

# VS. UniSystem™

## KIT MANUAL



FOR INSTALLATION IN

DONKEY KONG™

DONKEY KONG  
JUNIOR™

DONKEY KONG 3

MARIO BROS.™

POPEYE\*

PAK GAMES ONLY



### **WARNING**

If the replacement parts and components in this VS. UniSystem™ kit are not installed exactly as instructed herein, there may be radio frequency interference created in violation of F.C.C. class A standards.

### **WARNING**

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a class A computing device pursuant to subpart J of part 15 of F.C.C. rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. 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 required to correct the interference.

### **WARNING**

Use of non-Nintendo parts or modifications to your VS. UniSystem™ parts and components may adversely affect the safety of your game, and may cause injury to your players.



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# I. INTRODUCTION

## VS. UniSystem™ kit

VS. UniSystem™ kit enables you to change Donkey Kong\*, Donkey Kong Jr.\*, Mario Bros.\*, Donkey Kong 3\*, and Popeye\*\* into a VS. UniSystem\* in less than one hour. A VS. UniSystem\* will use any non-interactive VS.-Pak\*.

Before you begin, be sure you are properly prepared. Make certain you have selected the proper VS. UniSystem\* kit for the particular game you are replacing. Next thoroughly read this instruction manual to familiarize yourself with the proper procedures. Make certain that you have all the tools necessary to complete the process.

If you have any questions, please call Nintendo Service at 1- (800)- 633-3236.

NOTE: This VS. UniSystem™ kit is not usable on an original wide-body (700W) Mario Bros. game.

- \* Donkey Kong, Donkey Kong Jr., Mario Bros., Donkey Kong 3, and VS. UniSystem are trademarks of Nintendo of America Inc.
- \*\* A trademark of King Features Syndicate, Inc.

## II. Contents of VS. UniSystem kit

Parts Name	Quantity	Remarks
MDS-CPU P.C. Board Assembly	1	without EPROMS and PPU
MGS-UP Operation Panel Assembly	1	with harness
MGS-UP Front Screen (600W) Assembly	1	
MGS-UP Side Decal	2	
VS. UniSystem™ Manual	1	
062 Shield Cover Complete Assembly	1	
072-36P Edge Connector Harness	1	
072-44P Edge Connector Harness Assembly	1	
MGS Serial Number Plate	1	
Flat Cable Tie	1	
Wood Screw 3.1 x 10	4	
FCC Class-A Label	1	
FBI Sticker	1	
<b>Following parts are for TKG, DJR, DKC, TMA only</b>		
054 Shield Cage	1	
Video Monitor Bracket (L)	1	
Video Monitor Bracket (R)	1	
Video Monitor Support Bar	2	
Blind Cardboard (large)	1	
Carriage Bolt 6 x 30	6	
Cap Nut M6	6	
Cap Nut M5	4	
Machine Screw 5 x 12	4	
Wood Screw 3.5 x 13	9	
Ground Wire (E)	1	
Hole Template	1	
<b>Following parts are for TPP only</b>		
Power Supply and Transformer Assembly	1	821B-7B Power Assembly
Fuse Set	1	

### III. List of Tools Needed

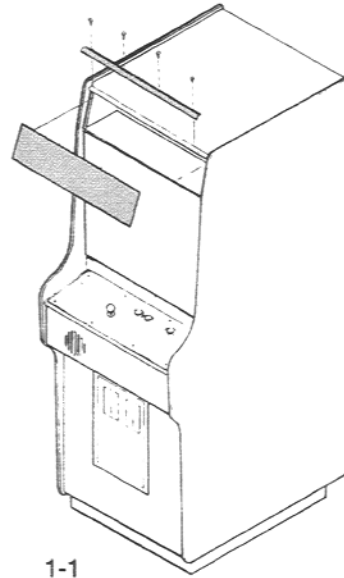
Flat (standard) screwdriver  
Phillips screwdriver  
7mm nut driver  
8mm nut driver  
10mm nut driver  
1/4" or 6.5mm drill bit  
Electric reversing drill  
Phillips bit (for drill)  
Staple gun  
Paper stapler  
Lacquer thinner  
Denatured alcohol or other cleaner  
Large wire cutter

**Note:** Many steps require the use of a phillips screwdriver and having a phillips screwdriver bit for your drill will greatly speed up these steps.

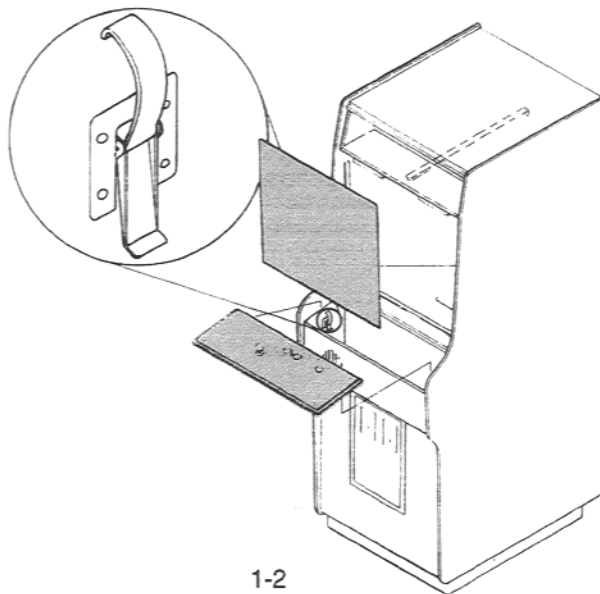


## IV. Step-by-step instructions

1. Remove marquee/header (see illustration 1-1)
  - A. Remove four (4) top trim screws
  - B. Remove marquee plexiglass
  - C. Replace marquee/header with new VS-Pak header
  - D. Replace top trim and four (4) top trim screws

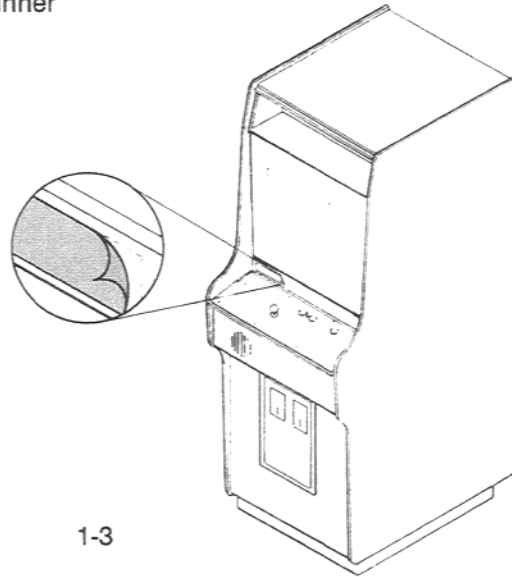


2. Remove old control panel and front screen (see illustration 1-2)
  - A. Undo control panel holddown clamps
  - B. Disconnect harness and remove control panel
  - C. Remove front screen by sliding back front screen clamp (access from back door)



**Note: For Donkey Kong, Donkey Kong Jr. ONLY**

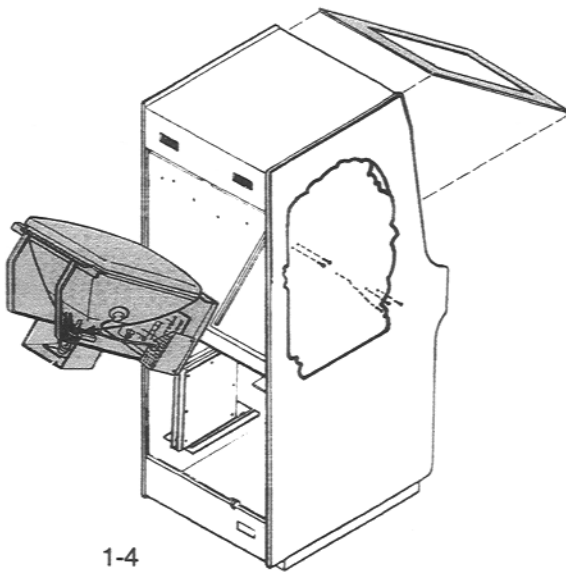
3. Remove instruction label (see illustration 1-3)
  - A. Spray label with lacquer thinner
  - B. Wait 15 minutes and remove with putty knife
  - C. Clean area with cloth and lacquer thinner



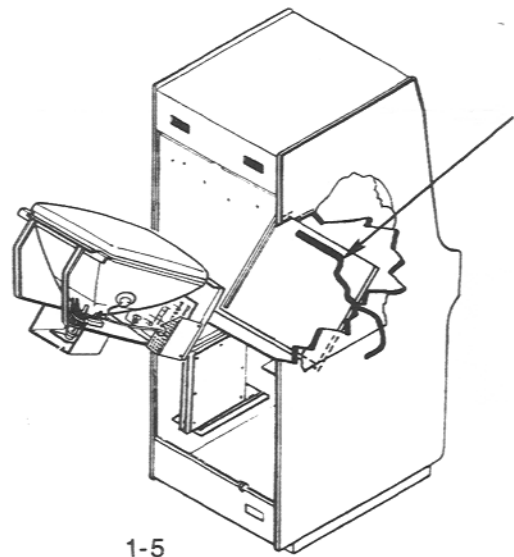
1-3

**Note: For Donkey Kong, Donkey Kong Jr. and Donkey Kong 3 ONLY**

4. Remove monitor
  - A. Unplug monitor connections and undo wire ties
  - B. Remove blind cardboard on monitor only
  - C. Remove monitor, upper monitor support bar and all carriage bolts (see illustration 1-4)
  - D. Remove old side decal
  - E. **IMPORTANT! Disconnect monitor ground wire at location shown in illustration** (see illustration 1-5)



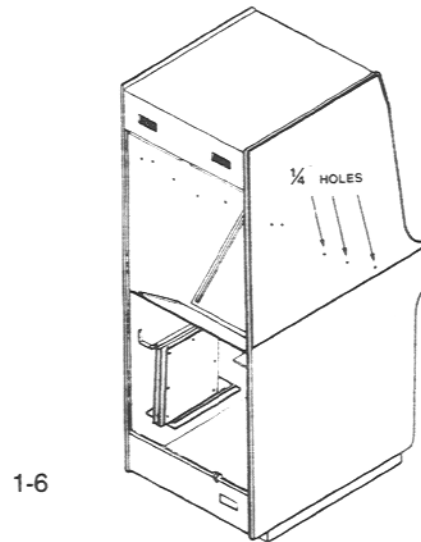
1-4



1-5

**Note: For Donkey Kong, Donkey Kong Jr. and Donkey Kong 3 only.**

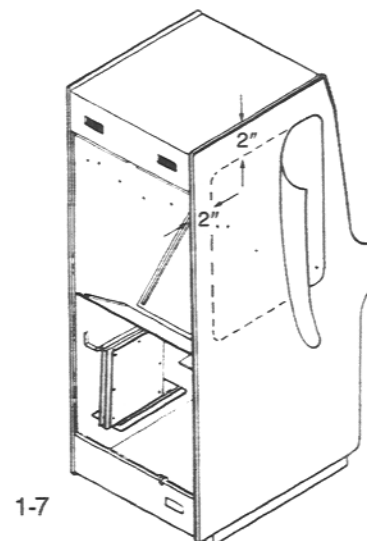
5. Side panels should have five (5) holes each. If your game has only two (2) holes, use template provided in kit and drill three (3) 1/4-inch or (3) 6.5-mm holes where indicated (see illustration 1-6).



**Note: This step is for all games**

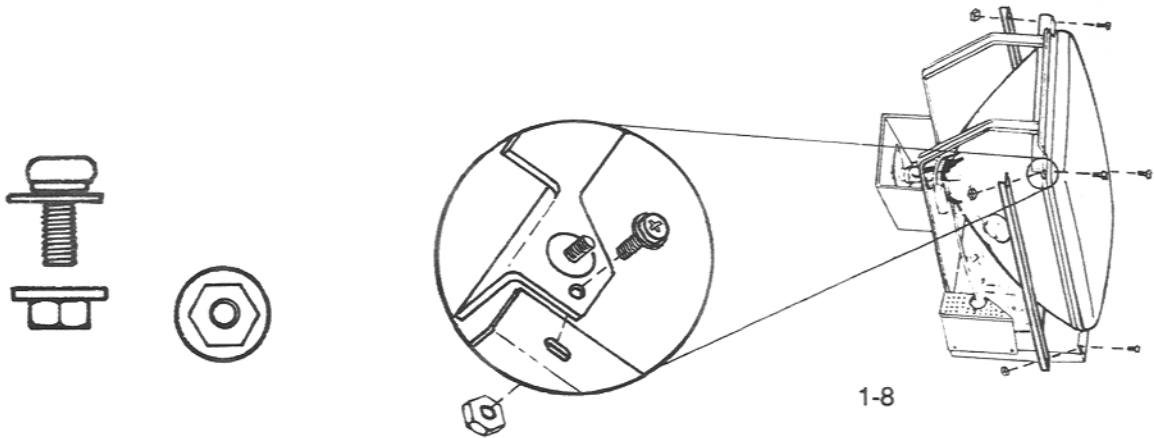
6. With old side decals removed, clean side panel with alcohol and install new VS. UniSystem decals. Decals are placed parallel to top and back of game 2" from edge. (See illustration 1-7)

**See decal application sheet on page 18**

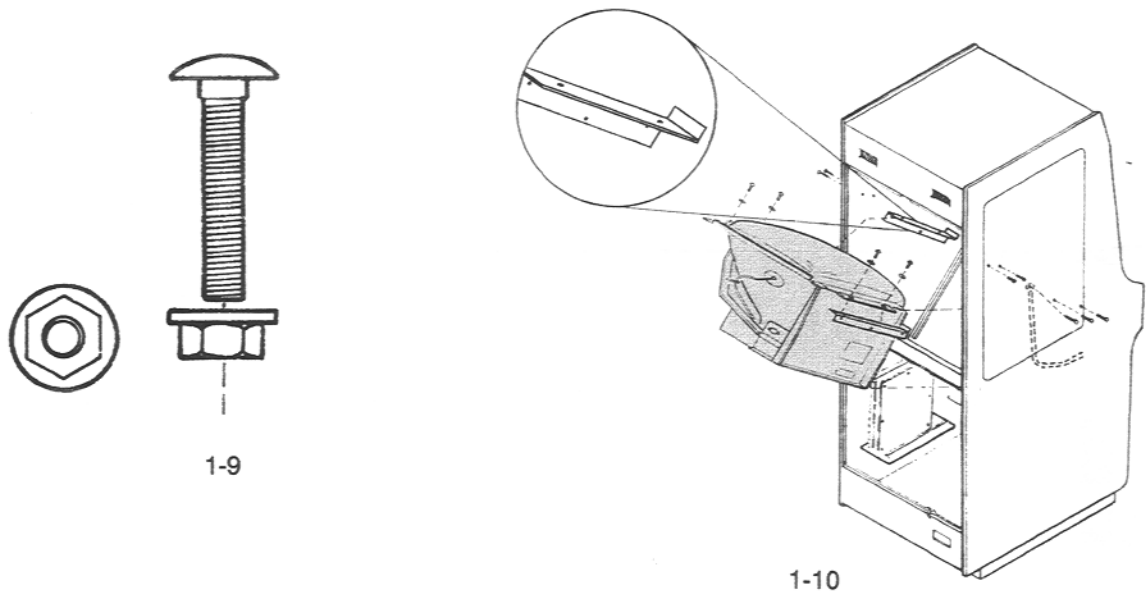


**Note: These steps are for Donkey Kong, Donkey Kong Jr. and Donkey Kong 3 ONLY.**

7. Install side support bars on monitor (see illustration 1-8)



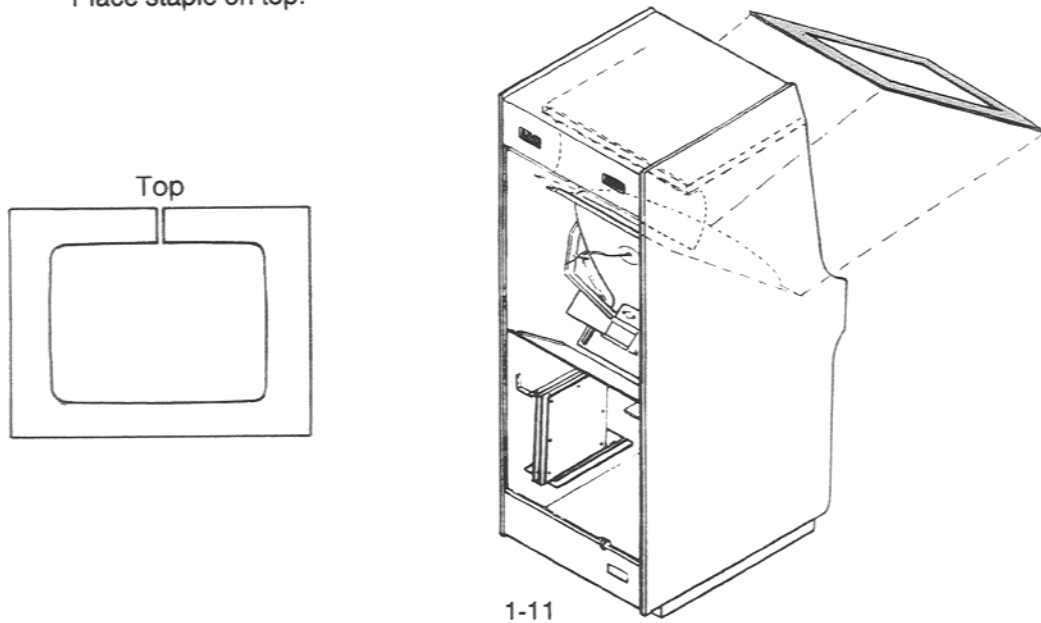
- A. Install new horizontal monitor mounting brackets to side panel with flange toward front of cabinet and pointing up. Note: use carriage bolt as shown (see illustration 1-9 & 1-10)
- B. Install monitor in horizontal position
- C. Monitor is placed on top of side bracket supports
- D. **IMPORTANT! Reconnect the monitor ground wire (disconnected in step 4E) to carriage bolt shown (see illustration 1-10)**



**Note: For Donkey Kong, Donkey Kong Jr. and Donkey Kong 3 ONLY**

8. Install new blind cardboard (see illustration 1-11)

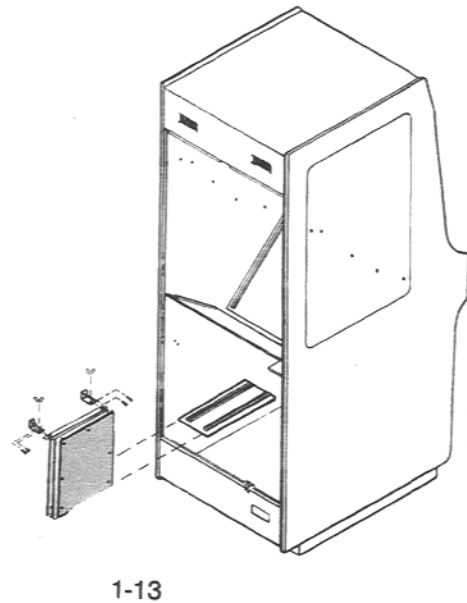
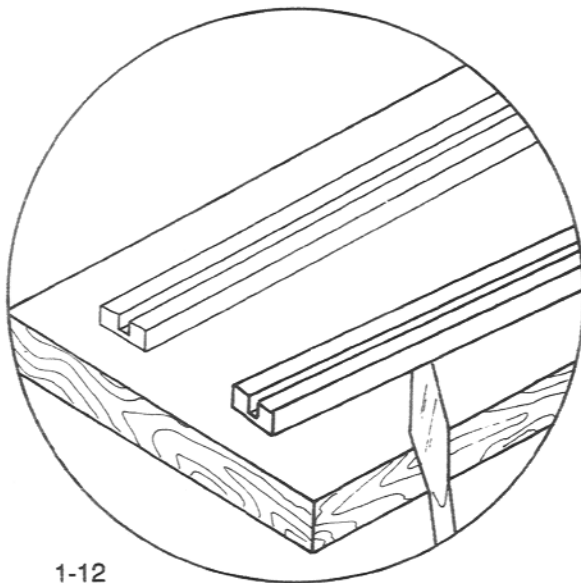
- A. Remove adhesive backing on tape. Center blind cardboard on monitor and adhere. Place staple on top.



**NOTE: For Donkey Kong and Donkey Kong Jr. ONLY**

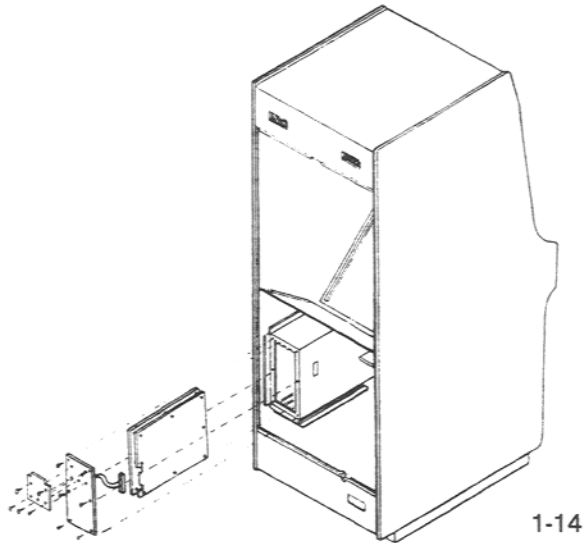
9. Remove old P.C. Board set and mounting brackets and old wire harness (see illustration 1-13)

- A. If P.C. Board wood shelf has slots made from square stock wood, remove these (see illustration 1-12)  
B. Remove old Main Wire Harness



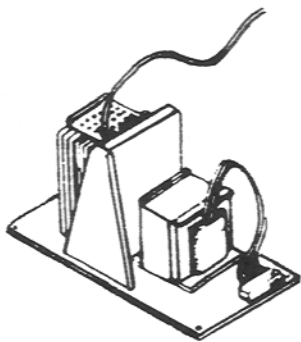
**NOTE: For Mario Bros. and Donkey Kong 3 ONLY**

10. Remove old Shield cage assembly including Shield cover and old P.C. Board set

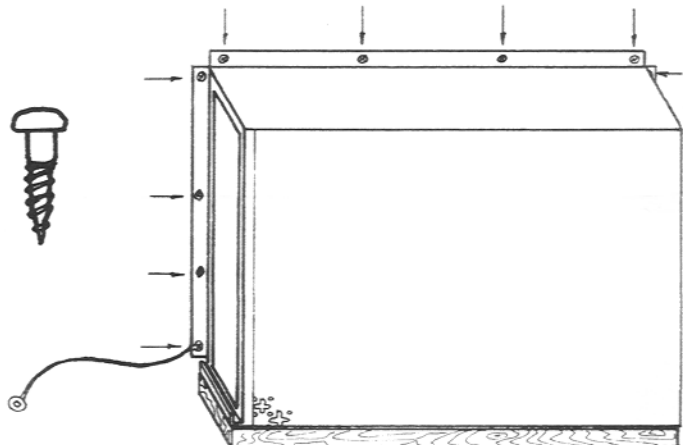


**NOTE: For Donkey Kong, Donkey Kong Jr., Mario Bros. and Donkey Kong 3 ONLY.**

11. Install new Shield cage so it is flush with rear of wood shelf and fasten with six (6) screws provided. **IMPORTANT! On lower left corner install ground harness and connect the other end to the mounting bolt on the power supply as shown (see illustration 1-15 & 1-16)**



1-16

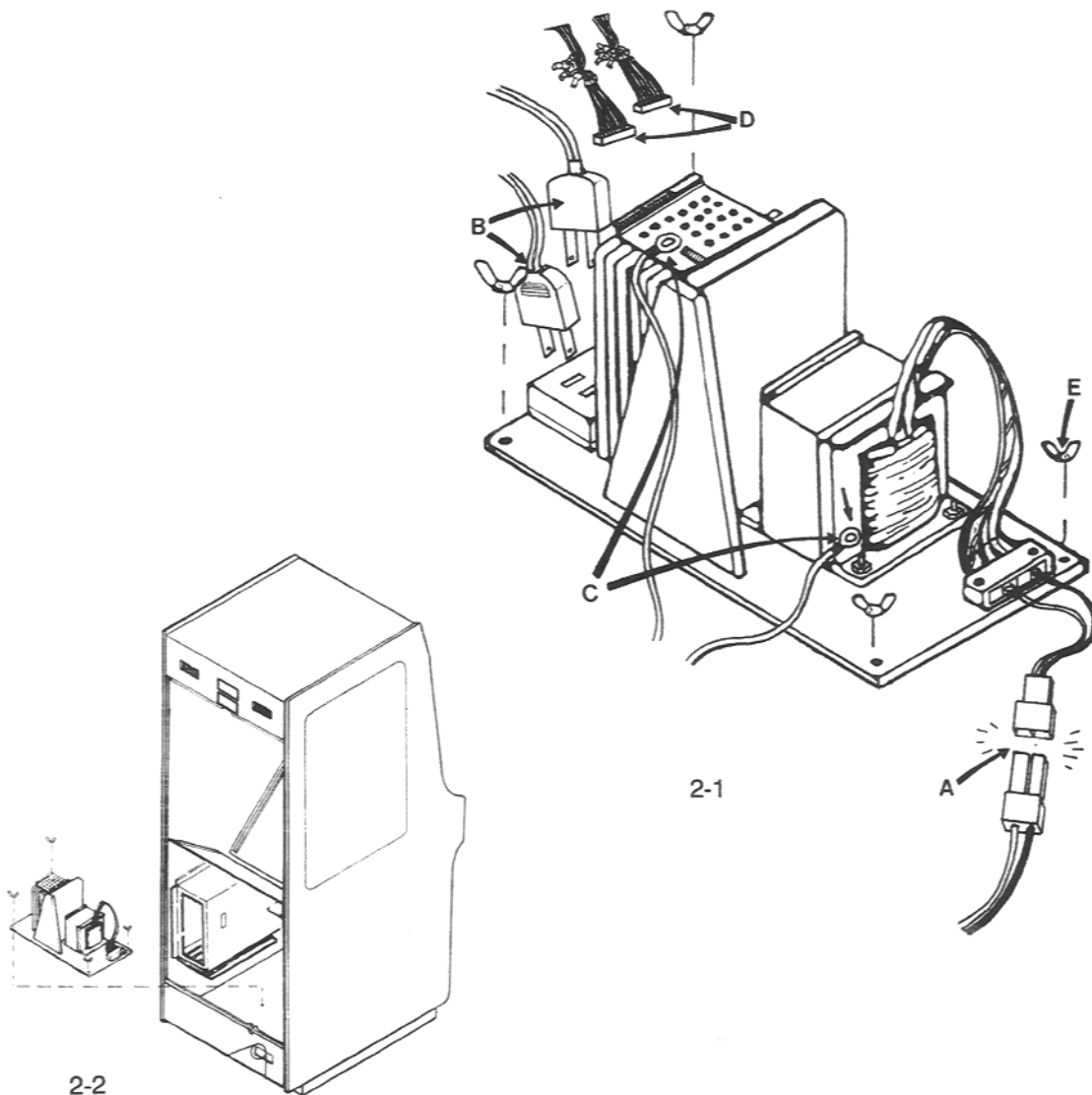


1-15

**These steps are for Popeye ONLY**

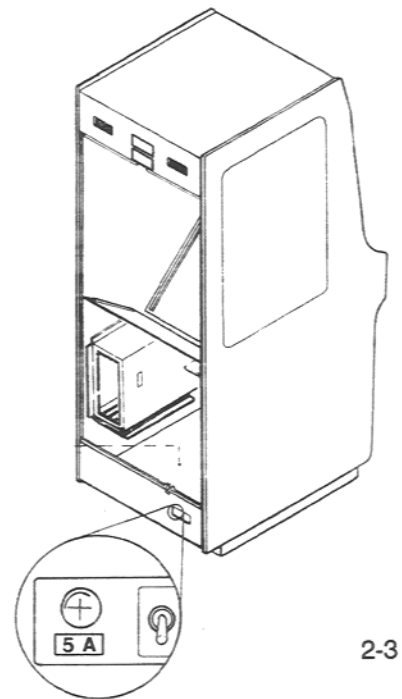
12. If you are replacing a Popeye game, remove old power supply transformer assembly (see illustration 2-1 & 2-2)

- A. Disconnect connector from switch plate
  - B. Disconnect both plugs for monitor and lamp
  - C. Disconnect ground harness connections
  - D. Disconnect both power harness connections
  - E. Remove four (4) wing nuts and take out old power supply
  - F. Replace with new power supply assembly and tighten wing nuts
- NOTE: Bolts for wing nuts may push through bottom of game during mounting of new power supply unit. If this happens, simply push them back up when power supply assembly is in place.
- G. **Reconnect Steps A, B, & C** being careful to get a good connection on Step C. **Ground harnesses.**



**These steps are for Popeye ONLY**

13. Change fuse to 5 AMP and change label to 5 AMP on switch plate (see illustration 2-3)

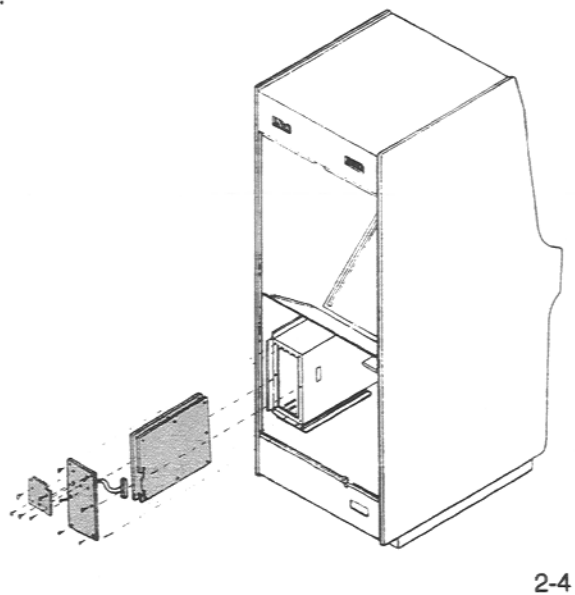


14. Remove old P.C. Board assembly and old Main Wire Harness (see illustration 2-4)

- A. Remove the six (6) machine screws that hold on the Shield cover.

**IMPORTANT: Save these machine screws**

- B. Remove Shield cover and complete P.C. Board assembly.  
C. Remove old Main Wiring Harness.

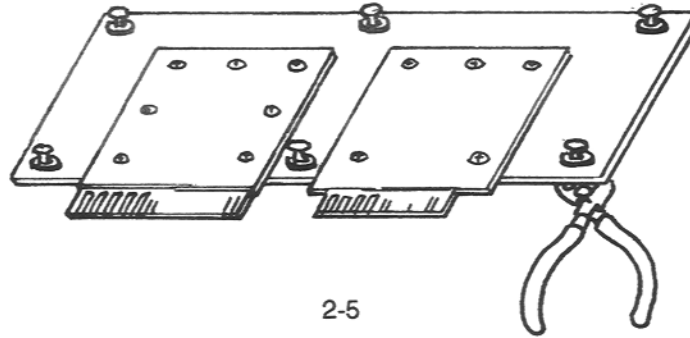




**IMPORTANT!! This step is for Popeye ONLY**

15. Modify new Shield Cover Assy to fit old Shield Cage (see illustration 2-5)

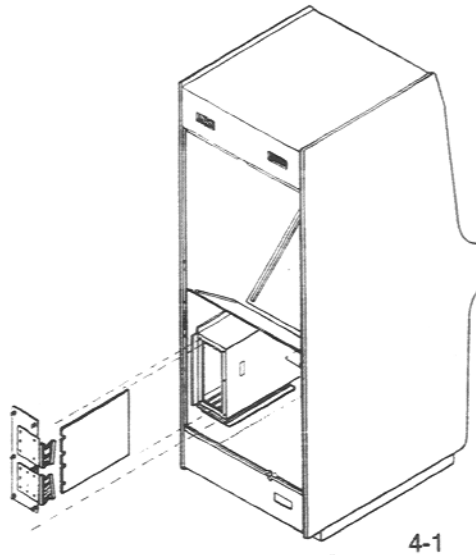
- A. Cut off six Fasteners on perimeter of Shield Cover Assy
- B. To install Shield Cover use six (6) machine screws from step 14A.



**NOTE: This step is for all games**

17. Install new MDS P.C. Board and shield cover assembly (see illustration 4-1)

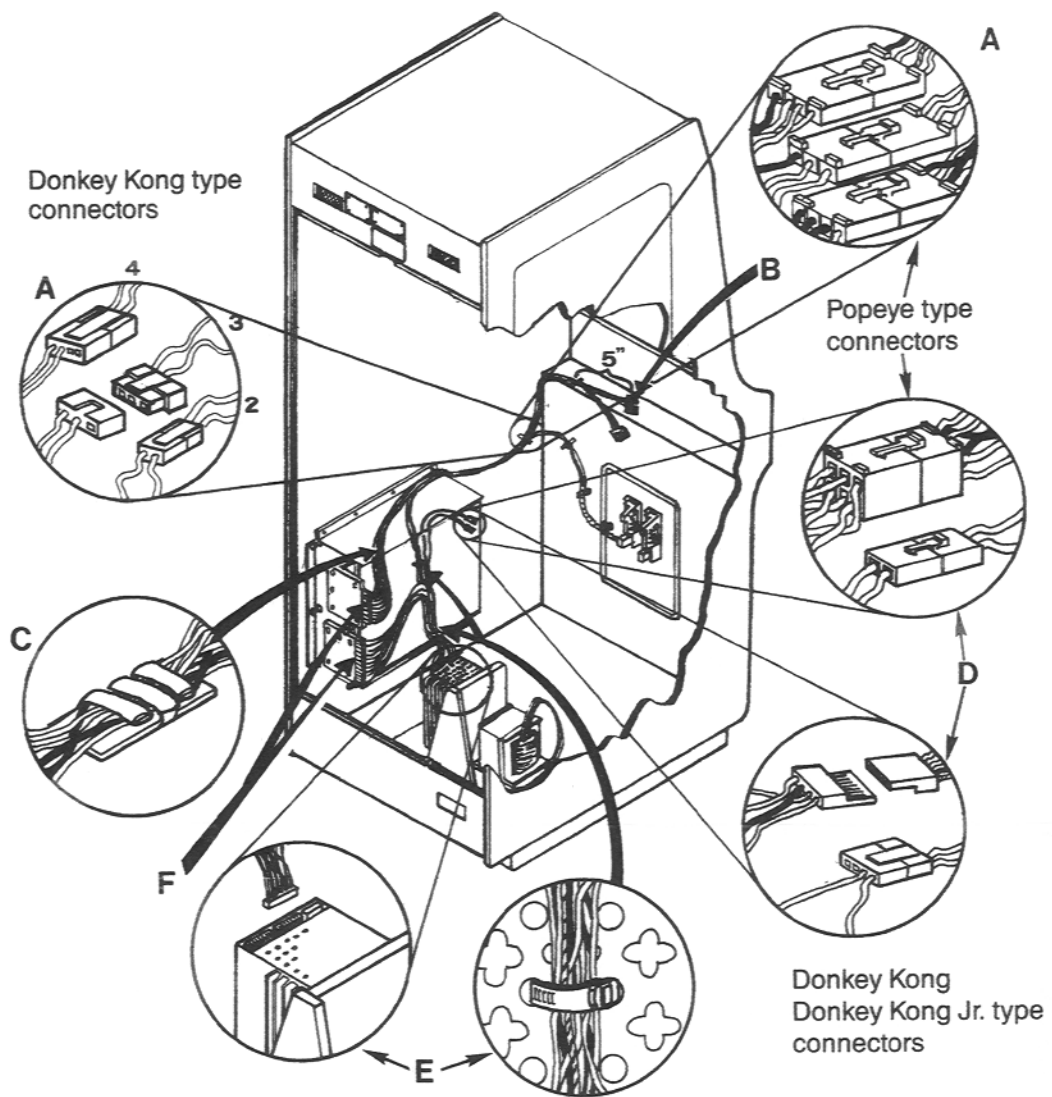
- A. Attach short harnesses to P.C. Board with 36 pin connector on top
- B. Slide P.C. Board into Shield cage grooves
- C. Do not fasten Shield cover until after final check sheet and adjustments Section V is completed



**NOTE: These steps are for all games**

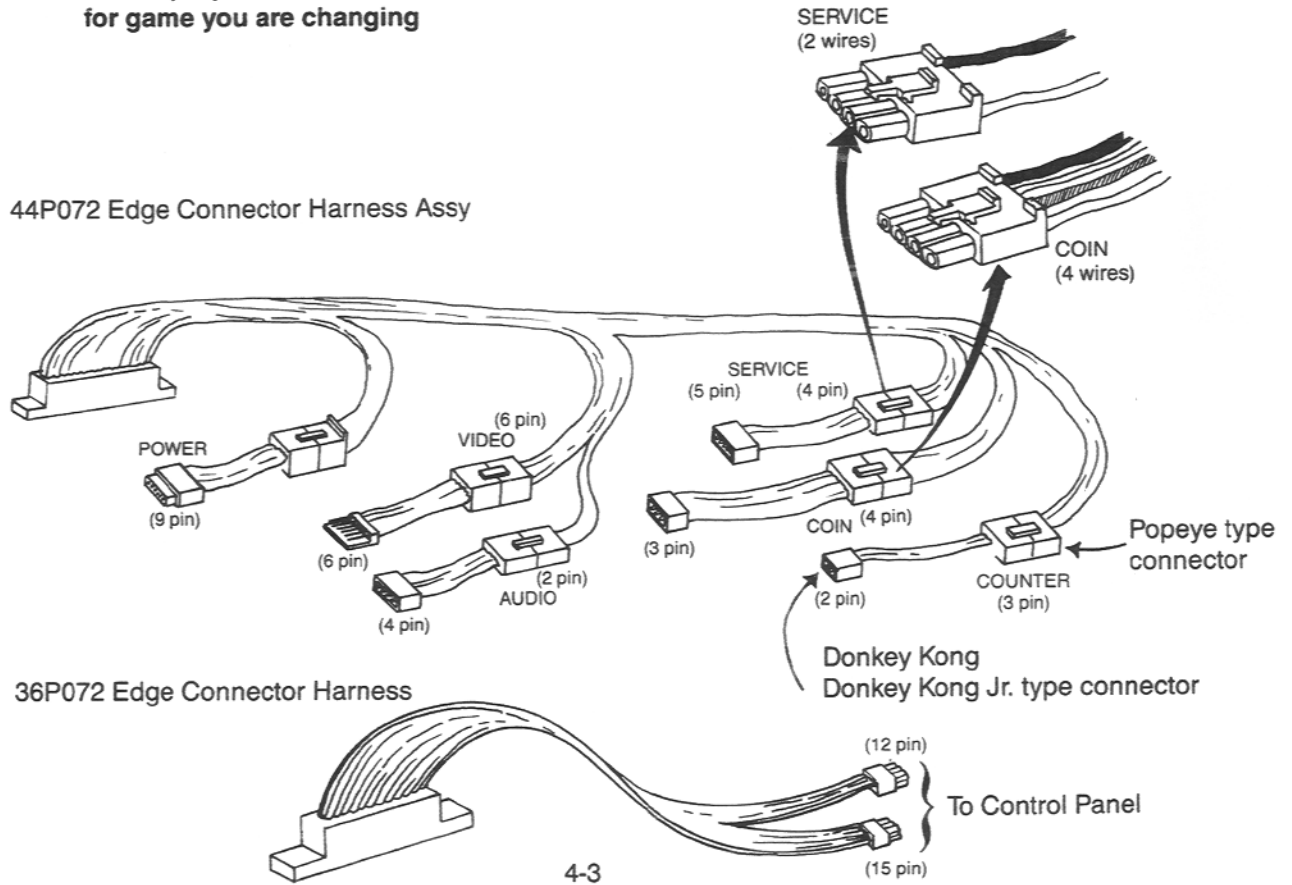
17. Connection of Harnesses (see illustration 4-2)

- A. Connect Coin, Service, Counter harnesses to 44P072 Edge harness.  
**Note:** Harnesses are different for Popeye type and Donkey Kong or Donkey Kong Jr. type (see illustration 4-3)
- B. Fasten Control Harness 072-36P to wire tie approximately 5" from connectors.
- C. Route Harnesses through existing wire ties
- D. Connect Sound and Video Harness from monitor to Edge Connector Harness
- E. Connect Power Harness to Power Supply (9 pin connector) and fasten Power Harnesses to Shield Cage with cable tie.
- F. Connect 44P Edge Connector Harness and 36P Edge Connector Harness to Cover Assy.



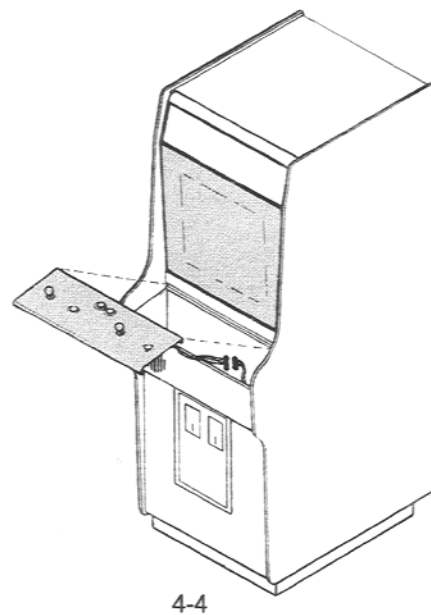
**Note: Select proper connector  
for game you are changing**

44P072 Edge Connector Harness Assy



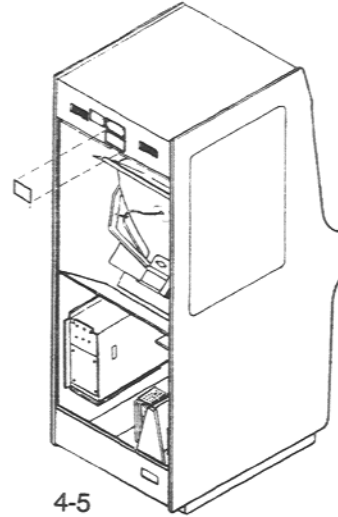
**Note: These steps are for all games**

18. Install new front screen and fasten with front screen clamp (see illustration 4-4)
19. Connect new VS. UniSystem control panel to harness and fasten down (see illustration 4-4)



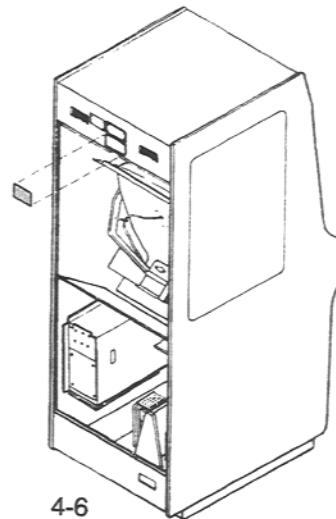
**NOTE: These steps are for all games**

20. Screw on new serial number plate next to old plate.  
**IMPORTANT! Do not remove old plate**  
(see illustration 4-5)



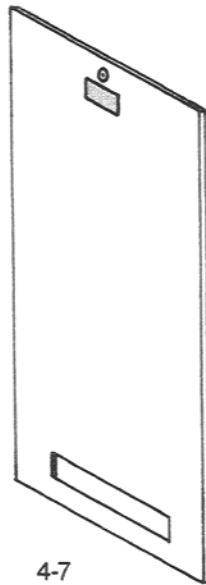
21. Attach FCC Class A label (see illustration 4-6)

- A. Remove old FCC label
- B. Put on new FCC label and staple all four corners



22. Attach FBI sticker

- A. Place label on back door just under lock (see illustration 4-7)



4-7

## Side Decal Application

### Step 1.

Start by peeling the protective backing "A" down about 6 inches from the top.

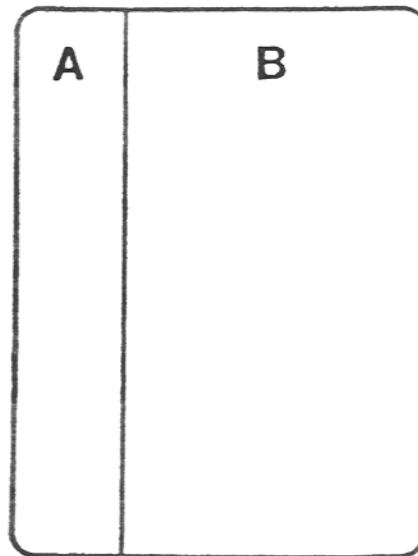
Place decal in desired position. Pull down slowly the remainder of the protective backing of "A."

While doing this, use a soft cloth to smooth decal onto side board, moving from top to bottom of decal.

### Step 2.

Fold remaining decal back, exposing the unprinted side. Begin to peel protective backing "B" from center to right hand side "slowly."

Using soft cloth smooth decal onto side panel by running hand from top to bottom of decal, moving outward to the right hand side.



Front View

## V. Final Check Sheet and Adjustments

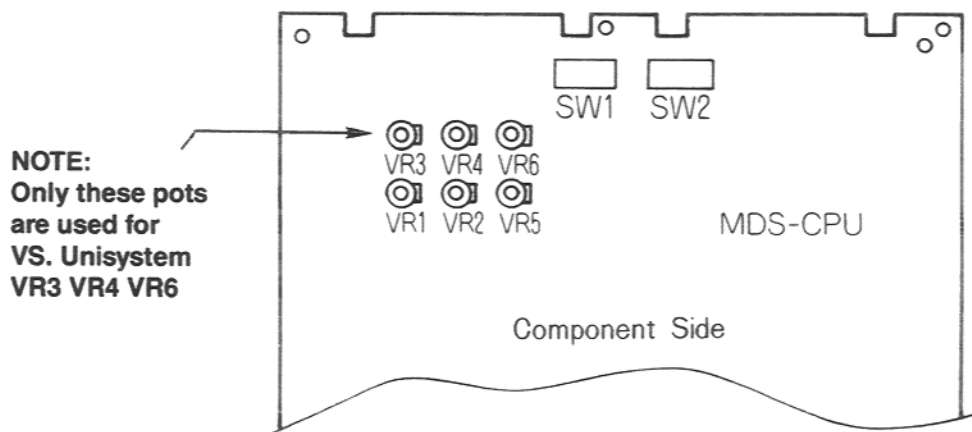
- 1. FBI sticker installed (MANDATORY)
- 2. New serial number plate installed (MANDATORY)
- 3. New FCC label installed (MANDATORY)
- 4. Fuse label changed (Popeye only)
- 5. P.C. Board adjustments made  
(see P.C. Board adjustments page 20)
- 6. Monitor adjustments made  
(see monitor adjustments pages 21-22)
- 7. Coins give credit
- 8. Controls on operation panel functioning
- 9. Sound checked

## Adjustments

After powering up the game, you will probably find that the screen's horizontal width is too narrow and the vertical height is too small. To make adjustment to the horizontal width, refer to the illustration on page 21. To adjust the vertical height, use the V-size adjustment on the rear of the monitor to make the picture larger (see page 22).

### MDS P.C. Board

**NOTE: Only SW2 is used for VS. UniSystem™ games**

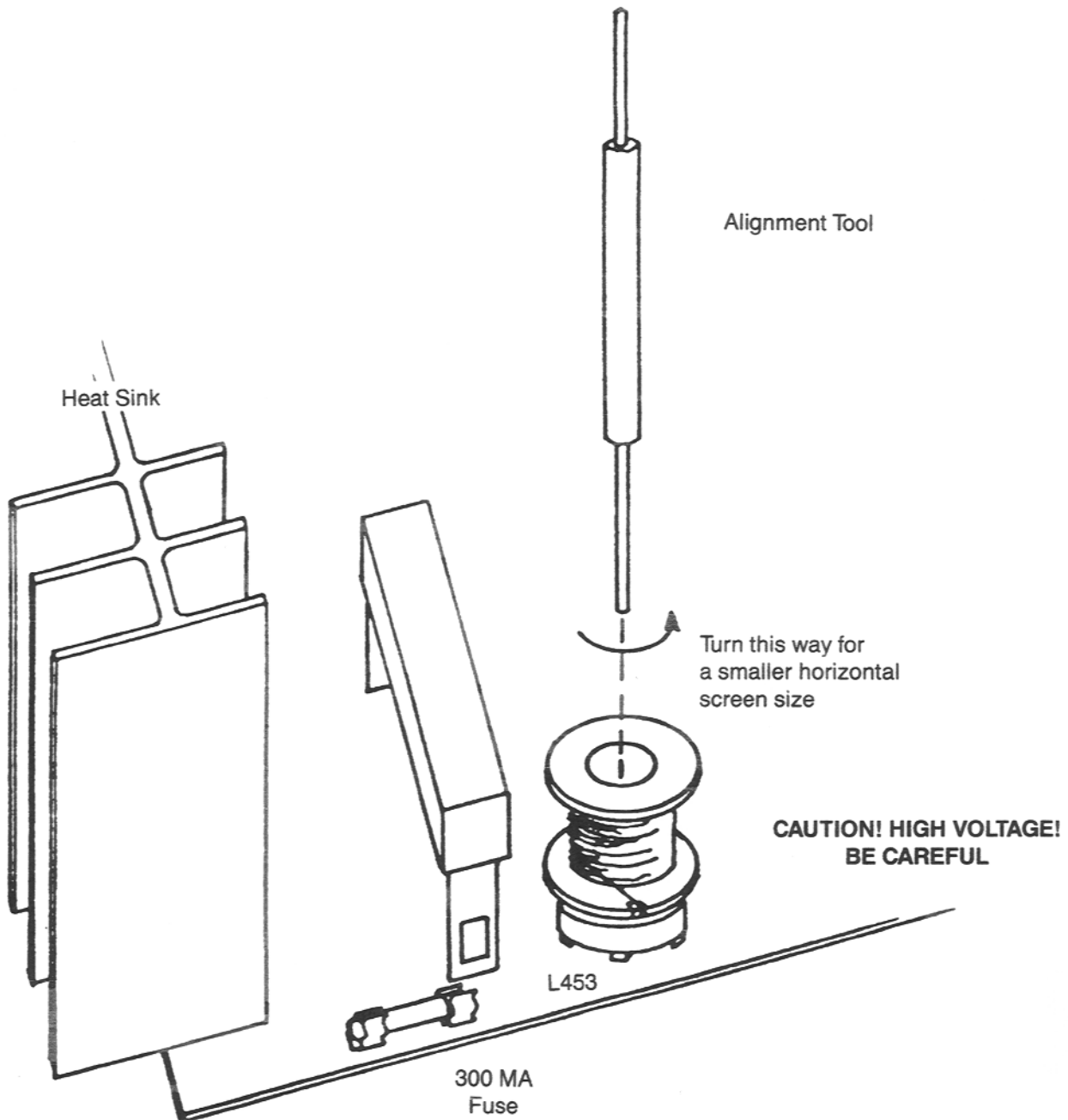


- Cautions:**
- (1) Since the Dip Switch settings (SW2 only) may be changed by new game software, refer to the new game instructions in Operation Manual for VS. Pak.
  - (2) Do not touch the fixed variable resistors (VR1, VR2, VR3, VR4, VR5, and VR6), as they have already been preset and do not need adjustment.
  - (3) If, however, color does not look correct, VR3, VR4, and VR6 may be adjusted.

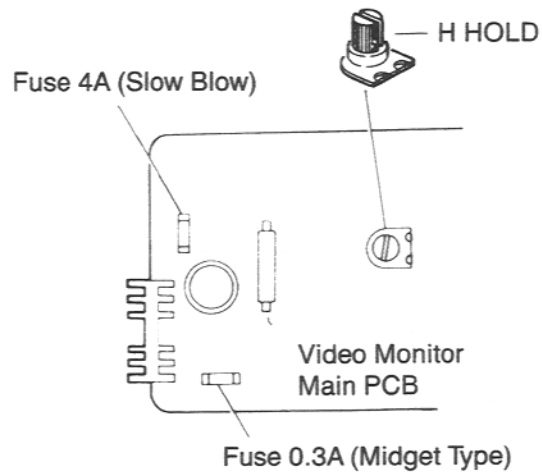
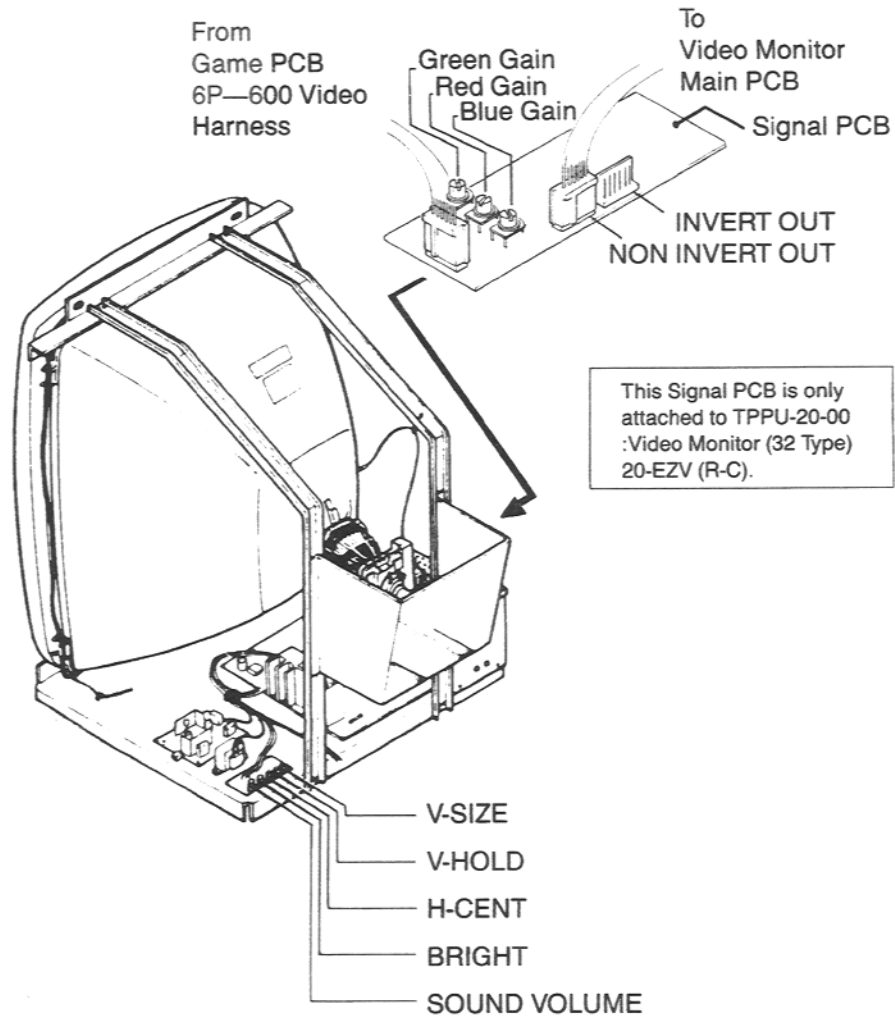


## Adjustment of Horizontal Width

Using a standard 2.6mm hex non-conductive core alignment driver, carefully turn L453 counter-clockwise for a smaller horizontal screen size. L453 is located in the rear of the monitor just under the deflection yoke.



## Adjustment of Video Monitor



### WARNING

Do not touch the inside of the Video Monitor.  
It contains many parts supplied with high voltage.

# Nintendo®

## SERVICE DEPARTMENT

Dear Customers:

In addition to the steps you have already done, we felt it would benefit you if the previous cabinet and coin selector problems were checked to ensure the modifications had been done. Below is the list of service bulletins which deal with these problems.

We have included copies of these service bulletins:

TKG-05	Slam Switch	4-18-82
DJR-01	Upper Coin Door Hinge	8-24-82
DJR-02	Model 730A Coin Selector	1-04-83
DJR-05	Video Wrap Around	9-09-83

Sincerely,

Nintendo of America, Inc.

# Nintendo®

## SERVICE DEPARTMENT BULLETIN # TKG.05

GAME: Donkey Kong, Donkey Kong Junior, Popeye, Mario Bros., Donkey Kong 3, VS System

SUBJECT: Slam Switch

In order to prevent the accumulation of free credits by kicking the coin door, a slam switch should be added.

In all cases the switch (a "normally open" weighted reed switch) should be mounted on the coin door. Connect one side of the slam switch to the brown wire on the coin switch (ground). The other side of the slam switch should be connected to a wire which will be run through the wiring harness to the CPU board. At this point the installations vary for the six (6) games.

### **Donkey Kong:**

TKG2 and TKG3: Attach to Test Point 8, at board coordinates 3L.

TKG4: Attach to Test Point 2-RESET, at board coordinates 1L.

### **Donkey Kong Junior:**

Attach to Test Point 2-RESET, at board coordinates 1L.

### **Popeye:**

Attach to C13 (47 $\mu$  F electrolytic capacitor), "+" side, at board coordinates 2N.

### **Mario Bros:**

Attach to C38 (100 $\mu$  F electrolytic capacitor), "+" side, at board coordinates 4F.

### **Donkey Kong 3:**

Attach to C25 (100 $\mu$  F electrolytic capacitor), "+" side, at board coordinates 2E.

### **VS. System**

Attach to C3 (10 $\mu$  electrolytic cap) "+" side, at board coordinates 1K.

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## SERVICE DEPARTMENT BULLETIN # DJR-01

GAME: Donkey Kong Jr.

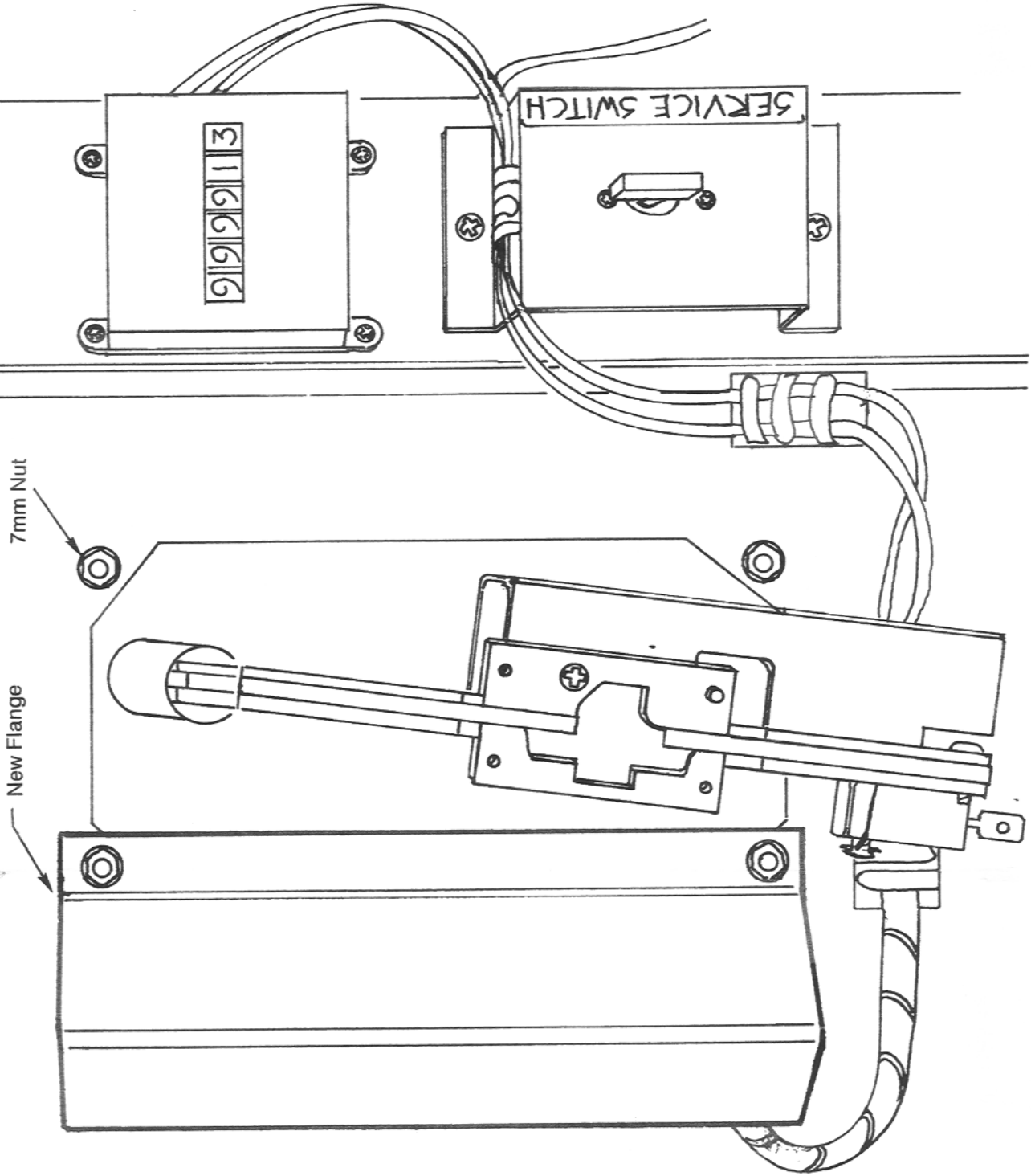
SUBJECT: Upper Coin Door Hinge

It has been brought to our attention that a flattened straw or similar object can be passed through the center opening in the upper hinge. If the object makes contact with the coin switch, it can be used to run up multiple credits.

The solution is to block the opening with a flange made of wood or metal. This flange should be mounted to the inside of the cabinet and can be obtained from us as a retrofit kit.

This problem is presented in all Radar Scope uprights, Donkey Kong uprights and early Donkey Kong Jr. uprights.

**NOTE:** Mount new flange on left coin mech using existing nuts and bolts so flange covers hinge when door is closed.



## Retrofit Flange

Detail Coin Mech.

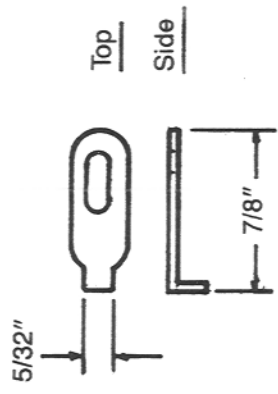
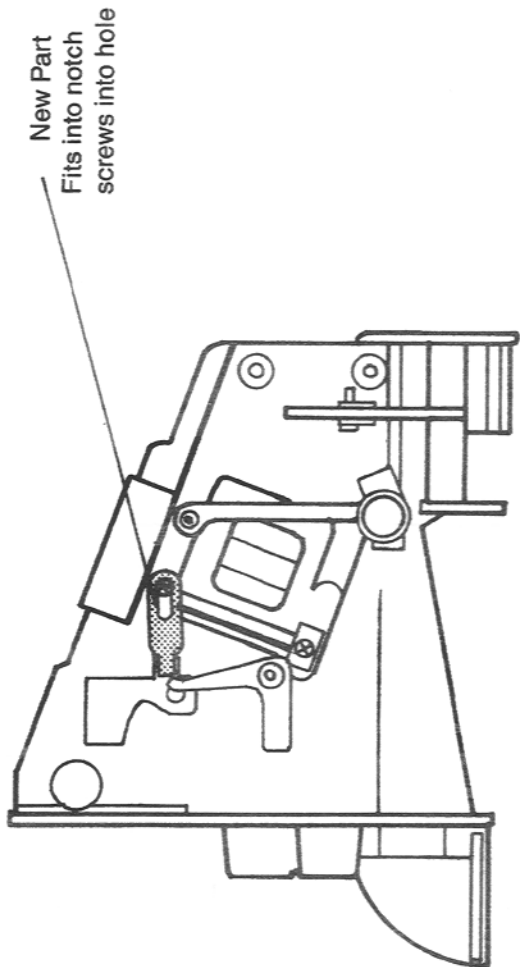
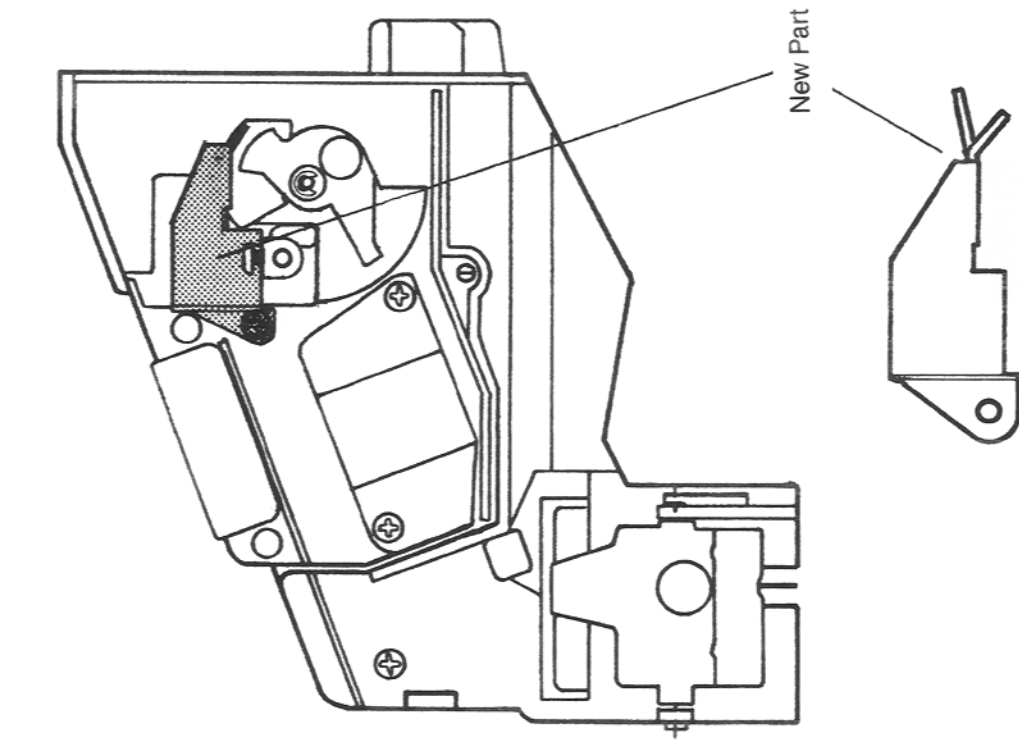
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## SERVICE DEPARTMENT BULLETIN # DJR-02

GAME: Donkey Kong Jr.  
SUBJECT: Model #730A Coin Selector

It has come to our attention that there is a problem with the model #730A coin selector in that a nickel or a penny, if flipped through the entry just right, will continue through the mechanism and establish credits.

The solution to this problem is to add a small metal piece to the selector as shown in the enclosed drawing. This piece can be made from 18 gauge steel or even a paper clip as shown in the drawing. This piece is available at no charge. The threaded hole in the selector is an M3 x 6 MM size. If you cannot locate a screw this size, you can remove one of the machine screws from the power supply cage.





# Nintendo®

## SERVICE DEPARTMENT BULLETIN # DJR-05

GAME: Donkey Kong, Donkey Kong Junior

SUBJECT: Video Wrap Around on Left Side of Picture

We have recently received a number of service calls concerning the wrap around or fold over of the picture on the left hand side of the monitor. In most cases the problem may be solved by replacing capacitor C407 on the main monitor PC board. This is located just to the left of the high voltage cage when viewing from the rear of the monitor. The value of this capacitor is 10 microfarads at 160 volts (of course, any capacitor of 10 microfarads with a voltage rating higher will work also).

This capacitor is connected between ground and the B+ supply for the vertical output transistors, so if this capacitor becomes leaky it does not allow full vertical deflection of the screen; consequently, you get video information imposed over the other (wrap around).

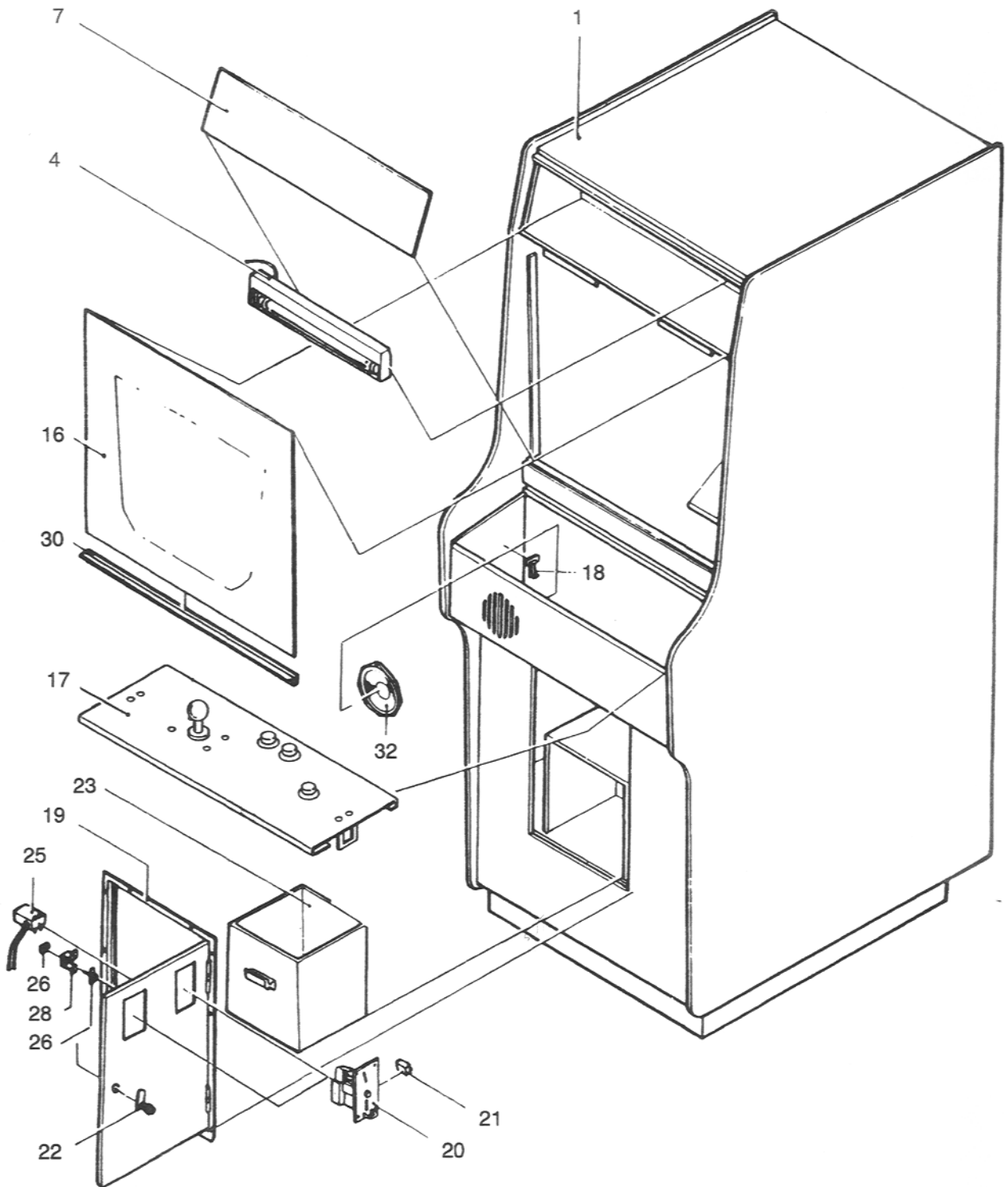
If you have questions about this or any other questions concerning Nintendo products, please feel free to contact us.

## IX. Reorder Parts List

### Body Parts — Front View (Fig. 5-1)

ITEM	PART NO.	DESCRIPTION
1	TKGU-01-01	Body
2	TKGU-01-69	Center Trim
3	TKGU-01-56	Top Trim
4	TKGU-01-29	Fluorescent Lamp Ass'y
5	TKGU-01-29-01	Fluorescent Lamp
6	TKGU-01-29-02	Lamp Starter (Glow Lamp)
7	MGSU-01-24	Name Plate Plexi
8	TKGU-01-49	Speaker Grill
9	TPPU-01-52	Monitor Support Bar
10	TPPU-01-50	Monitor Mounting Brkt Left
11	TPPU-01-51	Monitor Mounting Brkt Right
12	TKGU-20-00	Video Monitor (20-5F) (Standard Scan)
13	TKGU-20-01	Video Picture Tube
14	TPPU-01-68	Blind Cardboard (Small)
15	TPPU-01-67	Blind Cardboard (Large)
16	MGSU-01-23	Front Screen
17	MGSU-23-60	Operation Panel Ass'y
18	TKGU-01-31	Draw Latch
19	TKGU-01-28	Coin Door
20	TKGU-01-02	Coin Selector
21	TKGU-01-02-01	Coin Switch
22	TKGU-01-04	Front Door Lock
23	TKGU-01-01-03	Cash Box
24	MDSU-01-32	CS Frame 120 W Ass'y
25	TKGU-01-11	Game Counter
26	TKGU-01-33	Service Switch
27	TMAU-11-20	CS Plate 120W (Only)
28	TKGU-01-64	Service Switch Bracket
29	TKGU-01-72	T Molding (White)
30	TKGU-01-53	Front Screen Frame (Lower)
31	MGSU-11-23	Side Decal
32	TKGU-01-43	Speaker 16cm (8 OHM)

Front View of Game Cabinet



5-1

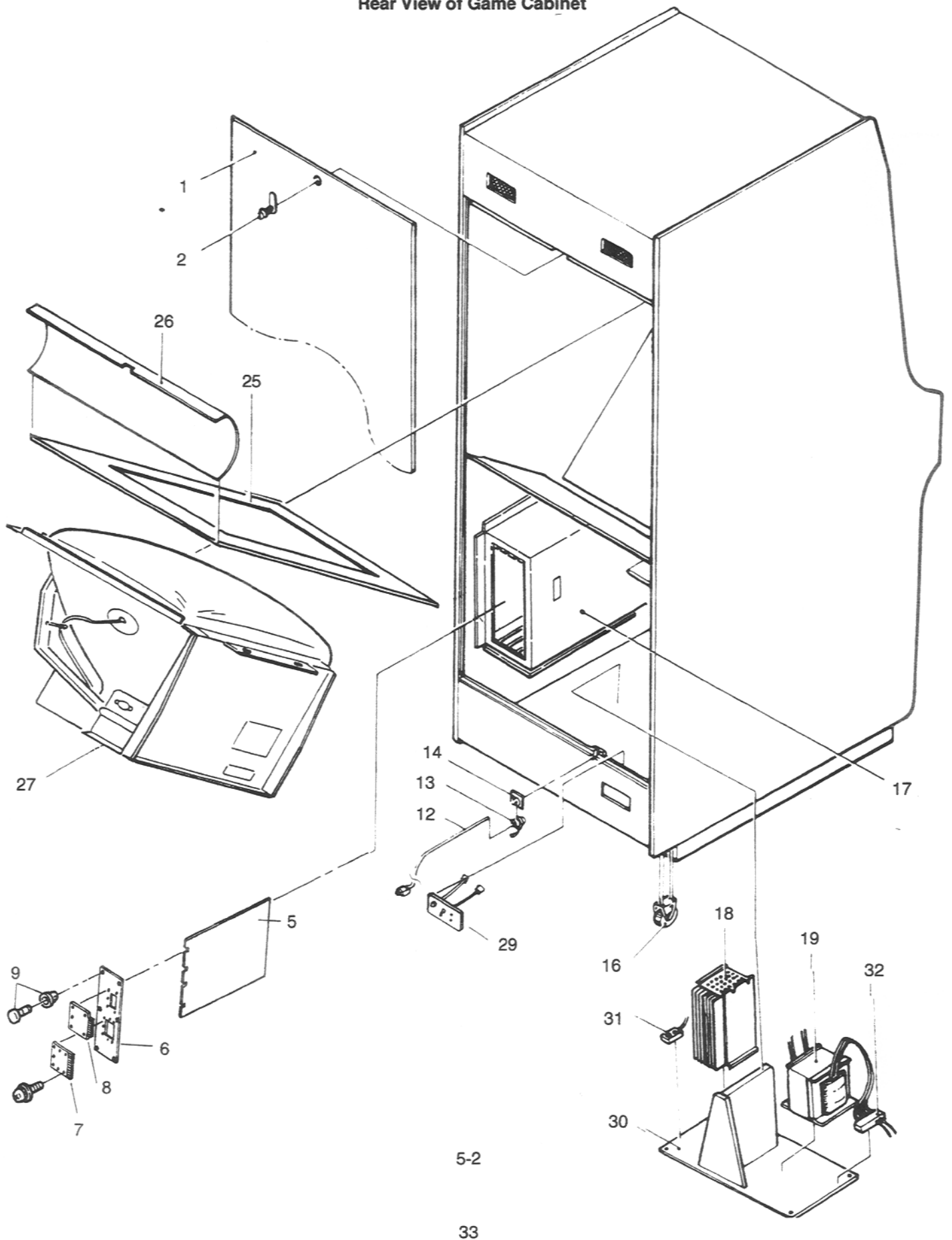
31

## IX. Reorder Parts List, Continued

### Body Parts — Rear View (Fig. 5-2)

ITEM	PART NO.	DESCRIPTION
1	TKGU-01-01-05	Back Door
2	TKGU-01-03	Back Door Lock (Key #6510)
3	TKGU-01-03-01	Back Door Key Only (Key #6510)
4	TKGU-01-05	Cam A-Type (Back Door Lock)
5	MDST-21-11	P.C. Board Ass'y
6	MDSU-01-01-11	062 FCC Shield Cover
7	MDSU-01-01-12	062 44P FCC P.C.B. Ass'y
8	MDSU-01-01-13	062 36P FCC P.C.B. Ass'y
9	MDSU-23-35	Snap In Fastener
10	TPPU-01-01-14	FCC Sponge (Black)
11	CHPU-01-01-15	Shield Cover Label
12	TKGU-01-08	Power Cord 5M
13	TKGU-01-10	Strain Relief Bushing
14	TKGU-01-65	Strain Relief Bushing Plate
15	TKGU-11-08	Fuse 5A 125V
16	TKGU-01-30	Caster
17	CHPU-01-01-10	Shield Cage (054 Type)
18	TKGU-18-01	Power Supply PP-7B
19	TKGU-09-01-01	Power Transformer PT821B
20	TKGU-01-07	Back Door Lock Stopper Plate
21	MGSU-11-05	Back Door Label
22	TPPU-11-25	FCC Label
23	TKGU-11-17	Monitor Adjustment Label
24	MGSK-23-61	MGSK Operation Manual
25	TPPU-01-67	Blind Cardboard (Large)
26	TPPU-01-68	Blind Cardboard (Small)
27	TKGU-20-00	Video Monitor (20-EZV) (Standard Scan)
28	TKGU-20-01	Video Picture Tube
29	TKGU-10-01	Power On/Off Switch Ass'y (90 ~ 120v)
29	TKGU-10-01E	Power On/Off Switch Ass'y (200 ~ 240v)
30	TKGU-01-01-02	Transformer Base
31	TKGU-09-01-02	100v Outlet (From Transformer)
32	TKGU-09-01-03	Terminal Block 6-Position
32	TKGU-19-01-03	Terminal Block 4-Position

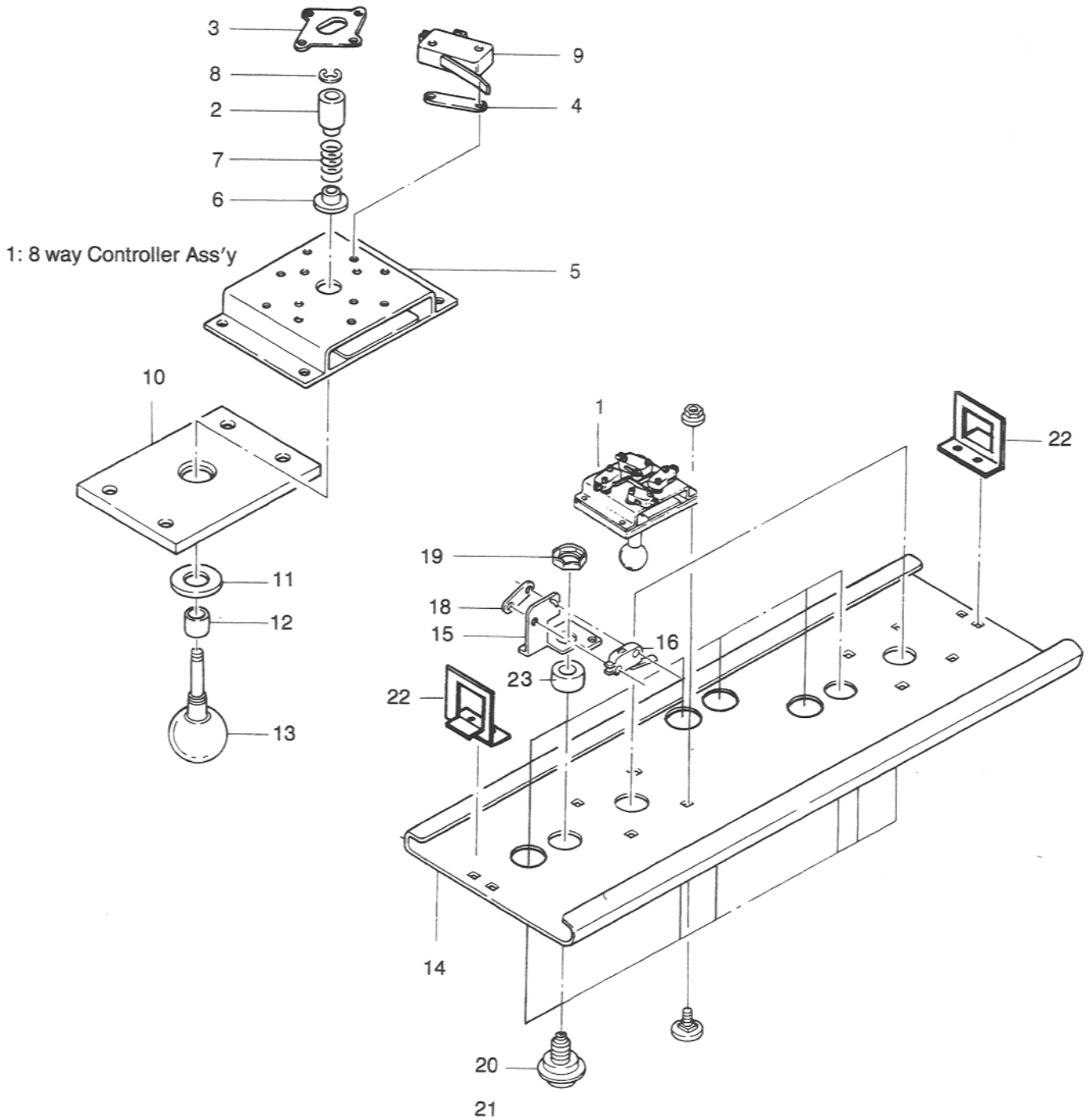
# Rear View of Game Cabinet



**Operation Panel Assembly (Fig. 5-3)**

<b>ITEM</b>	<b>PART NO.</b>	<b>DESCRIPTION</b>
1	MDST-14-12	8 Way Control Lever Assembly
2	TKGU-23-21	Switch Collar
3	TNX-23-18	8 Way Guide Plate
4	TKGU-23-17	Switch Spacer
5	TKGU-23-16	Bearing Brkt
6	TKGU-23-20	Spring Stopper
7	TKGU-23-22	Lever Spring
8	TKGU-23-23	E-Ring
9	TKGU-23-13	Micro Switch
10	TMAU-12-15	Lever Plate
11	TMAU-12-14	Control Knob Plate
12	TMAU-12-16	Control Knob Collar 8L
13	TMAU-11-18	Knob with Shaft 80.5L
14	MGSU-01-22	Operation Panel Base
15	TKGU-23-12	Switch Button Bracket
16	TMAU-34-18	Micro Switch VL 12L (Straight)
17	MDSU-12-17	Black Sponge, 2 x 10 x 580L
18	TKGU-23-26	Nut Plate
19	TKGU-23-34	Pal Nut M16
20	MDST-12-21	Button Assembly (Black)
21	MDST-12-17	Button Assembly (Crimson)
22	TMAK-11-19	Operation Panel Fastener
23	TMAU-12-18	Collar — 34 x 28 x 7H
24	MDST-12-24	Button Assembly (Light Blue)
25	MDST-12-27	Button Assembly (Green)

**VS. UniSystem Operation Panel Assembly Parts (Upright)**



5-3

**Operation Panel Assembly**

## Wiring Harnesses

<b>PART NO.</b>	<b>DESCRIPTION</b>
MDSU-41-12	062 44P FCC Harness
MDSU-41-11	062 36P FCC Harness
MGSU-41-13	UP-072-44P Edge Harness
MGSU-41-14	UP-072-36P Edge Harness
MGSU-42-11	UP-072-15P Switch Harness
MGSU-42-12	UP-072-12P Switch Harness
MGSK-43-01	072-6P-100 Video Harness
MGSK-43-02	072-2P-100 Audio Harness
MGSK-43-03	072-4P-100 Service Sw. Harness
MGSK-43-04	072-4P-100 Coin Sw. Harness
MGSK-43-05	072-3P-100 Counter Harness
MGSK-43-06	072-9P-250 Power Harness
TKGU-13-17	2P-860 Speaker Harness



**MDS P.C. Board Assembly**

<b>PART NO.</b>	<b>DESCRIPTION (Reference Designations and Locations)</b>	
MDST-21-11	P.C. Board Assembly	
MDST-21-12	2A03 Microprocessor	(2J,8J)
MDST-21-13	HM6116 2k × 8bit Static RAM, 250ns	(6E)
MDST-21-14	MB8416-15 2k × 8bit Static CMOS RAM 150ns	(8L)
MDST-21-15	TC5533P-A 4k × 8bit Static RAM	(2C)
MDST-21-16	TC5533P-B 4k × 8bit Static RAM	(8C)
MDST-21-17	74LS00 Quad 2-input NAND LS TTL	(4C, 5C)
MDST-21-18	74LS04 Hex Inverters LS TTL	(1L, 2K, 4E, 5E)
MDST-21-19	74LS10 Tri 3-input NAND LS TTL	(4D)
MDST-21-20	74LS32 Hex 2-input AND LS TTL	(4A, 4B, 5A, 5B)
MDST-21-21	74LS74 Dual D-Flip Flops LS TTL	(5D)
MDST-21-22	74LS123 Dual Retriggerable Single Shots LS TTL	(1J)
MDST-21-23	74LS138 Dual 2 to 4 Demultiplexers LS TTL	(1F, 6F)
MDST-21-24	74LS157 2 to 1 Data Selectors LS TTL	(5J, 5K, 6J, 6K)
MDST-21-25	74LS165 8bit Shift register LS TTL	(6M, 6N, 7P, 8P)
MDST-21-26	74LS240 Octal 3 State Bus. Inverters LS TTL	(7M, 7N, 8M, 8N)
MDST-21-27	74LS245 Octal 3 State Bus Transceivers LS TTL	(3K, 8K)
MDST-21-28	74LS373 Octal 3 State D-Latches LS TTL	(2E, 8E)
MDST-21-29	74F04 Hex Inverters FAST TTL	(5H)
MDST-21-30	4066 Quad Analog Switches C-MOS	(2P, 4P)
MDST-21-31	LM324 Hex Operational Amplifiers	(1P, 3P)
MDST-21-32	LM3900 Hex Operational Amplifiers	(5N, 5R)
MDST-21-33	PST518A Reset IC	(1K)
MDST-21-34	2SA933 Silicon PNP Transistor	(Q3, Q7, Q13 ~ Q16, Q19 ~ Q22, Q26, Q27)
MDST-21-35	2SC1740 Silicon NPN Transistor	(Q1, Q2, Q4 ~ Q6, Q8, Q9, Q12, Q17, Q18, Q23 ~ Q25)
MDST-21-36	2SD592 Silicon NPN Transistor	(Q10, Q11)
MDST-21-37	1S953 Silicon Switching Diode	(D1, D2, D5, D7, D9 ~ D11)
MDST-21-38	W03B Silicon Diode	(D3, D4, D6, D8)
MDST-21-39	27 Ω 1/4W ± 5% Resistor	(R4)
MDST-21-40	33 Ω 1/4W ± 5% Resistor	(R22, R30, R36, R38, R45 R47, R72, R89)
MDST-21-41	100 Ω 1/4W ± 5% Resistor	(R79, R80, R95, R97)
MDST-21-42	330 Ω 1/4W ± 5% Resistor	(R8, R20, R28, R29, R48, R49, R70, R71, R73, R91)
MDST-21-43	680 Ω 1/4W ± 5% Resistor	(R119)
MDST-21-44	1K Ω 1/4W ± 5% Resistor	(R31, R32, R92, R93)
MDST-21-45	1.2K Ω 1/4W ± 5% Resistor	(R37, R43)
MDST-21-46	2.2K Ω 1/4W ± 5% Resistor	(R6, R11, R12, R14, R15, R23, R24, R27, R39 ~ R42, R50, R51, R54, R55, R64, R65, R68, R69, R81, R87)
MDST-21-47	3.3K Ω 1/4W ± 5% Resistor	(R77)
MDST-21-48	4.7K Ω 1/4W ± 5% Resistor	(R13, R17, R25, R26, R52, R53, R66, R67)

**MDS P.C. Board Assembly (continued)**

<b>PART NO.</b>	<b>DESCRIPTION (Reference Designations and Locations)</b>	
MDST-21-49	10K $\Omega$ 1/4W $\pm$ 5% Resistor	(R3, R5, R7, R16, R18, R19, R21, R33, R56 R63, R75, R82, R83, R85, R86, R120)
MDST-21-50	12K $\Omega$ 1/4 W $\pm$ 5% Resistor	(R76, R96, R98)
MDST-21-51	20K $\Omega$ 1/4W $\pm$ 5% Resistor	(R94, R99)
MDST-21-52	33K $\Omega$ 1/4W $\pm$ 5% Resistor	(R1, R2)
MDST-21-53	100K $\Omega$ 1/4W $\pm$ 5% Resistor	(R10, R35, R84, R103, R121)
MDST-21-54	150K $\Omega$ 1/4W $\pm$ 5% Resistor	(R74, R118)
MDST-21-55	360K $\Omega$ 1/4 W $\pm$ 5% Resistor	(R107, R114)
MDST-21-56	750K $\Omega$ 1/4W $\pm$ 5% Resistor	(R101, R108, R109, R110, R115, R116)
MDST-21-57	1M $\Omega$ 1/4W $\pm$ 5% Resistor	(R102, R106, R112, R117)
MDST-21-58	1.8M $\Omega$ 1/4W $\pm$ 5% Resistor	(R90, R105)
MDST-21-59	2.2M $\Omega$ 1/4W $\pm$ 5% Resistor	(R81, R87, R100, R104)
MDST-21-60	1K $\Omega$ $\times$ 8 Series Resistor Array	(RM1, RM2, RM5, RM8, RM11, RM14, RM17)
MDST-21-61	68 $\Omega$ $\times$ 4 Parallel Resistor Array	(RM3, RM4, RM6, RM7, RM9, RM10, RM12, RM13, RM15, RM16)
MDST-21-62	33pF 50V Ceramic Disc Capacitor	(C35, C91, C92)
MDST-21-63	68pF 50V Ceramic Disc Capacitor	(C25, C86)
MDST-21-64	100pF 50V Ceramic Disc Capacitor	(C38, C42, C43, C46)
MDST-21-65	220pF 50V Ceramic Disc Capacitor	(C26 ~ 29, C34, C45)
MDST-21-66	0.01 $\mu$ F 50V Ceramic Disc Capacitor	(C9, C10, C89, C90)
MDST-21-67	0.1 $\mu$ F 25V Ceramic Disc Capacitor	(C100 ~ C178)
MDST-21-68	0.2 $\mu$ F 12V Ceramic Disc Capacitor	(C4, C12)
MDST-21-69	0.047 $\mu$ F 50V Film Capacitor	(C37, C39, C40, C44)
MDST-21-70	3.3 $\mu$ F 16V Al. Electrolytic Capacitor	(C15 ~ C18, C31, C32)
MDST-21-71	10 $\mu$ F 16V Al. Electrolytic Capacitor	(C3, C5, C6, C11, C13, C14, C19 ~ C24, C30, C33, C36, C41, C47 ~ C85)
MDST-21-72	47 $\mu$ F 16V Al. Electrolytic Capacitor	(C2)
MDST-21-73	100 $\mu$ F 16V Al. Electrolytic Capacitor	(C1)
MDST-21-74	100 $\mu$ F 25V Al. Electrolytic Capacitor	(C8)
MDST-21-75	470 $\mu$ F 16V Al. Electrolytic Capacitor	(C7, C87, C88)
MDST-21-76	500 $\Omega$ Variable Resistor. Red Cap	(VR1, VR3)
MDST-21-77	500 $\Omega$ Variable Resistor. Green Cap	(VR2, VR4)
MDST-21-78	500 $\Omega$ Variable Resistor. Blue Cap	(VR5, VR6)
MDST-21-79	21.47727MHz Crystal	(X1)
MDST-21-80	8 position dip switch	(SW1, SW2)
MDST-21-81	28P IC socket	(1A, 1B, 1C, 1D, 2A, 6A, 6B, 6C, 6D, 8A, 8B)
MDST-21-82	40P IC socket	(2F, 2J, 8F, 8J)
MDST-21-83	Type 32-4 (UM3 $\times$ 2) Battery Case	
MDST-21-84	Bolt with washer M2.6	
MDST-21-85	Flat washer M2.6	
MDST-21-86	Nut Plate M2.6	
MDST-21-87	Dry Battery "AA" T18L Beaded tie	

**Power Supply Parts (PP7B)**

Part No.	Description	
TKG-18-01	(PP-7B) Power Supply	Complete
TKG-18-02	Transistor	2SC2555
TKG-18-03	Transistor	2SA817
TKG-18-04	Transistor	2SC2535
TKG-18-05	Transistor	2SA1015
TKG-18-06	Fast Recovery Center Tap Diode	CTU-2S
TKG-18-07	Shot Key Diode	CTB33S
TKG-18-08	Silicon Rectifier Diode	S4VB40 4A 400VW
TKG-18-09	Silicon Rectifier Diode	1B4B41
TKG-18-10	Hybrid IC	3D-1001
TKG-18-11	3 Terminals Regulators	7824
TKG-18-12	3 Terminals Regulators	7812
TKG-18-13	Thyristors	5P4M
TKG-18-14	Thyristors	03P05M
TKG-18-15	Diode	1S954
TKG-18-16	Diode	10DF-4
TKG-18-17	Photo Coupler	PC614
TKG-18-18	Zener Diode	05Z5.6U
TKG-18-19	Zener Diode	05Z5.1L
TKG-18-20	Zener Diode	05Z5.6Z
TKG-18-21	Ceramic Capacitor	DE0707B471K2K 470pF2KV
TKG-18-22	Ceramic Capacitor	0.1MF 50V
TKG-18-23	Film Capacitor	MDD2J473M 0.074MF 630VW
TKG-18-24	Film Capacitor	0.01MF 50V
TKG-18-25	Film Capacitor	1000pF 50V
TKG-18-26	Aluminum Electrolytic Capacitor	1000MF 50V
TKG-18-27	Aluminum Electrolytic Capacitor	47MF 35V
TKG-18-28	Aluminum Electrolytic Capacitor	47MF 16V
TKG-18-29	Aluminum Electrolytic Capacitor	3300MF 10V
TKG-18-30	Aluminum Electrolytic Capacitor	100MF 25V
TKG-18-31	Aluminum Electrolytic Capacitor	10MF 16V
TKG-18-32	Aluminum Electrolytic Capacitor	330MF 200V
TKG-18-33	Aluminum Electrolytic Capacitor	1000MF 25V
TKG-18-34	Resistor (Coil Winding)	20 OHM 2W
TKG-18-35	Resistor (Carbon)	1K OHM 1/4W ± 5%
TKG-18-36	Resistor (Carbon)	51 OHM 1/4W ± 5%
TKG-18-37	Resistor (Carbon)	12 OHM 1/2W ± 5%
TKG-18-38	Resistor (Carbon)	470 OHM 1/4W ± 5%
TKG-18-39	Resistor (Carbon)	22 OHM 1/2W ± 5%
TKG-18-40	Resistor (Carbon)	20K OHM 1/2W ± 5%

**Power Supply Parts (PP7B), continued**

Part No.	Description	
TKG-18-41 TKG-18-42 TKG-18-43	Resistor (Carbon) Resistor (Cement) Resistor (Metal Oxide)	100 OHM 1/2W 20 OHM 5W 510 OHM 3W
TKG-18-44 TKG-18-45 TKG-18-46 TKG-18-47 TKG-18-48 TKG-18-49	Variable Resistor Variable Resistor Shunt Resistor SC Coil SF Coil SF Coil	50K OHM GF06P 2K OHM GF06P 5m OHM SC-02 100MH 5A 800MH 2A
TKG-18-50 TKG-18-51 TKG-18-52	Oscillator Transformer Oscillator Transformer Oscillator Transformer	EC-35 Type 3D-0097 EI-30 Type 3D-0097 EE-16 Type 3D-1000
TKG-18-53	Fuse Element	FGMB 4A 125V NR Type

**MONITOR PARTS (20-EZV)**

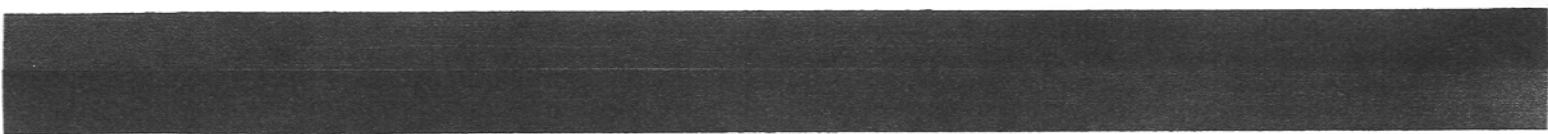
<b>PART #</b>	<b>DESCRIPTION</b>
MON-01-01	IC LA1464
MON-01-03	IC LA5112
MON-02-01	DIODE 1S1555
MON-02-02	DIODE 1S1553
MON-02-03	DIODE EU-1
MON-02-04	DIODE RU2
MON-02-05	DIODE SIB01-02
MON-02-06	DIODE ERC04-06
MON-02-07	DIODE 1S188TV
MON-02-50	ZENER DIODE EQA01-35
MON-02-51	ZENER DIODE EQA01-07
MON-02-52	ZENER DIODE EQA01-12
MON-02-53	ZENER DIODE HZ7
MON-03-01	TRANSISTOR 2SA673(A)
MON-03-02	TRANSISTOR 2SA940
MON-03-03	TRANSISTOR 2SA659
MON-03-51	TRANSISTOR 2SC536
MON-03-52	TRANSISTOR 2SC2551
MON-03-53	TRANSISTOR 2SC1015
MON-03-54	TRANSISTOR 2SC1051
MON-03-55	TRANSISTOR 2SC1507
MON-03-56	TRANSISTOR 2SC2073
MON-03-57	TRANSISTOR 2SC2228
MON-03-58	TRANSISTOR 2SC2271
MON-03-76	TRANSISTOR 2SD386-AY
MON-03-77	TRANSISTOR 2SD870
MON-03-78	TRANSISTOR 2SD1090
MON-03-79	TRANSISTOR 2SD901
MON-03-80	TRANSISTOR 2SD869
MON-05-01	FUSE RESISTOR 1W 39 OHM
MON-05-02	FUSE RESISTOR 2W 330 OHM
MON-05-03	FUSE RESISTOR 1/2W 1 KOHM
MON-05-04	FUSE RESISTOR 1W 3.3 OHM
MON-05-08	3 KOHM VARIABLE RESISTOR
MON-05-10	10 KOHM VARIABLE RESISTOR
MON-05-12	50 KOHM VARIABLE RESISTOR
MON-05-14	200 KOHM VARIABLE RESISTOR
MON-05-16	450 OHM VARIABLE RESISTOR
MON-05-18	300 OHM VARIABLE RESISTOR
MON-06-01	TRANSFORMER A7007
MON-06-02	LINEARITY COIL (A0285)
MON-06-04	WIDTH COIL (A7018)
MON-06-05	FILTER COIL (L7133)
MON-06-06	LINE FILTER (L019D)
MON-06-21	FLYBACK TRANSFORMER F5024
MON-06-50	YOKE COIL (20-5F TYPE)
MON-06-60	PURITY MAGNET ASSY (20-5F)
MON-07-01	FUSE 4A
MON-07-02	FUSE 0.3A
MON-08-01	THERMIST SDT-500
MON-08-02	THERMIST SDT-1000
MON-08-50	POSISTOR PTH451C05
MON-09-00	CERAMIC CAPACITOR 5PF 50V
MON-09-02	CERAMIC CAPACITOR 470PF 500V
MON-09-04	CERAMIC CAPACITOR 4700 PF 500V

**MONITOR PARTS (20-EZV), CONTINUED**

<b>PART #</b>	<b>DESCRIPTION</b>
MON-09-06	CERAMIC CAPACITOR 820PF 500V
MON-09-08	CERAMIC CAPACITOR 1000 PF 1000V
MON-09-10	CERAMIC CAPACITOR 200PF 2000V
MON-09-12	CERAMIC CAPACITOR 500PF 2000V
MON-09-50	ELECTRO CAPACITOR 47MF 10V
MON-09-52	ELECTRO CAPACITOR 470MF 10V
MON-09-54	ELECTRO CAPACITOR 100MF 16V
MON-09-56	ELECTRO CAPACITOR 220MF 16V
MON-09-58	ELECTRO CAPACITOR 4.7MF 25V
MON-09-60	ELECTRO CAPACITOR 220MF 25V
MON-09-62	ELECTRO CAPACITOR 330MF 25V
MON-09-64	ELECTRO CAPACITOR 1MF 160V
MON-09-66	ELECTRO CAPACITOR 10MF 160V
MON-09-68	ELECTRO CAPACITOR 100MF 160V
MON-09-70	ELECTRO CAPACITOR 470MF 160V
MON-10-00	MYLAR CAPACITOR 0.047MF 100V
MON-10-02	MYLAR CAPACITOR 0.082MF 50V
MON-10-04	MYLAR CAPACITOR 2700PF 50V
MON-10-06	MYLAR CAPACITOR 0.33MF 50V
MON-10-08	MYLAR CAPACITOR 0.1MF 50V
MON-10-10	MYLAR CAPACITOR 8200PF 50V
MON-10-12	MYLAR CAPACITOR 0.015MF 50V
MON-10-14	MYLAR CAPACITOR 0.056MF 50V
MON-10-16	MYLAR CAPACITOR 0.068MF 50V
MON-10-30	POLYPRO CAPACITOR 0.056MF 160V
MON-10-32	POLYPRO CAPACITOR 0.47MF 200V
MON-10-34	POLYPRO CAPACITOR 0.022MF 200V
MON-10-36	POLYPRO CAPACITOR 2200PF 630V
MON-10-38	POLYPRO CAPACITOR 6800PF 2000V
MON-11-00	SOLID RESISTOR 1/2W 1.8 KOHM
MON-11-30	CARBON RESISTOR 1.2W 100 OHM
MON-11-32	CARBON RESISTOR 1/2W 1 KOHM
MON-11-34	CARBON RESISTOR 1/2W 10 KOHM
MON-11-36	CARBON RESISTOR 1/2W 120 OHM
MON-11-38	CARBON RESISTOR 1/2W 18 OHM
MON-11-40	CARBON RESISTOR 1/2W 39 KOHM
MON-12-00	WIRE WD RESISTOR 20W 180 OHM
MON-12-02	WIRE WD RESISTOR 7W 470 OHM
MON-12-04	WIRE WD RESISTOR 7W 1.5 OHM
MON-12-30	OXIDE M RESISTOR 1W 1 KOHM
MON-12-32	OXIDE M RESISTOR 1W 18 KOHM
MON-12-34	OXIDE M RESISTOR 1W 330 OHM
MON-12-36	OXIDE M RESISTOR 1W 8.2 KOHM
MON-12-38	OXIDE M RESISTOR 2W 10 KOHM
MON-12-40	OXIDE M RESISTOR 2W 5.6 KOHM
MON-12-42	OXIDE M RESISTOR 3W 1.2 KOHM
TKGU-20-01	VIDEO PICTURE TUBE (510UTB22)
TKGU-20-02	MONITOR MAIN PCB (W/COMPONENTS)
TKGU-20-03	MONITOR AUDIO PCB (W/COMPONENTS)
TKGU-20-04	MONITOR CRT PCB (W/COMPONENTS)
TKGU-20-07	MONITOR INVERTER PCB (W/COMPONENTS)







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