



United Amusements

TURBOGRAFX 16

WARRANTY

UNITED AMUSEMENTS, Inc. hereby warrants that this TURBOGRAFX-16 System is in good working condition.

This System has been thoroughly tested, first at NEC and subsequently by us in Los Angeles. Here, the System has been "cooked" in special testers in order to simulate actual conditions the board will undergo in a video game cabinet on location and in constant use. It has been bench-played with various NEC games in order to ensure that the highest quality standards have been met in each testing category.

This System is hereby warranted for 90 days from date of shipment by us to the customer of record.




Inspector
FOR UNITED AMUSEMENTS



UA S/N NUMBER 100318-99

DATE OF INSPECTION 9-26-89



United Amusements

Leaders in the Business of Video Games

**TURBOGRAFX-16 GENERAL INFORMATION
AND
TROUBLE SHOOTING GUIDE**

- * The TURBOGRAFX-16 unit will display a picture on the screen even if the +5 volts is missing! (+12 volts is the only voltage needed by the main unit.)
- * If the +5 volts is missing, the game will not coin and it will have no sound.
- * Never remove TURBOCARDS if the power is on!
- * Be careful when removing or installing TURBOCARDS. Make sure that you do not accidentally switch off the main unit by moving the power switch that is located to the left, and below the TURBOCARD slot.
- * When power is first applied to the main unit, a short squealing sound can be heard. This is normal and no cause for worry.
- * If the squealing sound stays on longer than 1 second, or is heard during the day (board lock-up), replace the I.C. chip labeled 556 (located to the right of the Z-80 chip).
- * The TURBOGRAFX-16 unit has a built-in anti-stringing and coin jam circuit. The unit will blank the screen and a repeating beeping sound will be heard if anyone tries to 'string' the game. If you wish to switch off this function, a new program update is available from UA.
- * After the player inserts a coin, he/she has approximately 15 seconds to start the game (by pushing the START button). If the player fails to press the START button within this time limit, (15 seconds) the credit will be lost! This function has been added so that more games can run on the TURBOGRAFX-16 system.



TURBOGRAFX 16 • *The Next Generation in Video Game Technology*

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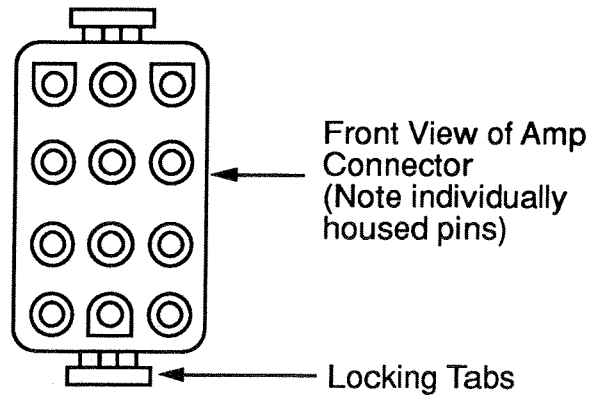
TURBOGRAM

Service Bulletin

September, 1989

RE: Use of Amp Connector

The Amp connector was chosen over the standard Molex primarily because it has higher reliability rate than the Molex and is generally easier to connect and disconnect than the Molex, thus simplifying installation and distribution for the operator. The pins in an Amp connector are individually isolated from each other, which prevents shorting and ensures proper alignment when it is plugged into its mate. Overall, we feel that the Amp connector was the best choice for our system based on its reliability, reusability, and ease of use.



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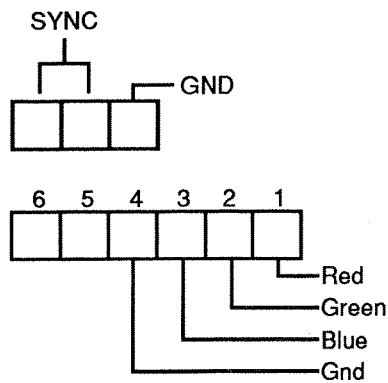
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TURBOGRAM

Service Bulletin

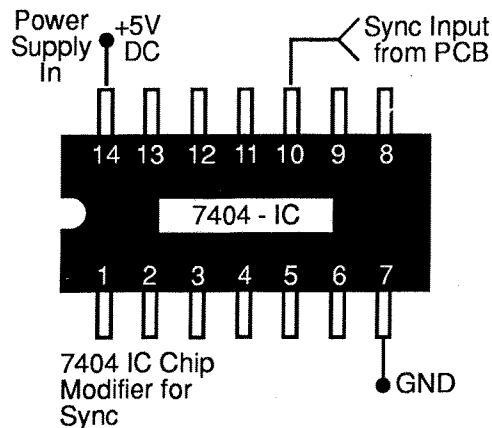
September, 1989

When using an Electro Home Monitor and the game will not sync, please do the following:



Electro Home

For older monitor that sync won't adjust



Supply—Radio Shack, etc.
—about 35¢



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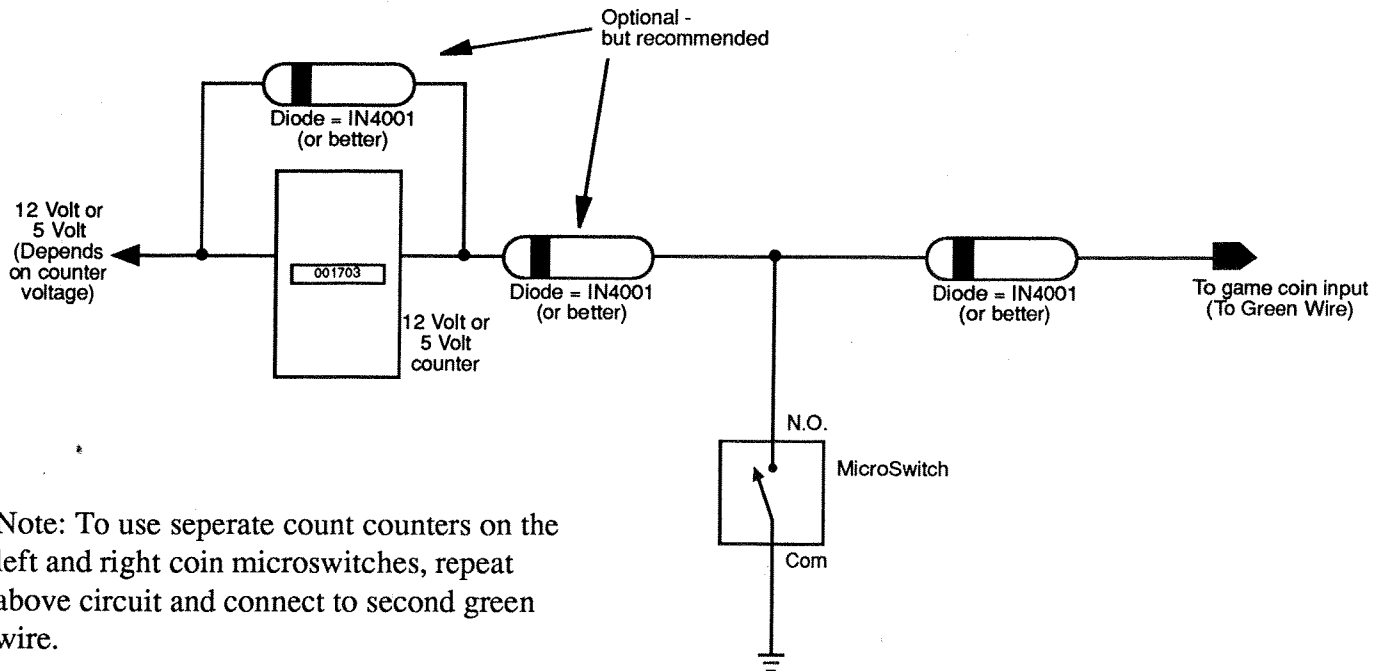
TURBOGRAM

Service Bulletin

September, 1989

RE: Coin Counter Hook-up

When hooking up the coin counter, you must use a diode (1N4001 or better) in series between the microswitch and the coin counter. This is to ensure that dangerous voltages will not reach the coin board through the counter and damage it. A secondary diode in parallel with the coin counter is recommended, but not mandatory.



Note: To use separate count counters on the left and right coin microswitches, repeat above circuit and connect to second green wire.



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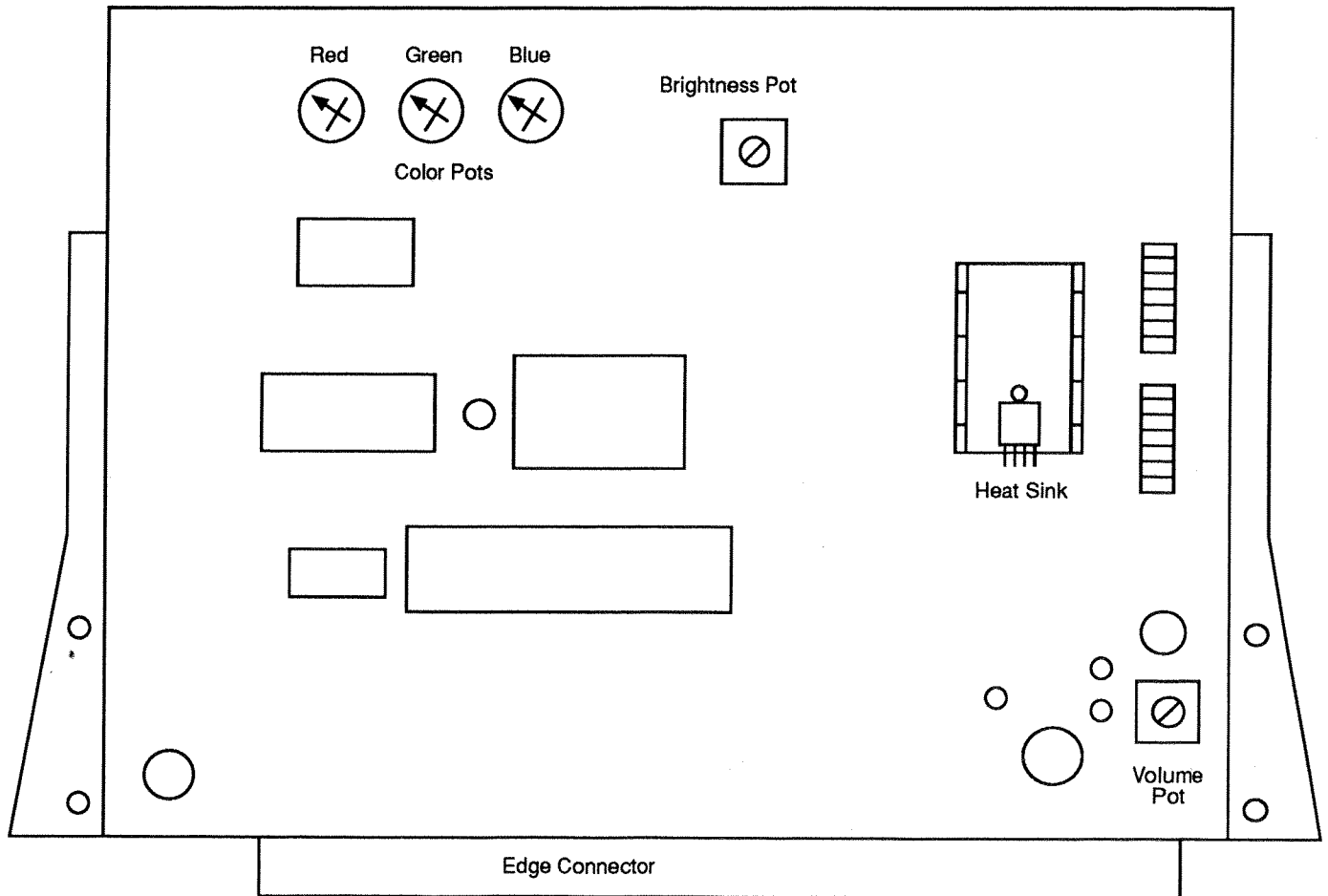
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TURBOGRAM

Service Bulletin

September, 1989

TurboGraphx-16 Coin Board Assembly



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TEST THE OLD CABINET FIRST!

NOTE:

We recommend you tape this page to your "old" Cabinet, then carefully check out the "old" cabinet before you begin the conversion.

PRE-CONVERSION CHECKLIST

We have found that it is better to go through the following checklist before beginning a conversion. This way, you are assured that your cabinet is working properly and any problems encountered may easily be isolated and fixed.

"Old" Cabinet Check List

Cabinet Serial #: _____

- ALL LIGHTS WORK
- COIN TEST
- METER TEST
- VIDEO TEST
- SOUND TEST
- ALL LOCKS/KEYS PRESENT AND WORKING
- LABEL AND SERIAL NUMBERS
- ALL ABOVE ITEMS CHECKED

Date: _____ Tech: _____

FINAL CHECK LIST

TURBOGRAFX-16 CABINET

We suggest you tape this sheet to the cabinet you are converting. After you have thoroughly tested all components, we suggest you "bag" the machine indicating it is ready for use and belongs on location now!

NAME OF GAME: _____

SERIAL #: _____

- ALL LIGHTS WORK
- COIN ACCEPTOR WASHED
- TOKEN MECH
- QUARTER MECH
- COIN TEST
- METER TEST
- VACUUM CABINET
- CLEAN SCREEN
- LABEL AND SERIAL NUMBERS
- LEG LEVELERS
- PROPER LOCKS
- GAME TEST
- SOUND LEVEL
- ALL SYSTEMS WORKING PROPERLY
- COVER CABINET WITH PLASTIC

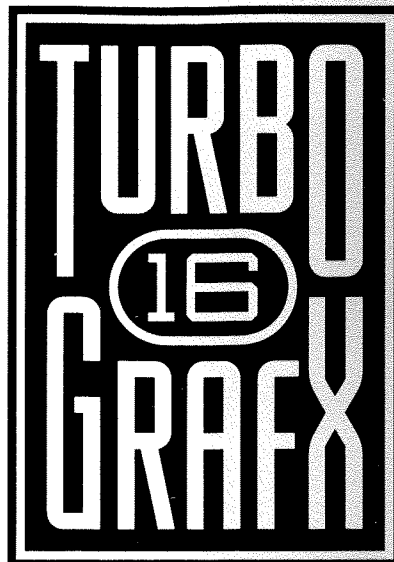
DATE: _____

TECH: _____



United Amusements

LEADERS IN THE BUSINESS OF VIDEO GAMES



INSTALLATION GUIDE
AND
SERVICE MANUAL
FOR COIN APPLICATION

Your Hotline For Service

(800) 722-8658

(800) 722-VOLT



United Amusements

Leaders in the Business of Video Games

Dear Operator:

C O N G R A T U L A T I O N S ! ! !

And welcome to the world of TURBOGRAFX-16, the Next Generation in video game technology.

Your TURBOGRAFX-16 purchase represents the first step down a road which promises to return profits from your video game operations. We salute you for the wisdom of your choice, and we thank you for your business.

The contents in our TURBOGRAFX-16 Kit have been selected with great care, always with you as an operator in mind. We have spared no expense, cut no corners, to bring you everything you need in order to make TURBOGRAFX-16 profitable for you.

Please take time to read carefully the contents in this manual, especially pages 7, 11 and 13. The TURBOGRAFX-16 Kit (and this manual) was made for only these two purposes:

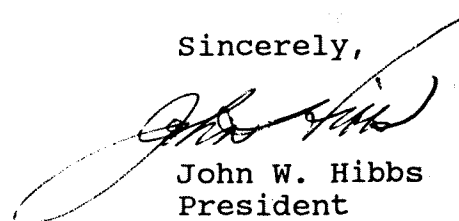
TO MAKE YOUR CONVERSION AS EASY, SIMPLE
AND FAST AS WAS HUMANLY POSSIBLE,

AND

TO ENSURE THAT ONCE ON LOCATION ITS
SERVICE NEEDS ARE KEPT TO THE ABSOLUTE
MINIMUM.

If there is ANYTHING else that we could do to improve this kit, please call me. It is my personal goal to provide the operator with the most complete and most profitable kit ever offered in America.

Sincerely,



John W. Hibbs
President



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KIT CONTENTS

Single Kit Package:

- 1 - TURBOGRAFX-16 System and Coin Board Assembly
- 1 - TURBOGRAFX-16 Control Panel Assembly
 - includes: 1 - 8 way microswitch joystick
 - 4 - Action buttons
 - 1 - Start button
 - 8 - Carriage Bolts and Nuts
- 1 - Wiring Harness
- 1 - TURBOGRAFX-16 Marquee
- 1 - Smoked Monitor Plexi
- 1 - Black Overlay
- 1 - Metal Marquee Frame with 6 Tamperproof Screws and Tool
- 1 - Instruction Manual
- 1 - Control Panel Template
- 1 - Wood Shelf and 2 Wood Mounting Rails
- 1 - Plastic Cabinet Cover
- Game Titles as per invoice

"Twin" Pack:

- 2 - TURBOGRAFX-16 System and Coin Board Assembly
- 2 - TURBOGRAFX-16 Control Panel Assembly
 - includes: 1 - 8 way microswitch joystick
 - 4 - Action buttons
 - 1 - Start button
 - 16 - Carriage Bolts and Nuts
- 2 - Wiring Harness
- 2 - TURBOGRAFX-16 Marquee
- 2 - Smoked Monitor Plexi
- 2 - Black Overlays
- 2 - Metal Marquee Frame with 12 Tamperproof Screws and Tool
- 2 - Instruction Manual
- 2 - Control Panel Template
- 2 - Wood Shelf and 4 Wood Mounting Rails
- 2 - Plastic Cabinet Cover
- Game Titles as per invoice

Inspect the entire system package to make sure it is complete and in satisfactory condition. If any damage has occurred during shipment or if there are any missing items, please contact us at:

United Amusements, Inc.
Service Department

1-(800) 722-8658
1-(800) 722-VOLT

WARRANTY INFORMATION

United Amusements, herein referred to as "Seller", warrants only to the initial purchaser, herein referred to as "Buyer" of its products that the items listed are free from defects in material and workmanship under normal use and service for a period of 90 days after purchase.

Warranty periods are effective from initial date of shipment from Seller to Buyer. Seller's sole responsibility shall be, at its option, to repair or replace products which are returned to Seller during the warranty periods specified, provided:

1. Seller is notified promptly upon discovery by Buyer that the products are defective.
2. Such products are properly packaged and then returned to Seller's place of business.

This warranty does not apply to any parts damaged during shipment and/or due to improper handling, or due to improper installation or usage or alteration. In no event shall the Seller be liable for any anticipated profits, loss of profits, loss of use, accidental or consequential damages, or any other losses incurred by the customer in connection with the purchase of a United Amusements' product.

DON'T LOSE YOUR WARRANTY!!!

Do not attempt to troubleshoot or repair the TURBOGRAFX-16 system if it is found to be faulty or your warranty may be voided. Keep in mind that a United Amusements' technician is available to help you troubleshoot.

SERVICE INFORMATION

TO OBTAIN REPLACEMENT PARTS OR TECHNICAL ASSISTANCE, PLEASE FEEL FREE TO CALL OUR TOLL FREE NUMBER: (800) 722-8658 OR (800) 722-VOLT OR WRITE US:

United Amusements, Inc.
1975 Riverside Dr.
Los Angeles, CA 90039

FAX: (213) 664-0518

F. C. C. W A R N I N G

The PCB shield supplied with the TURBOGRAFX-16 System must be utilized and terminated to ground at the time of installation of the PCB. This is required in order to comply with the limits for a class A computing device pursuant to subpart J of part 15 of F.C.C. rules. These rules are designed to provide reasonable protection against harmful interference to radio communications equipment in a residential area is likely to cause RF interferences in which case the user at his or her own expense will be required to take whatever measures necessary to correct the interference.

SAFETY HINTS

1. Turn power "OFF" whenever changing parts or replacing/disconnecting connectors. Wait approximately 10 seconds before proceeding to remove the edge connector so that the power supply may discharge.
2. Do not expose the TURBOGRAFX-16 System to direct sunlight.
3. When moving the system, always use anti-static bubble wrap or other static resistant material so the computer parts do not receive a shock.
4. Use an isolation transformer for your monitor. Without one, you may cause a power surge to the TURBOGRAFX-16 system and do irreparable damage.
5. Ground the cabinet properly. The cabinet should be plugged into a grounded 3-wire outlet. The control panel should also be grounded to prevent players from receiving an electrical shock.

GETTING THE TOOLS TOGETHER....

We strongly suggest that you have the following tools at hand to ensure the proper installation of your new TURBOGRAFX-16 system.

1. Electric Screwdriver
2. Wire Cutter
3. Center Punch
4. Electric Drill
5. Hole Bit
6. Hammer
7. Pliers
8. Soldering Iron
9. Phillips Screwdriver
10. Sand Paper
11. Semi-gloss Latex Paint
12. Exacto Knife
13. Vacuum Cleaner

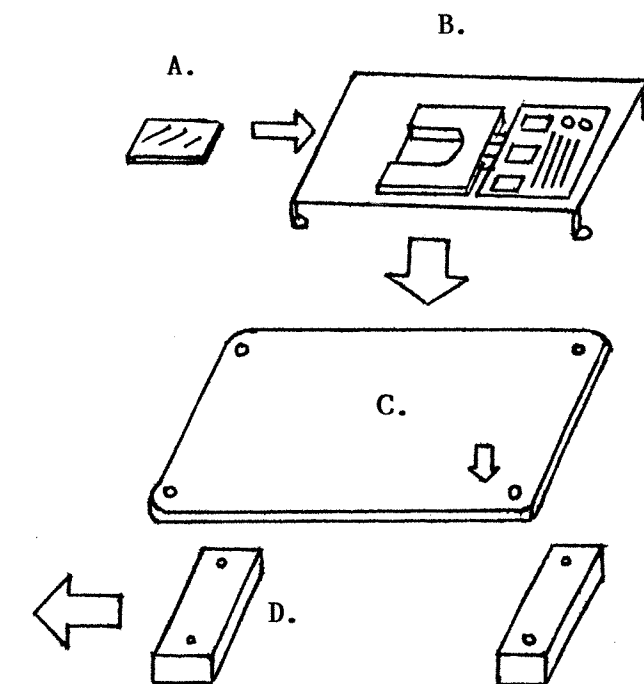
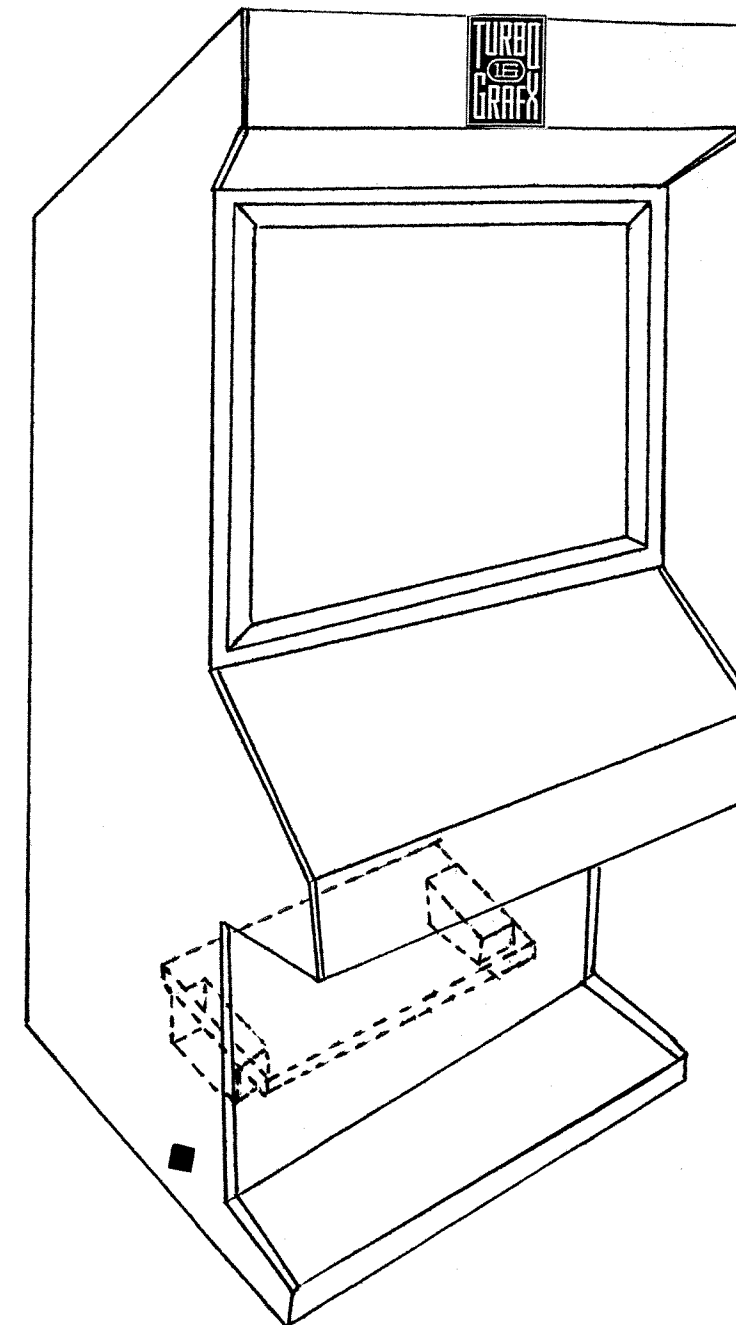
TAKING THE OLD CABINET APART

Performing a few simple tasks when preparing a cabinet for conversion can save you a great deal of time and effort when you are installing the TURBOGRAFX-16 System. We recommend that you:

- * Inspect the exterior surface of your cabinet.
- * Check for gouges and remove all foreign objects (ex. gum, etc.) stuck to the cabinet's exterior.
- * Remove all exterior decals.
- * Clean the cabinet thoroughly and repair any visible damage.
- * Remove the following:
 - Old game PCB
 - Monitor Plexi
 - Marquee Sign
 - Control Panel
 - Instructions and Decals
- * Label each wire or group of wires as to function (ex. DC power supply output, monitor video sync wires).
- * Use a vacuum cleaner to remove all dirt and dust inside your cabinet.
- * Finally, paint your old cabinet using an acrylic-based semi-gloss paint.

Remember, a little time and effort spent now on enhancing a cabinet's appearance will definitely result in increased earning power later.

For maximum efficiency, TURBOGRAFX-16 systems should be mounted so TURBOCARDS can be changed from the front of the cabinet (mostly through the coin door). We have provided a shelf solely for this purpose. Please try to use it as per our suggestions as follows:



LEGEND:

- A. - TURBOCARD
- B. - TURBOGRAFX-16 System
- C. - Wood Shelf
- D. - Wood Rails

TURBOGRAFX-16: MOUNTING THE SHELF

INSTALLATION

- * You have been provided with a pair of wood mounting rails designed to fit either the wooden shelf or the system metal frame.
- * To install the wood rails, mark on the inside walls of your cabinet the location of your mounting rails.
- * The wood rails marked 1 goes on the left side of the cabinet facing you. The rails marked 2 goes on the right side.
- * After making sure that your rails are level, attach the rails to the inside of your cabinet.
- * If you do not want to use the wooden shelf, simply insert the system metal frame in the slots at the bottom of the wood rails.
- * To use the wooden shelf measure the inside width of your cabinet and then cut your wood shelf to fit this measurement.
- * Using the system metal frame as your template, mark on your wood shelf the location of the holes for attaching the system to the shelf.
- * Drill the holes and mount all corners of the system frame to the shelf to ensure stability.
- * Mount the wood shelf to the support wood rails.

NOTE :

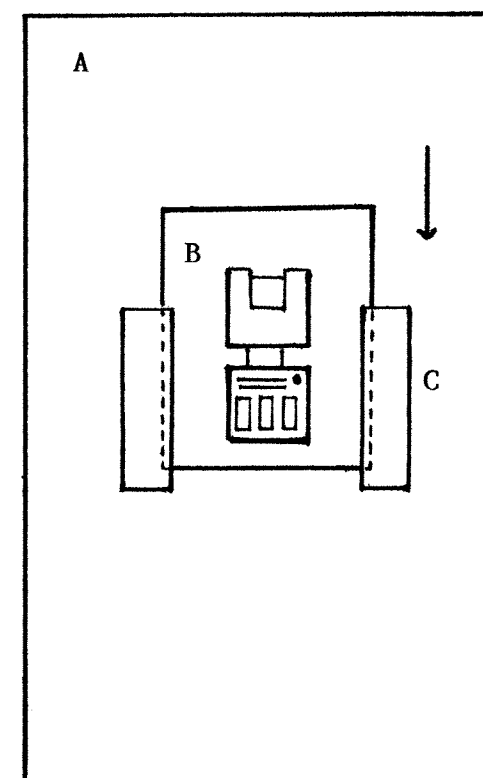
Try to mount the system to the shelf as far to the "left" or "right" as possible so that exchanging TURBOCARDS (in the "middle" of the shelf) will be easy as possible.

If there is insufficient space inside your cabinet, we suggest attaching the system to the inside rear door or an inner wall of your cabinet. (Please refer to the next diagram)

If you choose to mount the TURBOGRAFX-16 System on either the back door of your cabinet or either of the inside back walls, we strongly recommend you use the shelf mounting rails. These are designed so that you can easily remove and replace the TURBOGRAFX-16 System.

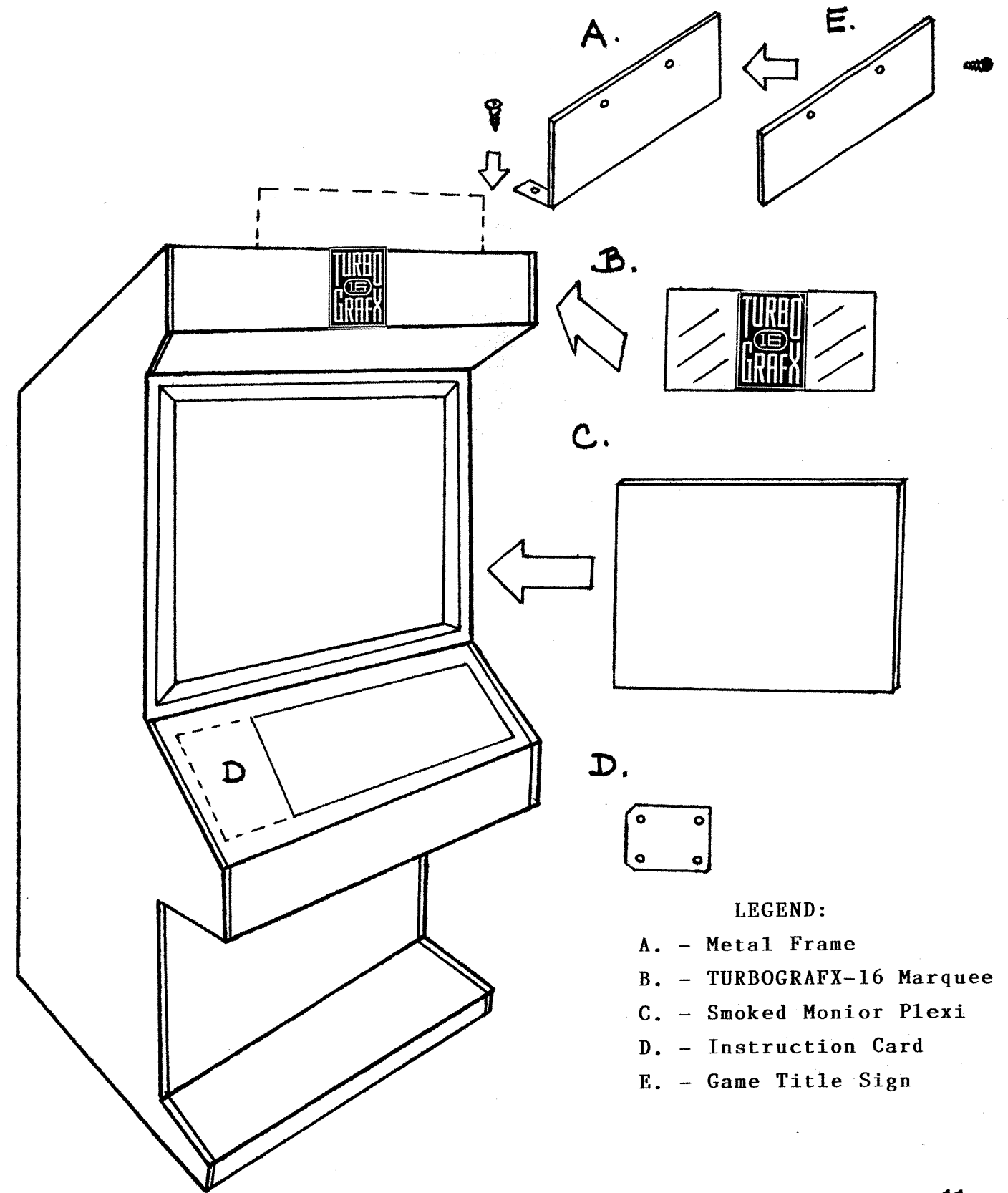
Legend:

- A - Rear door of cabinet or inside walls
- B - TURBOGRAFX-16 System
- C - Mounting rails



MOUNTING INSTRUCTIONS

- * Locate a space on the inside rear door of your cabinet or on either of the inner walls large enough to accommodate the system.
- * Make sure that when the door is closed, the System does not come into contact with the monitor or any other piece of equipment.
- * Mount the wood rails onto the chosen wall or rear door. Be very careful to attach the rails securely.
- * Slide the system into the wooden rails.



- LEGEND:
- A. - Metal Frame
 - B. - TURBOGRAFX-16 Marquee
 - C. - Smoked Monitor Plexi
 - D. - Instruction Card
 - E. - Game Title Sign

TURBOGRAFX-16: ART WORK, PLASTICS AND INSTRUCTIONS

INSTALLATION

A. METAL FRAME

- * Using the metal frame as your template, drill four holes on top of your cabinet.
- * Secure the metal frame to your cabinet top using the provided carriage bolts.

B. TURBOGRAFX-16 MARQUEE

- * Use the old marquee as a template.
- * Lay the old marquee on top of your new sign.
- * Cut the plexi but be very careful as plastic has a tendency to break.
- * Install your new marquee.

C. SMOKED MONITOR PLEXI

- * Use the old plexi as a template and lay it on top of your new plexi.
- * Mark the new plexi to the proper size.
- * Cut the plexi and install it.

D. GAME INSTRUCTIONS

- * Simply attach the provided plastic encased game instructions to the left side of the control panel using the four tamperproof screws.

E. GAME SIGN

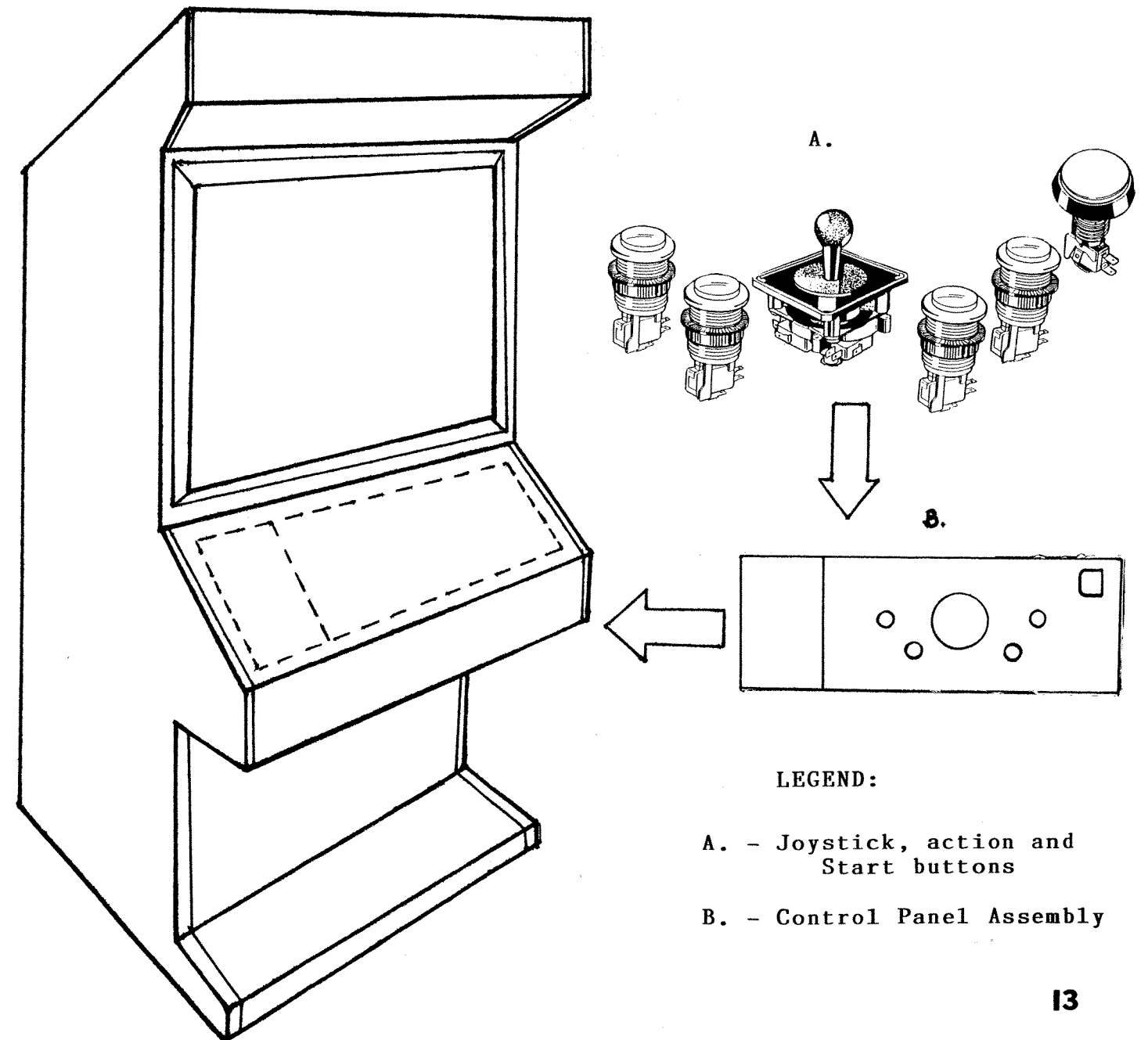
- * Attach the appropriate game sign to the metal frame using the enclosed tamperproof screws.

NOTE:

We have provided a tamper-proof screwdriver tool with each kit. We strongly suggest you tape this tool to the inside of the coin door so you don't have trouble unscrewing the title game signs and/or the instruction plate.

FEATURES:

- * Designed to fit 90% of cabinets in the market
- * Rugged, easy to install
- * No more fumbling with messy overlays
- * No more misplaced buttons
- * No more confusing wires



LEGEND:

- A. - Joystick, action and Start buttons
- B. - Control Panel Assembly

TURBOGRAFX-16: CONTROL PANEL

INSTALLATION

1. Remove all buttons, joysticks, decals and wiring from the old control panel.
2. Strip off the old overlay.
3. Use sand paper to clean and prepare your old panel.
4. Mark the dimensions of the TURBOGRAFX-16 panel using the template provided.
5. Using the template as a guide, cut holes in the old panel to accommodate the new TURBOGRAFX-16 panel. Make sure the joystick and the button wires fit correctly.
6. Where the new TURBOGRAFX-16 does not cover "old" holes; plug holes with wood blocks, putty or "HAPP" button plugs.
7. Paint your old panel black or use the provided black overlay to cover the control panel area.
8. Bolt the new panel to the old using the carriage bolts included in the TURBOGRAFX-16 system.

SPECIAL HINTS FOR TURNING MONITORS

A. NINTENDO CABINET

1. Open the back door of the cabinet and remove the monitor.
2. Cut a piece of wood to a 21" x 21" size.
3. Cut a hole in the center of this piece to accommodate the existing monitor horizontally.
4. Slide the monitor into this hole and return the monitor into the cabinet. Make sure the monitor fly box red wire is facing up and that the bottom part of the monitor wood holder is held securely by the existing bracket.
5. While holding the monitor's top section, reposition the existing 'L' brackets to get the desired monitor slant.
6. Mark the desired location of the 'L' bracket. Make sure that the rear of the monitor does not touch the rear of the cabinet. Reposition bracket so that the monitor is a few inches away from the cabinet's rear.
7. Drill a hole into the monitor holder and the cabinet. Attach the bracket and monitor securely.

B. GREMLIN CABINET

1. Open the back door and remove the monitor and wood frame.
2. Remove the monitor from the wood frame. Remove the monitor chassis wings leaving the 1/4" screws in place.
3. Get a piece of wood about 1/2" thick and cut it to an 18" x 23 3/4" size. Cut a hole in the center large enough to hold the monitor horizontally.
4. On each side of the cabinet, right behind the monitor plexi holder, attach a small block of wood. This piece should be about 1" behind the plexi holder so it can hold the wood frame.
5. Insert the wood frame allowing the monitor chassis to tilt to the desired angle. Make sure that the rear of the chassis does not touch the rear of your cabinet.
6. To hold the top portion of the monitor in place attach a piece of wood on either side of the wood frame. To secure the monitor use an 'L' bracket to attach to the wood frame and the cabinet top.

C. BALLY MIDWAY CABINET

1. Open the cabinet's back door and take the screws from the monitor bar out.
2. Slide the monitor chassis and monitor bars out but leave the 2 'L' brackets.
3. Turn the monitor bars 45 degrees clockwise then place them at the sides of the metal monitor bezel holder.
4. Drill a hole at each corner of the monitor side bar and the monitor bezel holder.
5. Return the monitor into the cabinet in a horizontal position. Make sure all components are properly in place.
6. Slide the monitor in until it has reached the desired position. Using the side 'L' brackets, fasten the monitor securely to the cabinet.

D. ROCK OLA (CINEMATRONICS) CABINET

1. Loosen the monitor screws and remove the monitor.
2. Turn the monitor 'L' brackets (the ones that hold the monitor) so the longer ends are attached to the cabinet and the shorter ends to the monitor.
3. Move the top 'L' brackets about 2" downwards.
4. Trim the bottom part of the monitor wood holder and adjust the location of the bars attached to the monitor sides. Make sure that the rear of the monitor does not come into contact with the rear of the cabinet.
5. If necessary, bend the corners of the monitor chassis to accomodate the monito horizontally.
6. Drill a hole in each monitor bar and 'L' bracket. Fasten the monitor securely.

THE INTERFACE BOARD

QUESTION: What does the interface board do ?

ANSWER : The interface board's main function is to link the TURBOGRAFX-16 System to the industry wiring harness. It causes the System to be totally suitable for coin operations since it:

1. Controls coin inputs, counts credits
2. Controls game volume
3. Provides skill level and timer settings
4. Allows Buy-in ('continous play') features

QUESTION: How does the board allow me to run different titles and how can I adjust the board to get the maximum coin drop from each title ?

ANSWER : The board has dip switches which allows the operator to make games run on time. The dip switches can also be set for 'skill' play. If set for time, the switches can be set to allow play for a short period, such as 3 minutes, or for longer periods up to 20 minutes. For example:

SAMPLE TIMED SETTINGS									
SWITCHES	1	2	3	4	5	6	7	8	
HARD	X	X	X	OFF	ON	OFF	X	X	3 MINUTES
MEDIUM	X	X	X	OFF	OFF	ON	X	X	7 MINUTES
EASY	X	X	X	OFF	ON	ON	X	X	12 MINUTES

QUESTION: Since most games are set for time, how does the player know when his time is up?

ANSWER : A beeping sound will be produced 30 seconds before the game ends. This sound warns the player that he has 30 seconds remaining to insert another quarter for continous play ?

QUESTION: After inserting a quarter, does the game automatically give the player a credit ?

ANSWER : NO. The player must push the START button when it is flashing to obtain a credit.

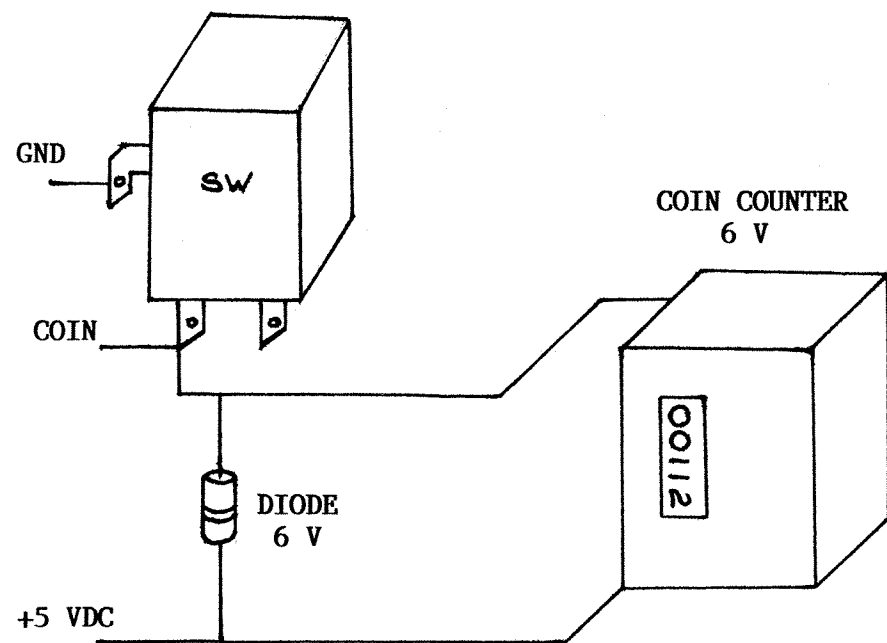
QUESTION: Does the system work only on timed play ?

ANSWER : NO. The system can also be set for 'skill' play. In this mode, the game will continue until the player's skill runs out. To set the game for 'skill', set the dip switches for untimed play.

'SKILL' PLAY SETTINGS								
SWITCHES	1	2	3	4	5	6	7	8
UNTIMED PLAY	X	X	X	OFF	OFF	OFF	X	X

QUESTION: Can this system work with a coin counter ?

ANSWER : YES. The System works with a coin counter just like a regular p.c. board. Please refer to the following diagram:



QUESTION: If a player deposits 4 quarters, how does he get 4 credits?

ANSWER : Whenever a player deposits a coin, the START button will flash. This means that a coin has been counted and that the START button must be pushed. The START button must be pushed whenever it is flashing ! So, if the player has inserted 4 quarters, the START button will flash 4 times, and the player must push it every time it flashes.

(NOTE: The first coin will begin your game so accepting your other credits will occur while you are playing. Remember, pushing the START button while the game is in progress does two things: 1. registers your credit, and 2. pauses the game. To resume play, simply push the START button again.)

TURBOGRAFX-16

COIN INTERFACE BOARD SWITCH SETTINGS

NOTE: When you receive your TURBOGRAFX-16 System, it will have the following preset factory settings:

- * 1 coin - 1 credit
- * 5 minute timer
- * BUY-IN feature ON
- * DEMO MODE sound ON

This is a conservative setting. We recommend that you leave the settings as is, and as players improve, you can adjust the settings to your location.

SETTINGS:

SWITCH FUNCTION	1	2	3	4	5	6	7	8
1 COIN/ 1 CREDIT*	OFF	OFF	OFF					
2 COIN/ 1 CREDIT	ON	OFF	OFF					
3 COIN/ 1 CREDIT	OFF	ON	OFF					
4 COIN/ 1 CREDIT	ON	ON	OFF					
1 COIN/ 2 CREDIT	OFF	OFF	ON					
2 COIN/ 3 CREDIT	ON	OFF	ON					
3 COIN/ 4 CREDIT	OFF	ON	ON					
FREE PLAY	ON	ON	ON					
UNTIMED PLAY				4	5	6		
1 MINUTE TIMED PLAY				ON	OFF	OFF		
3 MINUTE TIMED PLAY *				OFF	ON	OFF		
5 MINUTE TIMED PLAY				ON	ON	OFF		
7 MINUTE TIMED PLAY				OFF	OFF	ON		
10 MINUTE TIMED PLAY				ON	OFF	ON		
12 MINUTE TIMED PLAY				OFF	ON	ON		
20 MINUTE TIMED PLAY				ON	ON	ON	7	
BUY-IN FEATURE OFF							OFF	
BUY-IN FEATURE ON*							ON	8
DEMO SOUND OFF								OFF
DEMO SOUND ON*								ON

* FACTORY SETTINGS

TURBOGRAFX 16

PIN ASSIGNMENT

COMPONENT SIDE

GND
 GND
 +5V
 +5V
 -5V
 +12V
 KEY
 COIN COUNTER 1
 COIN LOCKOUT 1
 SPEAKER (+)
 AUDIO (+)
 VIDEO RED
 VIDEO BLUE
 VIDEO GND
 TEST SWITCH
 COIN 1
 1P START
 1P UP
 1P DOWN
 1P LEFT
 1P RIGHT
 1P S1
 1P S2
 1P S3
 (NOT USED)
 (NOT USED)
 GROUND
 GROUND

A1	B1
A2	B2
A3	B3
A4	B4
A5	B5
A6	B6
A7	B7
A8	B8
A9	B9
A10	B10
A11	B11
A12	B12
A13	B13
A14	B14
A15	B15
A16	B16
A17	B17
A18	B18
A19	B19
A20	B20
A21	B21
A22	B22
A23	B23
A24	B24
A25	B25
A26	B26
A27	B27
A28	B28

SOLDER SIDE

GND
 GND
 +5V
 +5V
 -5V
 +12V
 KEY
 COIN COUNTER 2
 COIN LOCKOUT 2
 SPEAKER (-)
 AUDIO (-)
 VIDEO GREEN
 VIDEO SYNC
 SERVICE SWITCH
 TILT SWITCH
 COIN 2
 (NOT USED)
 (NOT USED)
 (NOT USED)
 (NOT USED)
 (NOT USED)
 (NOT USED)
 (NOT USED)
 (NOT USED)
 (NOT USED)
 (NOT USED)
 GROUND
 GROUND

REPLACING GAMES

The TURBOGRAFX-16 system has been designed with the ease of replacing games foremost in mind. We have made game changes so simple that they can be performed in only 3 steps:

1. After shutting off the power, unscrew the 'old' game sign atop the machine and replace it with the 'new' game sign in your 'new' package.
2. Unscrew the instruction portion of the control panel and replace it with the instruction card for your 'new' game.
3. Open the cabinet and remove the 'old' game from the system console. Insert the new card and ensure it is securely locked in place.

Now you can switch the power back on and run a few tests to ensure that the game, buttons, joysticks and all other components are working properly.

TIPS ON DIP SWITCH SETTINGS

We have listed below some hints on changing your switch settings to maximize income at your locations.

If players become too good and game income drops you can:

1. Raise the cost per credit.
2. Lower the timed play.
3. Turn by-in feature off.
4. Change game cartridges!

If income is unsatisfactory then you can:

1. Increase credits per coin(s).
2. Increase timed play or go to untimed.
3. Turn buy-in feature on.
4. Change game cartridges.