENTS



## 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



CLOSE = OFF

POWER OFF WHEN RESETTING ANY SWITCH ON SW1



# Printed Circuit Board Darlington Map

LAMP NUMBERS	DRIVER	LAMP NUMBERS	DRIVER	LAMP NUMBERS	DRIVER			
B1	U38	X76-78	U77	<b>GAME #</b>				
B2-4	U37	X79	U76	1'S NO. BALLS A-C	U13			
B5-6	U38	X80	U77	1'S NO. BALLS D-F	U14			
B7	U37	X81-83	U76	1'S NO. BALLS G	U13			
B8	U38			10'S NO. BALLS A	U15			
B9-10	U40	X84	U78	10'S NO. BALLS B-C	U16			
B11-12	U39	X85	U74	10'S NO. BALLS D-E	U15			
B13	U40	X86-87	U78	10'S NO. BALLS F-G	U16			
B14	U39	X88-89	U74	<b>LAST #</b>				
B15	U40	X90	U78	1'S LAST A-C	U19			
		GP1	U8	1'S LAST D-F	U20			
I16	U44	GP2-4	7	1'S LAST G	U19			
I17-19	U43	GP5-6	U8	10'S LAST A	U21			
I20-21	U44	GP7	U7	10'S LAST B-C	U22			
I22	U43	GP8	U8	10'S LAST D-E	U21			
I23	U44			10'S LAST F-G	U22			
I24-25	U46	GP9-10	U10	<b>DOLLAR H</b>				
I26-27	U45	GP11-12	U9	10K'S DV A	U25			
I28	U46	GP13	U10	10K'S DV B-C	U26			
I29	U45	GP14	U9	10K'S DV D-E	U25			
I30	U46	GP15	U10	10K'S DV F-G	U26			
N31	U50	GP16	U9	1000'S DV A-C	U23			
N32-34	U49	GP17	U2	1000'S DV D-F	U24			
N35-36	U50	GP18-20	U1	1000'S DV G	U23			
N37	U49	GP21-22	U2	<b>DOLLAR L</b>				
N38	U50	GP23	U1	100'S DV A	U29			
		GP24	U2	100'S DV B-C	U30			
N39-40	U52	GP25	U4	100'S DV D-E	U29			
N41-42	U51			100'S DV F-G	U30			
N43	U52	<b>AUX</b>		10'S DV A-C	U27			
N44	U51	B LMP	U67	10'S DV D-F	U28			
N45	U52	I LMP	U67	10'S DV G	U27			
		N LMP	U68	<b>AUX</b>				
G46	U56	G LMP	U67	1'S DV A-D	U70			
G47-49	U55	O LMP	U68	1'S DV E-G	U69			
G50-51	U56			<b>CONFIGURATION TABLE</b>				
G52	U55							
G53	U56							
G54-55	U58	SPARES		SW 3	SW 4	SW 5	SW 6	
G56-57	U57	U3, U77, U78						
G58	U58			Emerald w/ time out	ON	OFF	ON	ON
G59	U57			Emerald w/o time out	ON	OFF	ON	OFF
G60	U58	OUTPUT - U83		Sapphire (GI) w/o time out	OFF	OFF	ON	OFF
				Sapphire (GI) w/ time out	OFF	OFF	ON	ON
O61	U62			Sapphire (DV) w/o time out	OFF	OFF	OFF	OFF
O62-64	U61			Sapphire (DV) w/ time out	OFF	OFF	OFF	ON
O65-66	U62							
O67	U61							
O68	U62							
O69-70	U64							
O71-72	U63							
O73	U64							
O74	U63							
O75	U64							

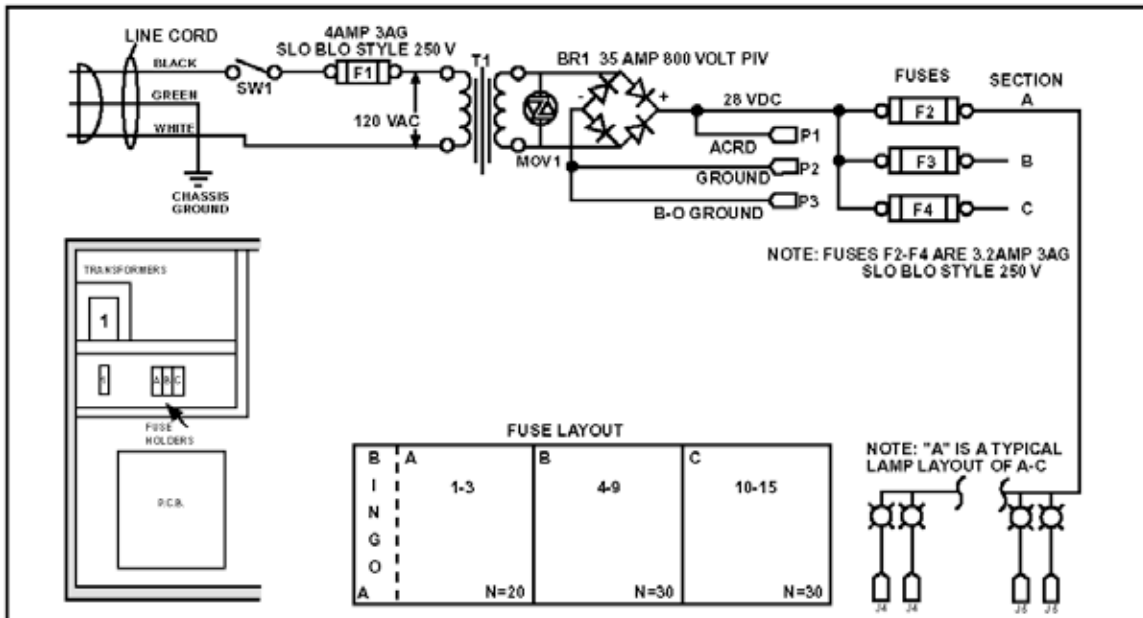
**If Darlington is cracked or burnt, check associated lamp sockets before changing the darlington.**

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

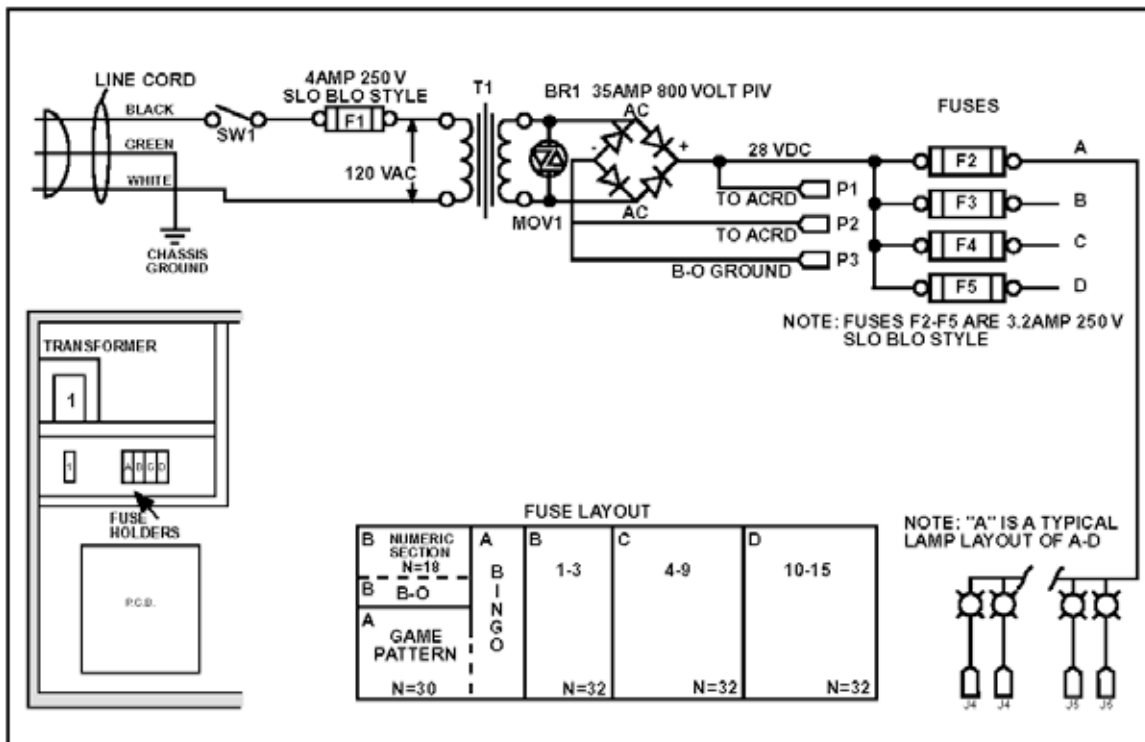


## 4 Inch Flashboard Wiring Diagrams

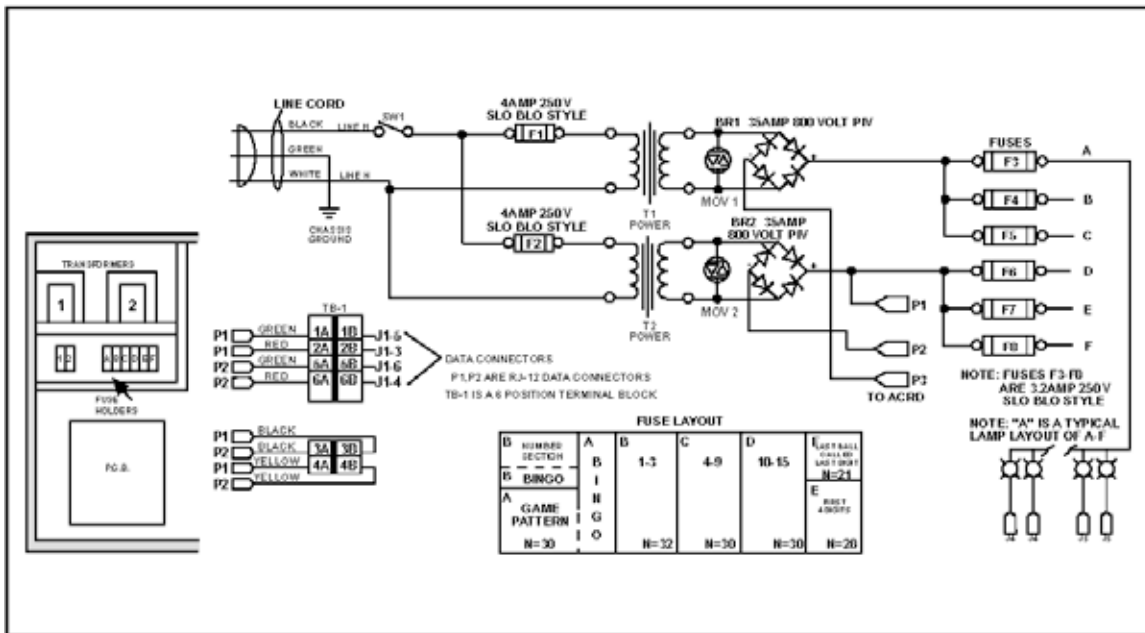
### 4" Numbers Only



### 4" Game Indicator

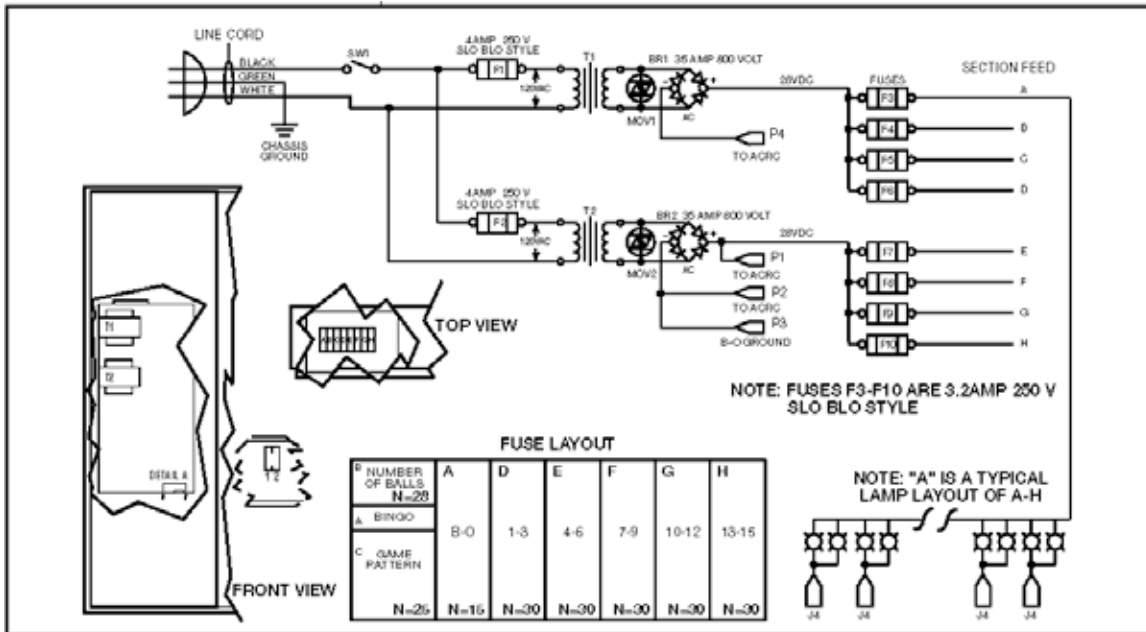


### 4" Dollar Value

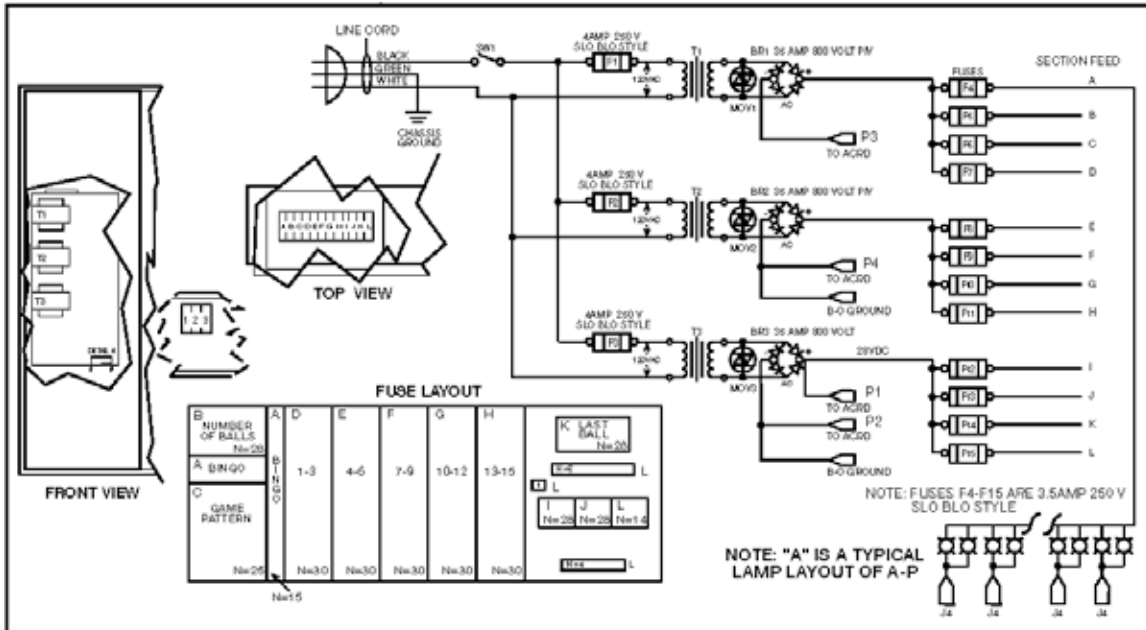


# 8 Inch Flashboard Wiring Diagrams

## 8" Game Indicator



## 8" Dollar Value



# WARRANTY

## CHAPTER

# 4

### Arrow/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 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 cover consumable items such as filters and bulbs.

THE WARRANTY CARD MUST BE COMPLETED AND RETURNED TO ARROW WITHIN 30 DAYS OF PURCHASE FROM ALL 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 first 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, 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 sold 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:

(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 fax number in Cleveland, Ohio

SERVICE CALLS WHICH DO NOT INVOICE 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.

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**9900 Clinton Road**  
**Cleveland, OH 44144**  
**Phone: 800.321.0757**  
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