

INSTALLATION MANUAL

UPRIGHT KIT



CAPCOM
BOWLING™

Rick

10. AM

Cap



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OUR TOLL FREE NUMBER FOR SERVICE INFORMATION CONCERNING THIS GAME, OR ANY OTHER CAPCOM GAME YOU NOW HAVE ON LOCATION.

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Inverter Board on Monitor

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WARRANTY, REPAIR, AND RETURN POLICY

1. * 90 day full electronics warranty.
2. Minimum \$40.00 service charge for all non-warranty repairs or returns.
3. For all servicing return to CAPCOM.
4. ANY non-factory repair or attempted repair voids warranty.
5. CAPCOM decal must remain on all PC boards

* All warranty periods begin on the date of purchase from CAPCOM

RETURN MERCHANDISE AUTHORIZATION - (RMA)

1. All returned merchandise must have an RMA number clearly visible on the outside of the package.
2. All RMA numbers must be obtained from CAPCOM by an authorized CAPCOM distributor. Please have CAPCOM serial number available when calling for an RMA number.
3. PC boards returned to CAPCOM without an RMA number will not be accepted.
4. CAPCOM will ship advance replacement boards to distributors or, at distributors request, drop-ship boards direct to the operator.
5. Advance replacement boards will be billed to the distributor until receipt of a returned board by CAPCOM at which time a credit will be issued.
6. All repairs and/or replacements will be shipped by CAPCOM within 24 hours of receipt or request (subject to availability of boards).
7. For any CAPCOM product purchased after 11/01/87, a CAPCOM warranty card must be on file for each board to facilitate repair and return.

BEFORE YOU GET STARTED...STOP!

1. Does your new game package include all listed parts?
2. Is the game you have chosen to transform able to supply all the required voltages for the new game (+5, -5, & +12 vdc)? NOTE: Some games (i.e. Ms. Pac Man, Galaxian, etc.) regulate their voltages on the main PC board. This makes the existing power supply inappropriate (and hazardous) to your new game. These games will require a power supply change. Many game supply houses can offer you a switching regulated power supply for a relatively low cost. Ask your CAPCOM distributor.
3. Is the monitor configuration compatible? It is sometimes rather difficult to change the monitor from a horizontal mount to a vertical one. Things will be easier if you choose a game cabinet with the same mount as your new game requires (vertical).
4. Do you have the necessary tools? (See the recommended tool list on page 5).

IMPORTANT!

This is the Upright Version of CAPCOM BOWLING!

Are you building a cocktail game? If so, you have the wrong kit! Contact your distributor immediately. While the cocktail version does use the same logic board it requires a different EPROM at position U6 and comes with different hardware, switches, graphics, JAMMA harness, and even different trackballs. Exchange this kit for a cocktail one right away.

CAUTION!

FCC REGULATION COMPLIANCE

This device complies with the limits for a class "A" computing device pursuant to sub-part "J" of part 15 of FCC rules, which are designed to provide reasonable protection against interference when operated in a commercial environment.

The use of an aluminized cardboard PC board cage with this game is not necessary for FCC compliance and is discouraged.

Operation of this equipment in a residential area is likely to cause interference in which case the user, at his own expense, will be required to take whatever measures may be necessary to correct the interference.

The FCC warning sticker included in this package must be displayed on the back of your cabinet.

INSTALLING YOUR

CAPCOM BOWLING

NEW GAME PACKAGE

TABLE OF CONTENTS:

New Game Package Contents	4
Power and Monitor Requirements	4
Recommended Tools and Supplies	5
Game Description	6
Installation Procedures	7
Control Panel Positioning	13
Ticket Dispenser Installation	14
Diagnostics, Adjustments, and Accounts	16
Main Harness Connections	18
Trackball Mounting Template	19
Warranty Registration Card	22

CAPCOM BOWLING

UPRIGHT VERSION PACKAGE CONTENTS

- 1) Printed Circuit Board (PCB)
- 1) Set of Nuts, Bolts, and Spacers
- 1) Connecting Wire Harness (JAMMA)
- 1) Trackball
- 1) Steel Mounting Plate for Trackball
- 4) Player Button Assemblies (1 Start, 1 Hook Left, 1 Hook Right, 1 Service)
- 1) Nylon clip for mounting Service Switch
- 1) Marquee Styrene
- 1) Marquee Plexiglas
- 1) Control Panel Overlay
- 1) Set of Side Graphics (2 pieces)
- 1) Set Function Labels (START, HOOK LEFT, etc.)
- 1) This Manual

NOTE: Replacement accessories available through your exclusive Capcom distributor.

POWER REQUIREMENTS:

+5 VDC	1 amp
+12 VDC	2 amps
-5 VDC	1 amp

MONITOR REQUIREMENTS:

Vertical Mount Raster Scan
Positive or Negative Composite Sync

NOTE: The monitor must be mounted vertically. Also, make sure that the start of the screen (left edge when mounted horizontally) is towards the bottom. If not, your monitor is mounted upside-down. You will need to remount it.

RECOMMENDED TOOLS AND SUPPLIES

CAPCOM New Game Package
Phillips and Slotted Screwdrivers
Socket Set
Wire Cutters and Strippers
Pliers or Channel Locks
Electric Drill with 3/32", 1/4", and 7/16" Bits
1-3/16" Chassis or Sheet Metal Punch
Small File
Razor Knife and Sharp Blades
Straight Edge
Painting Supplies (if you do your own painting)
 Air Brush or Paint Sprayer
 Paint Roller and Pan
 Paint Brush
 Paint (and primer)
 Sand Paper
 Putty Knife and Wood Putty
Staple Gun and Staples
Soldering Iron and 60/40 Resin Core Solder
Vacuum Cleaner
Assorted Fastening Hardware
Heat Shrink Tubing (3/32", 1/8", and 3/16")
Masking Tape
3-1/2" or 4" Wire Ties
Spray Window Cleaner and Rag (baby diapers work GREAT!)

IMPORTANT NOTE!

Through useage of the very latest technology this game requires far less power to operate than most games currently on the market. The outputs of many "regulated" switching power supplies actually vary with load. For this reason the power supply from an old game may not be correctly adjusted for CAPCOM Bowling. Therefore, it is very important to adjust the +5 vdc supply WITHOUT connecting the PCB, then readjusting later (if necessary) after the PCB is installed. Damage will occur in time if the power supply is outside the acceptable limits (between 4.8 and 5.2 vdc).

CAPCOM BOWLING

Game Description

- o 1 to 4 players can bowl
- o Additional players can buy in during the first frame
- o Press start once for each bowler
- o Adjust amount of left or right hook with hook buttons
- o Bowl by rolling the track ball
- o Bowling too slowly will cause a foul
- o Don't let the timer run out!
- o Game lasts ten regulation bowling frames
- o Tickets can be dispensed at operator set scores



INSTALLATION PROCEDURES

Something to Think About

Your final product will be a *new game*.

You have made a wise decision to transform a game that has seen better days at the all-important cash box into a new game. This is by far the most cost effective alternative to maximize the return of your initial investment. All you provide is the cabinet with a power supply and a monitor. Oh, yes, you will need a touch of elbow grease. And that's it! We provide the rest. The end result is a new game at a very low cost.

FACT: Spend a little time on the cabinet's appearance (i.e. marquee, control panel, and cabinet graphics) and you will raise the profits of any game -- especially with the introduction of a new game package.

The new game look should always apply to the inside of your game as well as the outside. A few wire ties and shrink tubing on your harness, some fastening hardware on your subassemblies, and a sweep with the ol' vacuum cleaner will ensure that unnecessary glitches do not occur.

Remember: you are creating a *new game*.

If you have any questions or just need some advice on any of your new game transformations, don't hesitate to give a member of our technical staff a call.

LET'S GET OUR HANDS DIRTY

Preparing the Original Game for the New Game

Remove the following:

1. Main Logic Board(s)
2. Control Panel
3. Monitor Plexiglas
4. Monitor Bezel
5. Marquee
6. Cabinet Graphics

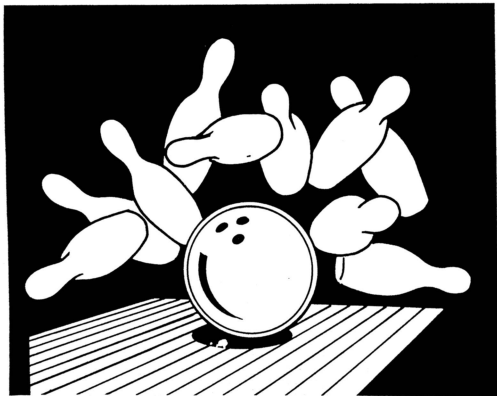
For a fresh look painting is highly recommended. Spray painting will always give a better finish but if an air brush or paint sprayer is unavailable then a roller is second best. Try to avoid brushes for covering large areas since they cover less smoothly than sprayers or rollers. If you don't have the facilities for painting try an auto body shop -- then you're sure to get the smoothest possible finish. Be sure to cover all exposed surfaces not to be painted (such as the coin door and the monitor) with masking tape (or newspaper on big areas) to keep from getting paint where you don't want it. Use a small brush to finish up the details. Nothing makes a cabinet look old faster than a sloppy paint job.

If your cabinet has wood grain sides remove the old graphics and adhesive (adhesive may be removed with lacquer thinner).

Thoroughly clean out your cabinet.

Note concerning JAMMA harnesses:


This game uses the JAMMA standard wiring harness. Therefore, if the cabinet you are installing this game into is already equipped with a JAMMA harness, your wiring work will be greatly simplified. However, a few differences need to be noted. The trackball used in this game connects to where a joystick would have been; what was up, down, left, and right is now x-direction, y-direction, x-clock, and y-clock, respectively (dir and clk for short). If you do use a cabinet which already has a JAMMA wiring harness you will need to change over the joystick wires to trackball connectors. Note how they are wired on the provided harness. Also, since this is a one to four player game only one start switch (player one start) is used and is pressed repeatedly for multiple players, similar to a pinball machine. All other signals follow the JAMMA standard. Note especially that the -5 vdc supply needs to be connected. Some games don't use this and so it may not already be connected on your cabinet. If you are installing this game into a Dynamo cabinet with a pre-installed JAMMA harness you will note that it doesn't have a wire for the service switch. You will have to correct this oversight by adding a contact to the edge connector at the proper position (position R). Some cabinets (Dynamo included) use only one coin switch input and wire the coin switches together. This prevents you from setting the left and right coin slots to different coinages. If you need different coinages for left and right slots you will need to wire the switches separately. Contact our technical department if you have any questions.



TIME TO INSTALL YOUR NEW GOODIES

Before you start -- **REMEMBER!** Do NOT work with any part of the system plugged in (lights, monitor, or power supply).

Printed Circuit Board:



Mount the PCB to the side of the cabinet. Use the board as a guide and mark where to drill mounting holes. Drill pilot holes (3/32"). Attach the PC board to the cabinet with wood screws and spacers -- snug but not too tight or the board may warp or crack. Mount the PC board with the edge connector toward the top. This will help keep the wiring harness from slipping off due to vibration. Be sure the board isn't being flexed in any way.

Wire Harness:

Attach the wire harness connector to the PC board. This connector should be keyed and labeled "**COMPONENT SIDE**". Be sure it is mounted correctly. Note that the power supply wires are closest to the end marked "1" on the board.

Connecting the Wire Harness to the Existing Wires:

When you hook up the control panel, power supply, monitor, or other subassemblies that remain in the game cabinet to your new wire harness try to use the existing secondary connector (none are provided).

1. Cut the original wire approximately three inches from the original connector. Strip off about 1/2" of insulation.
2. Slide a piece of heat-shrink tubing over the end.
3. Don't leave a lot of excess wire spooled up in your nice, clean cabinet. Cut the wire from your new game harness to the length you need, plus a few extra inches to be sure it's long enough. Leave enough for proper cable dressing later (don't make it stretch across the inside of the cabinet).
4. Solder the new wire designated for that position to the original wire that you just stripped. Use a straight in-line splice.
5. Melt the heat-shrink over the splice.

ALWAYS solder all wire splices. Just twisting the wires together is sure to cause intermittent problems in the future.

ALWAYS use shrink tubing over wire splices. **NEVER** use electrical tape. Electrical tape may unravel in time due to the heat inside the cabinet and cause serious trouble.

ALWAYS use wire ties to keep associated wires bundled. Attach to the cabinet wherever it seems necessary to keep them neat and secure.

AVOID bundling unrelated wires (such as the control panel and the monitor) as this may increase the likelihood of intermittent problems due to noise (trackballs are especially sensitive). Run different bundles separately.

REMEMBER: This is a *new game* -- not a sloppy conversion.

Power Wires:

1. Connect the wires that are designated for your power supply. You will need a supply of +5 vdc, -5 vdc, and +12 vdc. The +5 vdc must be regulated to within 5% (+ or - 0.25 vdc). The others may be unregulated but shouldn't stray too far or the sound may be affected. If the old game's supply doesn't provide these voltages it will have to be replaced. A switching-type supply is recommended (but not required).
2. You will notice that you have more than one wire for each voltage. You should use all wires supplied on the harness. This will ensure better power transmission and prevent overloading of the edge connector pads.
3. Tin all power supply wires before connecting them to the power supply. Loose strands may in time short out the supply. For best results connect spade lugs to the ends of the power wires and attach the spade lugs to the screw terminals of the power supply.

Monitor Wires:

You will be connecting the RED, GREEN, and BLUE video drives along with the composite SYNC and video GROUND wires.

NOTE CONCERNING SYNC:

This game generates a composite sync signal which is accepted by most monitors. A DIP switch (SW2) on the logic board allows you to choose between positive and negative composite sync. Most monitors require negative sync. If your monitor requires positive sync flip this switch on (towards the edge connector).

If your monitor does not have a composite sync input but instead has separate horizontal and vertical sync inputs try connecting the composite sync signal from the PC board to the horizontal sync signal on the monitor. This should produce a satisfactory result, although some adjustment of the monitor's sync controls may be necessary. This is the recommended approach for a Wells-Gardner monitor and should work with some others as well. If you still cannot get proper monitor stability, contact our technical staff for assistance.

Speaker Wires:

Find the wires marked for the speaker and hook them up. Pay attention to the polarity. The speaker probably has either a red mark or a plus sign (or both) near the positive terminal.

If your cabinet has two speakers connect them both. If they are 8 or 16 ohm speakers connect them in parallel. If they are 4 ohm connect them in series.

At this point we would like to encourage you to examine the speaker carefully. Is it really up to the high standards you wish to maintain at your location? Many arcade speakers are woefully inadequate for reproduction of good game sounds. Remember, it isn't just a video game -- it's a video/audio game. Far more effort was put into the sounds of this game than is put into most other arcade games. Roughly half the cost of making this game is in the sound section so don't waste it with a damaged, cheap, or undersized speaker. If the speaker isn't up to it, replace it. Reasonable speakers can be obtained for around ten dollars at stores such as Radio Shack. Car speakers work well. Get one which can handle about 12 watts, 4 or 8 ohms. Be careful not to get one which is too big. Position it as far from the monitor as possible since the speaker's magnet may deflect the monitor and cause some strange coloration. This can usually be corrected by degaussing the monitor. Be sure to attach it securely with all four screws to minimize vibration and rattling from the more intense sounds. Make sure everything else in the cabinet is attached securely for the same reason. Sound is an integral part of the game, not just an appendage. A small investment in a good speaker can make a world of difference in profits.

Coin Door Wires

1. Connect the designated wires to the coin switches.
2. You can connect the door lamps to the +5 vdc or -5 vdc supply. Some games have separate power supply outputs for the lamps.
3. Mount the service switch (included) somewhere convenient inside the coin door area. This switch allows you to enter adjustables, run diagnostics, and see or clear audits. Make it readily accessible through the coin door.
4. Be sure to clean and lubricate your old coin mechs. Keep the money coming in.

GUESS WHAT?

You are almost done with the electrical connections of your new game. All you have left is the control panel wiring. We're going to hold off on that for right now. We have a few other things we need to do first. So why don't you go ahead and get yourself a drink of water and stretch your legs? When you return, we can take a fresh look at your progress and move forward.

INITIAL TEST

You are just about ready to power up the PC board. But first, we need to recheck your work.

1. Carefully inspect the game for loose power wires, exposed connections, and extra fastening hardware. Look for any stray strands from stranded wires.
2. Make sure the PC board, monitor, power supply, and speaker are securely fastened in place.
3. Double check the connectors to be sure they are wired and connected properly.
4. With the board disconnected from the harness, turn the power on and adjust the +5 supply to be as close to +5 vdc as possible. This is very important to prevent damage to the game board. Turn the power off and connect the harness to the board.

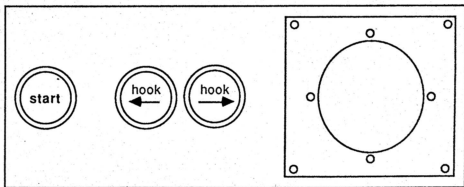
TIME TO APPLY POWER

1. Plug in the game and turn it on.
2. Look and smell for smoke (**TURN IT OFF IMMEDIATELY IF ANY IS NOTICED**).
3. Look at the green LED on the PC board. Is it flashing? If not, something is wrong -- turn off the game.
4. Listen for sound (should play a few notes on power up).
5. If you do not hear any sounds and the LED is flashing try turning up the volume and check the speaker connection. Dropping a coin through a coin switch should cause the sound of pins crashing. While this sound is being produced the LED will stop flashing momentarily. If you do not hear anything at all and the connections look good or if the LED is not flashing, call one of our technicians.
6. Look at the image on the monitor. Is it in sync? If not, and you can't stop it from rolling by adjusting the monitor's sync controls, try flipping SW2 on the logic board (marked + SYNC).
7. How's your picture?
 - o Is it centered?
 - o Is it too bright or too dim?
 - o Is it in focus?

Check your monitor manual for making these adjustments. Some test patterns are available through the game's diagnostics (accessed by pressing the service switch). Use these when making any adjustments. See page 16 for information about diagnostics. Proper monitor adjustment is very important in making your new game look new.

Control Panel Assembly

1. Remove all the old buttons, joysticks, and wires from the control panel and set them aside. Do not remove the original panel overlay until the new holes have been drilled.
2. Mark positions on the panel for new holes. Use the trackball template provided. See the diagram below for positioning of the buttons and the trackball.
3. Drill (or punch) the holes marked for buttons and bolts. Use a chassis or sheet metal punch for best results on button holes. Cut a hole for the trackball bracket. Position it so that the center of the trackball will be in the center of the alley when the game is playing (roughly 2/3 of the way across the screen. If possible, mark the hole with the game on. If you have a 3-inch chassis punch you can use it to punch a hole for the trackball instead of using the bracket. The trackball mounting bolts should form a diamond, not a square.
4. Use a file to smooth out the edges of all the new holes. The use of a plexiglas cover over the control panel is not recommended for this game since it usually interferes with the player's use of the trackball.
5. Plug up any old holes with a wood or metal plate.
6. Remove the original graphics overlay from the panel. Clean up the panel and install your CAPCOM graphics. Peel the top half of the protective backing off of your graphics. Start from the center and smooth out your overlay. Make sure you have about an inch extra coming off the top. No bubbles, please. Now peel off the bottom half and do the same as you did for the top. Trim off the excess overlay material with a sharp razor knife.
7. Adhere the function labels. Be sure they're straight.
8. Mount the trackball and the buttons and wire them up. Note that the trackball connects with 2 four-pin nylon Molex connectors. They have a ridge on one side to assure proper installation. **DO NOT PLUG THEM IN BACKWARDS.** You will probably damage the trackball's sensors. The connector for the x-axis is colored red and has red-white wires going to it. Connect this to the trackball's x-axis opto-board, which is toward the lower right after the track ball has been properly mounted. The y-axis connector goes to the opto-board at the upper-left. No damage will be done if these two connectors are interchanged but the trackball will not respond properly (up-down and left-right will be interchanged and mirrored).



Control Panel

Ticket Dispenser Installation

This game is capable of dispensing tickets through a Deltronics DL-1275 or similar ticket dispenser. Connection is through the 4-pin Molex plug at the right edge of the board marked "TICKET". It is pinned out as follows:

PIN	FUNCTION	
-----	----------	--

1	Ticket Sense
2	Ground
3	Motor Enable
4	+12 vdc

Note that pin 1 is nearest to the edge connector (and marked with a "1").

This is the same pin out (with a different connector) as the Deltronics DL-1275. If you wish to connect a ticket dispenser to this game you will have to make a cable with the proper connectors. The DL-1275 mates with a Molex #03-09-1041 or #03-09-1042. The game board connector mates with a Molex #22-01-2047 or #22-01-3047. Simply connect pins 1 through 4 on one end directly to pins 1 through 4 on the other end. If the ticket dispenser is not a DL-1275 you may need a different cable. Check with our technical staff if you are unsure. Other electro-mechanical devices can be connected through this connector provided they use the same signals. The Motor Enable output is TTL-compatible and is high when the motor is turned on. The Ticket Sense input expects an open-collector TTL signal where low indicates the sensor is not blocked. When a ticket is to be issued the Motor Enable line goes high until either the Ticket Sense line goes high then low again (indicating a ticket has passed) or until about 1/3 seconds passes (meaning no tickets are left or the dispenser is jammed).

Marquee Installation

Using the original marquee as a template, center your new marquee graphics and score the new marquee deeply to fit the cabinet. Break off excess with pliers.

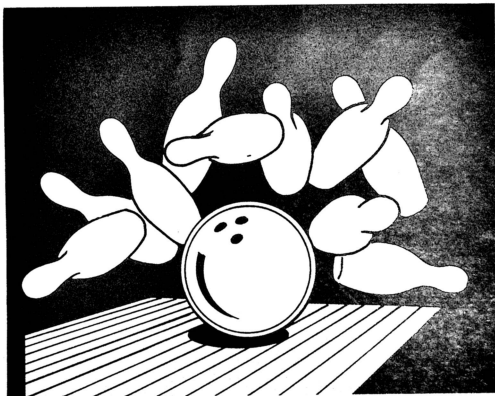
Be sure the light behind the marquee works. Everything should always work on a new game.

Side Graphic Installation

1. Be sure the sides of the cabinet are very clean, smooth, and free of any old adhesive, dust, etc.
2. Mark position of decal lightly with pencil (centered on upper half of cabinet).
3. Spray the side of the cabinet with glass cleaner (Windex).
4. Peel off the top 1/4 of the decal backing and apply to the cabinet starting at the top with a smoothing motion. Continue peeling off backing and smoothing.
5. Squeegee all bubbles and ripples out of the decal (use a piece of cardboard if you don't have a squeegee).
6. The Windex will allow some movement for a little while after application of the decal. Position correctly and allow to dry (requires several hours to fully cure).

Finishing Touches

1. Check the game inside and out for any imperfections. Secure any loose wiring or fastening hardware.
2. Make sure the coin door is tight and the coin mechs are well adjusted. A game is no good to anybody if you can't get a coin into it.
3. Once again go over every step of the transformation in your mind. Be sure everything is correct and to your liking.
4. Make sure all subassemblies are firmly attached. Anything which is not mounted securely will rattle annoyingly when the game is played. This game makes use of low-frequency sounds which can cause any loose joints to rattle.
5. Power up the game. Try both coin switches by dropping quarters (or tokens) through to check the coin mechs as well. Is the game adding credits? Play the game. Do the start and hook switches work? Does the trackball work properly? The trackball can be installed wrong (rotated) fairly easily so if the ball on the screen moves in different directions than the trackball make sure it isn't rotated and that the proper connectors go to the proper opto-boards. Try playing the game with the volume up and listen for rattling as you bowl. Tighten anything which is making noise.



Setting Up the Game

All operator adjustables are accessed by pressing the service switch while the game is in attract mode. Settings and accounts will be saved after the power is shut off. If everything is still intact when the game is powered back on the message "SYSTEM STATUS OK" will be displayed. If for some reason any settings were damaged the message "SYSTEM INITIALIZED" will be displayed and all factory defaults will be reinstalled. The battery on the logic board should last five years.

Pressing the service switch allows you to do three things:

1. Set operator adjustables (coinage, difficulty, ticket values, etc.).
2. Run diagnostics to help identify problems.
3. Look at (or clear) accounts.

Note that pressing the service switch while a game is in progress will have no effect.

Let's take a look at what happens in service mode. First, press the service switch (remember -- the game must be in attract mode, not the middle of a game). The first thing you'll see is the service menu with six items:

1. RAM TESTS
2. VIDEO TESTS
3. SOUND SYSTEM
4. ADJUSTMENTS
5. ACCOUNTS
6. EXIT

One of these items is highlighted in red. To select an item, roll the trackball to highlight the item you want and then press the start button. Let's start with tests. If any tests fail, contact one of our technicians for help.

RAM TESTS

Selecting this item will run a non-destructive test on the system's memory. Results will be displayed to the screen. Press start to return.

VIDEO TESTS

Selecting this puts some simple test patterns to the screen. First you should see five sweeps: red, then green, then blue, then white, then black. After that a white grid should appear on a black background. This shows the extremes of the video image. Use this to center your picture. You should be able to see the entire grid (8 x 8 boxes) on the screen. When finished, press start to return to the service menu.

SOUND SYSTEM

The sound system tests will allow you to select and play most of the sounds heard in the game. Roll the trackball to select a sound then press start to hear it. Try a few different sounds, like a hit sound (i.e. "FAST HIT"), the "THEME MUSIC", and "SWEEP". If you have a ticket dispenser connected, you can try it out now by selecting "TICKET" (tickets are considered part of the sound system) and pressing start. A ticket should be dispensed each time you press start. When you are done, select "RETURN TO MENU" and press start.

ADJUSTMENTS

The adjustments screen allows you to specify features of the game. Again, select an item by rolling the trackball. To change all settings back to their original factory values (defaults) select "RESET TO FACTORY SETTINGS" and press start. To reset the high score list or clear accounts, select the appropriate item and press start. Other functions (difficulty level, coinage, etc.) are adjusted by first selecting the appropriate item, then raising or lowering the value with the left and right hook switches.

Difficulty:

There are nine difficulty levels (1 - easiest, 9 - hardest). Set the difficulty level to your location. The default difficulty level is 4.

Coinage:

Left and right coin switches may be set independently, where 1-9 coins can receive 1-9 credits. Default coinage is 1 coin - 1 credit.

Ticket Values:

Four ticket values can be set so that when a player reaches that score some number (1 to 9) tickets will be dispensed. Setting to a score above 300 ensures no ticket will be dispensed (max. bowling score is 300). As each score is reached additional tickets will be dispensed. Default values are 301 (no tickets dispensed). Tickets (again 0 to 9) may also be dispensed for "Beer Frame". If a player gets a strike in the fifth frame the "Beer Frame" graphic will appear on the screen and the number of tickets selected for Beer Frame will be dispensed. Note that if "RISQUE GRAPHICS" (below) is turned off then Beer Frame will not occur.

Trackball Type:

Trackball type refers to the sensitivity of the trackball on the system. The trackball provided is type 3. If you are using a different trackball you may wish to try a different type setting. The default is 3. Experiment to find what's best for you.

Risque Graphics:

You have the option of eliminating some of the more risque graphics in the game (for more child- or family-oriented locations). Set "RISQUE GRAPHICS" to "OFF" to skip over them. This also disables "Beer Frame" (given at a strike in the fifth frame). Ordinarily, this option is on.

Bowler Timer

This allows you to give unlimited time before bowling. Usually this is set to "ON", which gives each bowler about ten seconds.

Free Play


Turning this option "ON" allows the game to start without adding coins.

ACCOUNTS

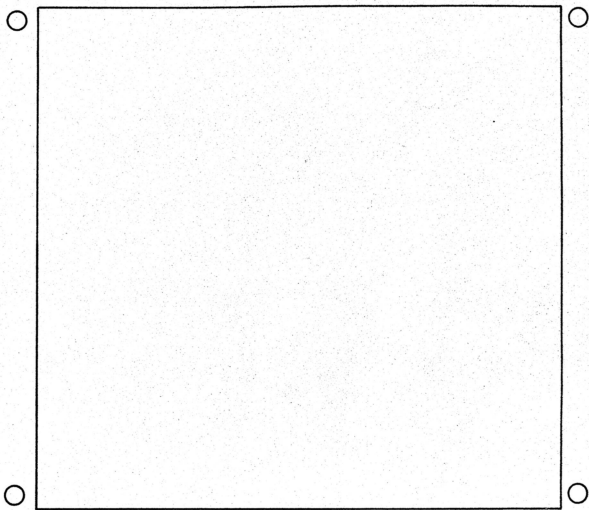
Select "ACCOUNTS" to see a record of left and right coins, number of plays, average game time (in seconds), and number of tickets dispensed. Typical game times should be in the area of two minutes. Use the record of how many tickets have been dispensed to adjust the ticket values. Accounts can be cleared through the adjustments menu. Exit by pressing start.

MAIN HARNESS CONNECTIONS

WIRE COLOR	SOLDER SIDE	PARTS SIDE	WIRE COLOR	
Black	GND	A 1	GND	Black
Black	GND	B 2	GND	Black
Red	+5 vdc	C 3	+5 vdc	Red
Red	+5 vdc	D 4	+5 vdc	Red
Yellow	-5 vdc	E 5		
Orange	+12 vdc	F 6	+12 vdc	Orange
	KEY	H 7	KEY	
		J 8		
		K 9		
Yellow-Red	Speaker -	L 10	Speaker +	Red-Yellow
		M 11		
Green	Video Green	N 12	Video Red	Red
White	Video Sync	P 13	Video Blue	Blue
Brown	Service	R 14	Video GND	Black
		S 15		
Green-Yellow	Coin 2	T 16	Coin 1	White-Yellow
		U 17	Start	Brown-White
		V 18	X-Dir	Red-White
		W 19	Y-Dir	Orange-White
		X 20	X-Clk	White-Red
		Y 21	Y-Clk	White-Orange
		Z 22	Hook Left	White-brown
		a 23	Hook Right	Yellow-white
		b 24		
		c 25		
		d 26		
Black	GND	e 27	GND	Black
		f 28		

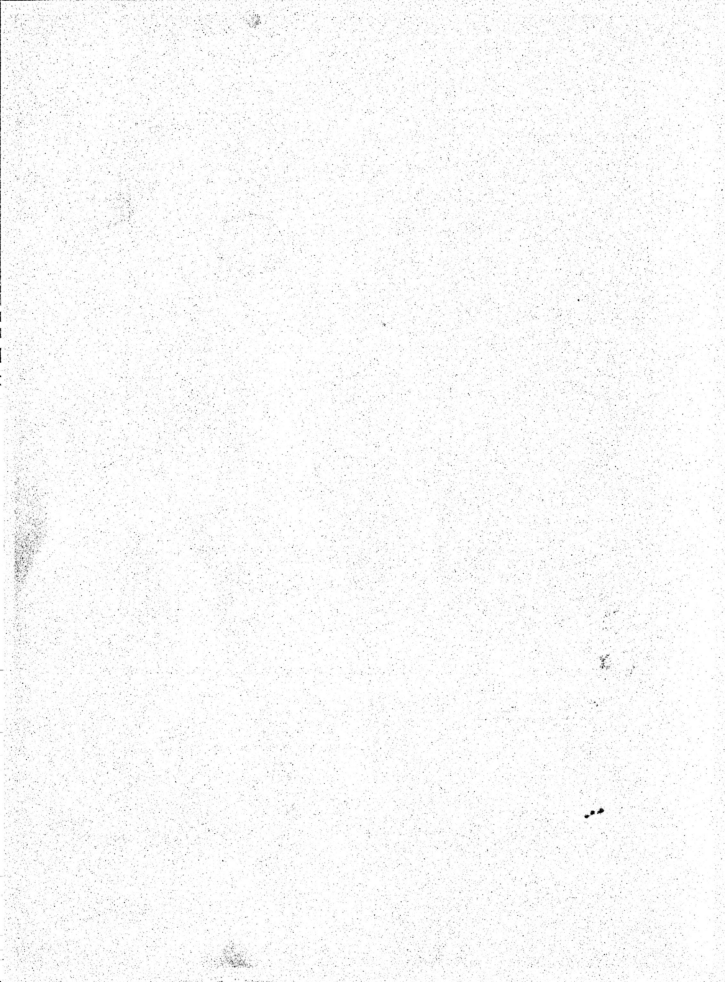


TRACKBALL MOUNTING TEMPLATE



13/64 Dia. Holes (4)

Use this template to position and cut a hole for the trackball bracket.
Follow the instructions on page 13.



CAPCOM GAME OWNER:

Please fill out card and register for Free drawing at COIN-OP SHOWS. YOU NEED NOT BE PRESENT TO WIN.

Remember to fill in S/N of PCB (S/N IS REQUIRED FOR DRAWING).

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