

FIELD CONVERSION KIT

SAC 1, SAC 1A, SAC 1B,
SAC-MAN & C.T. MAINFRAME

Bally

SENTE™

10601 W Belmont Avenue
Franklin Park, Illinois 60131
U S A .

Phone (312) 451-9200 Cable Address MIDCO Telex No. 72-1596

WARNING

THIS GAME MUST BE GROUNDED. FAILURE TO DO SO MAY RESULT IN DESTRUCTION TO ELECTRONIC COMPONENTS.

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 FCC 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.

ELECTRICAL BULLETIN: FOR ALL APPARATUS COVERED BY THE CANADIAN STANDARDS ASSOCIATION (CSA) STANDARD C22.2 NO. 1, WHICH EMPLOYS A SUPPLY CORD TERMINATED WITH A POLARIZED 2-PRONG ATTACHMENT PLUG.

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

ATTENTION: POUR PREVENIR CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR. UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.



Invites You To Use

**OUR TOLL FREE NUMBERS FOR
SERVICE INFORMATION CONCERNING THIS GAME, OR ANY
OTHER BALLY/SENTE™ GAME YOU NOW HAVE ON LOCATION.**

**CALL US FOR PROMPT, COURTEOUS
ANSWERS TO YOUR PROBLEMS.**

Video - Continental U.S. 800-323-7182



10601 West Belmont Avenue Franklin Park, Illinois, 60131 phone (312) 451-9200

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Printed in U.S.A.

WARNING

The parts contained in this field conversion kit must be installed without deviation from the instructions contained in this manual and kit. Failure to follow these instructions in every detail may result in the creation of illegal interference to radio and TV reception.

BALLY SENTE has verified that this field conversion kit, when installed in the game(s) specified in this manual, complies with the requirements in Part 15 of the FCC rules for a Class A computing device. Operation of this equipment in a residential area may cause unacceptable interference to radio and TV reception, requiring the operator to take whatever steps are necessary to correct the interference.

BALLY SENTE will not be responsible for incomplete or improper conversions, or installation in a game for which this field conversion kit is not intended. If this field conversion kit is installed in a game that is not specified in this manual or in a previously converted game, the operator is required to take whatever steps are necessary to insure compliance with the requirements in Part 15, Subpart J, of the FCC Rules for a Class A computing device.

SPECIAL NOTE:

DO NOT DISCARD ANY OF THE PARTS YOU REMOVE
WHEN MAKING THE MODIFICATIONS EXPLAINED IN
THIS MANUAL.

THEY WILL BE RE-USED IN FUTURE CONVERSION KIT!

**UPRIGHT KIT CONVERSION PROCEDURE
FOR SAC 1B, SAC 1A OR SAC 1
OR SAC-MAN***

To Change Attract (Header) Art

1. Remove bolts holding in Attract Retainer located at top front of cabinet. Remove Attract Retainer.
2. Slide Attract Glass up and out of cabinet.
3. Remove old Attract Art and replace with new Attract Art.
4. Slide Attract Glass containing new art back into cabinet.
5. Replace and secure Attract Retainer.
6. Clean front of Attract Glass.

To Change Control Panel Insert Assembly (SAC 1B, SAC 1A or SAC 1)

1. Power off SAC 1B (SAC 1A or SAC 1) unit using switch on top of cabinet toward the back.
2. Unlock Coin Mech door and reach through to unlatch large front door from inside cabinet. (One side latch for SAC 1A or SAC 1. One top latch and one bottom latch for SAC 1B.)
3. unlatch two (2) clamps locating inside the cabinet at each end of Control Panel.
4. Disconnect the Control Panel Insert Assembly harness from the main harness of SAC 1B (SAC 1A or SAC 1) unit.
5. **SAC 1B or SAC 1A Unit:** Swing out Control Panel on its hinge.
SAC 1 Unit: Lift Control Panel up, slide to right and pull down to remove. Carefully pull Control Panel harness wiring out of opening at rear of Control Panel tray.
6. Remove bolts and nuts securing the old Control Panel Insert Assembly to the Control Panel. Remove old Insert Assembly.
7. Install new Control Panel Insert Assembly by reversing this procedure.
8. Power on SAC 1B (SAC 1A or SAC 1) unit using switch at rear of cabinet.
9. Play game to check if all switches and controls are working properly.

To Change Game Cartridge

1. Power off SAC 1B (SAC 1A or SAC 1) unit using switch on top of cabinet toward the back.
2. Unlock Coin Mech door and reach through to unlatch large front door from inside cabinet.
3. Find Game Cartridge On/Off Switch located at bottom front right of Electronic Chassis just inside large front door (this switch may be used to power unit on and off in place of switch at rear of cabinet).
4. Turn Game Cartridge On/Off Switch off to permit Game Cartridge to slide out of Electronic Chassis.
5. Slide old Game Cartridge out of chassis.
6. Slide new Game Cartridge between runners to plug into the Main PC Board. Be sure Game Cartridge is securely plugged in. ROMs on the Game Cartridge should be facing to the left as you look into the cabinet.
7. Turn Game Cartridge On/Off Switch back on (this also locks cartridge into place).
8. Check game option switch settings.
9. Close and latch large front door.
10. Close and lock Coin Mech door.
11. Power on SAC 1B (SAC 1A or SAC 1) unit using switch at rear of cabinet.
12. Play game to test if unit is working properly.

BE SURE TO SAVE GAME CARTRIDGE, CONTROL PANEL INSERT, AND ATTRACT (HEADER FOR REUSE).

*** PLEASE REFER TO YOUR "SAC-MAN" FIELD CONVERSION KIT INSTRUCTION MANUAL FOR KIT CONVERSION PROCEDURE INFORMATION.**

COCKTAIL TABLE KIT CONVERSION PROCEDURE

GENERAL:

The basic purpose of this instruction sheet is to give you some simple guide lines for installing your game kit in the COCKTAIL TABLE MAINFRAME portion of your game cabinet. Guidelines, where applicable, are provided for removing all the parts of the old game. Turn your game off, unplug it from it's power source, and open it's Coin Door.

1. To convert the two Control Insert Assemblies:

NOTE: Each of the Control Insert Assemblies is held in place to the Control Shelf Sub-assembly by several screws. Two winghead screws (and washers) hold a Light Shield and the Control Insert Assembly against two Locating Brackets (with each bracket mounted to a Control Shelf Side piece and the inside of the Mainframe Cabinet). Three screws hold the bottom of the Control Insert Assembly to the hinge portion of a Bottom Plate and Hinge Assembly (which is also mounted to two Control Shelf Side pieces and the inside of the Mainframe Cabinet).

A. Follow the "Cabinet Opening Instructions" in the following illustration to remove the table top from the cabinet's pedestal.

B. Remove the Control Insert Assembly by performing the following:

1. Disconnect the Control Insert Assembly's cabling from the cabling of the Mainframe cabinet.
2. Remove the winghead screws and washers holding the Control Insert Assembly to the Light Shield and the two Locating Brackets.
3. Remove the three screws holding the Control Insert Assembly to the Bottom Plate and Hinge Assembly.
4. Lift out the Assembly.
5. Remove the Light Shield and Lamp Assembly held by screws to the Control Insert Assembly.

C. To install the new game's two Control Insert Assemblies, reverse this procedure but leave the table top off of the cabinet's pedestal.

D. Player 1 control is always on the left side of game looking from the coin door.

2. Replace the old game's P.C. Cartridge with the P.C. Cartridge from your new game kit by referring to the following illustration.

3. Secure the table top to the cabinet's pedestal.

4. To convert the Underlay:

A. Remove the screws which secure the table top Main-Display-Glass in place and then remove the table top Main-Display-Glass.

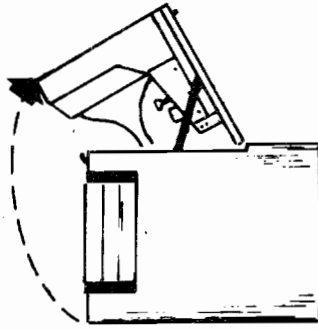
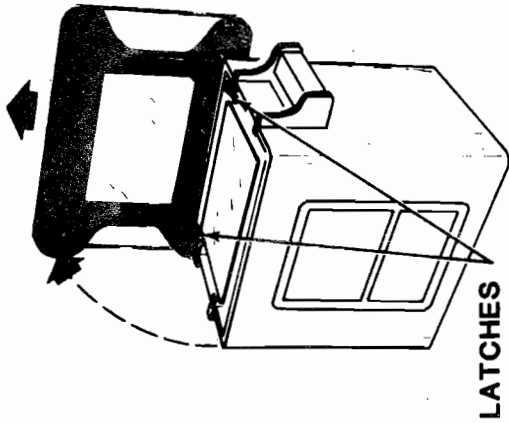
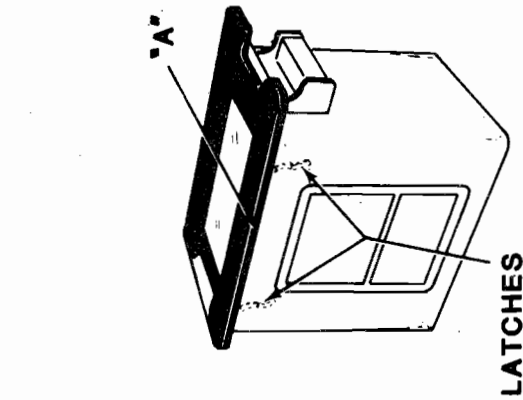
B. The old Underlay can be lifted off of the table top.

C. The new Underlay (as provided in the new game Field Conversion Kit) can be installed by reversing this procedure.

5. Close the Coin Door, reconnect the game's Power Plug to it's power source, turn it on and run a Self-Test.

6. When through completing a positive Self-Test (everything checks good), your game is ready for use.

CABINET OPENING INSTRUCTIONS



TO SERVICE MONITOR AND OTHER ELECTRONIC COMPONENTS OF GAME:

I. OPEN COIN BOX DOOR

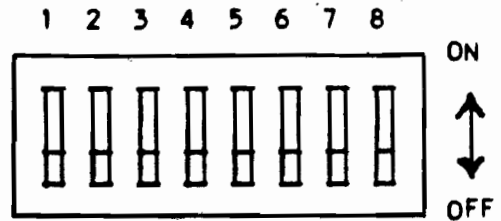
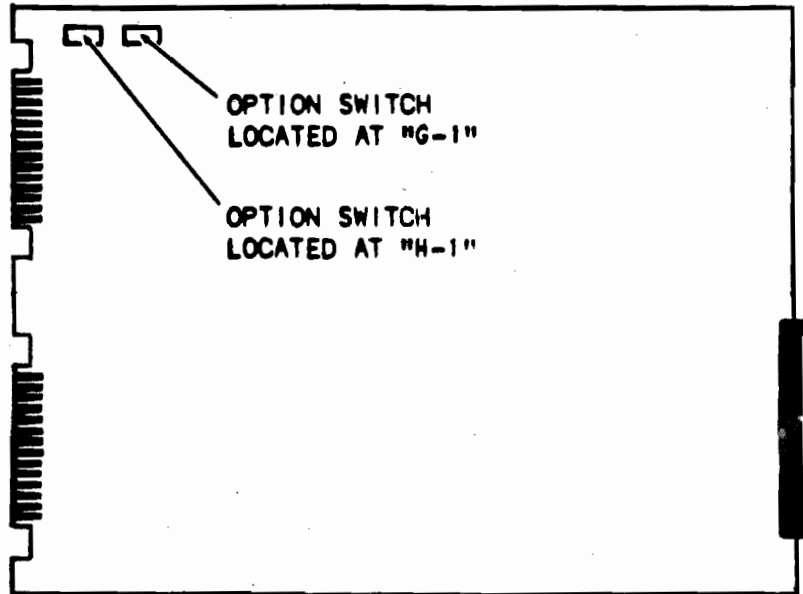
WARNING: RIGHT HAND LATCH IS CLOSE TO HIGH VOLTAGE ON MONITOR

A. RELEASE THE TWO LATCHES INDICATED IN ABOVE SKETCH

II. GRASP THE TABLE TOP AT "A", RAISE IT 90° AND LIFT IT STRAIGHT UP AND AWAY FROM THE GAME

III. RELEASE THE TWO MONITOR RETAINING LATCHES INDICATED ABOVE AND TILT MONITOR TO THE SIDE

C.P.U. BOARD REFERENCE DRAWING



Game Review

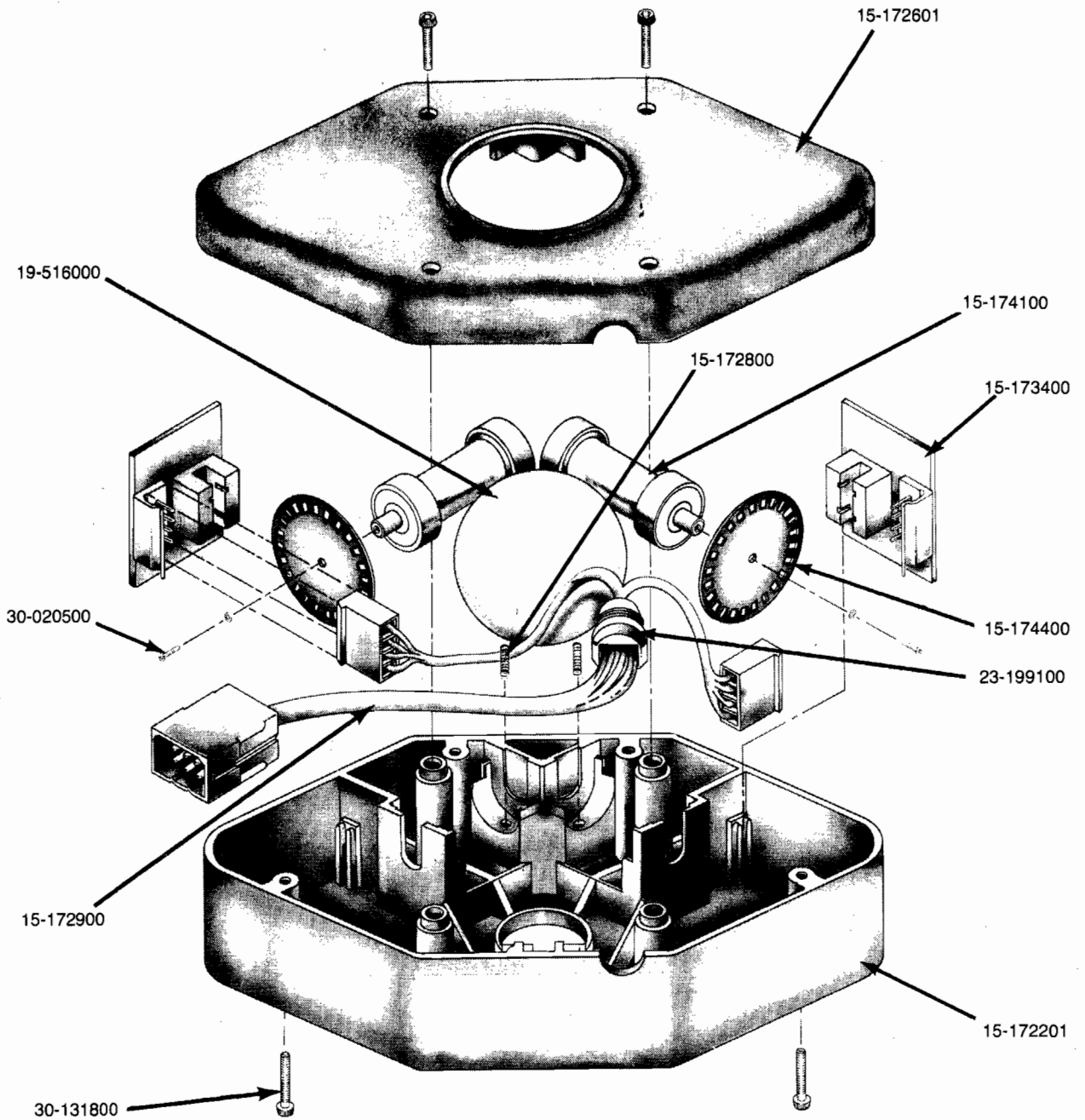
Self Test

Pressing the self-test switch on the chassis tray will cause the program to enter a sequenced self-test mode. First the screen RAM is tested by outputting a pattern to the monitor and checking it. This part of the test takes about 3 seconds and results in status screen that indicates whether the screen RAM is good and also indicates the status of the ROM checksums. Pressing start 1 will then go to the switch input test where the state of all the controls and option switches is presented to the user. Pressing start 1 again will take the user to the game score statistics screen where a cumulative graph of scores and other information is presented to the viewer. Next start 1 again will take the user to a similar game time statistics screen. On either this screen or the prior one, the user may choose to reset the cumulative statistics and high scores by pressing the start 2. Pressing start 1 yet again returns the user to the switch input screen. To exit self-test mode, the self-test switch must be returned to its original position on the game chassis.

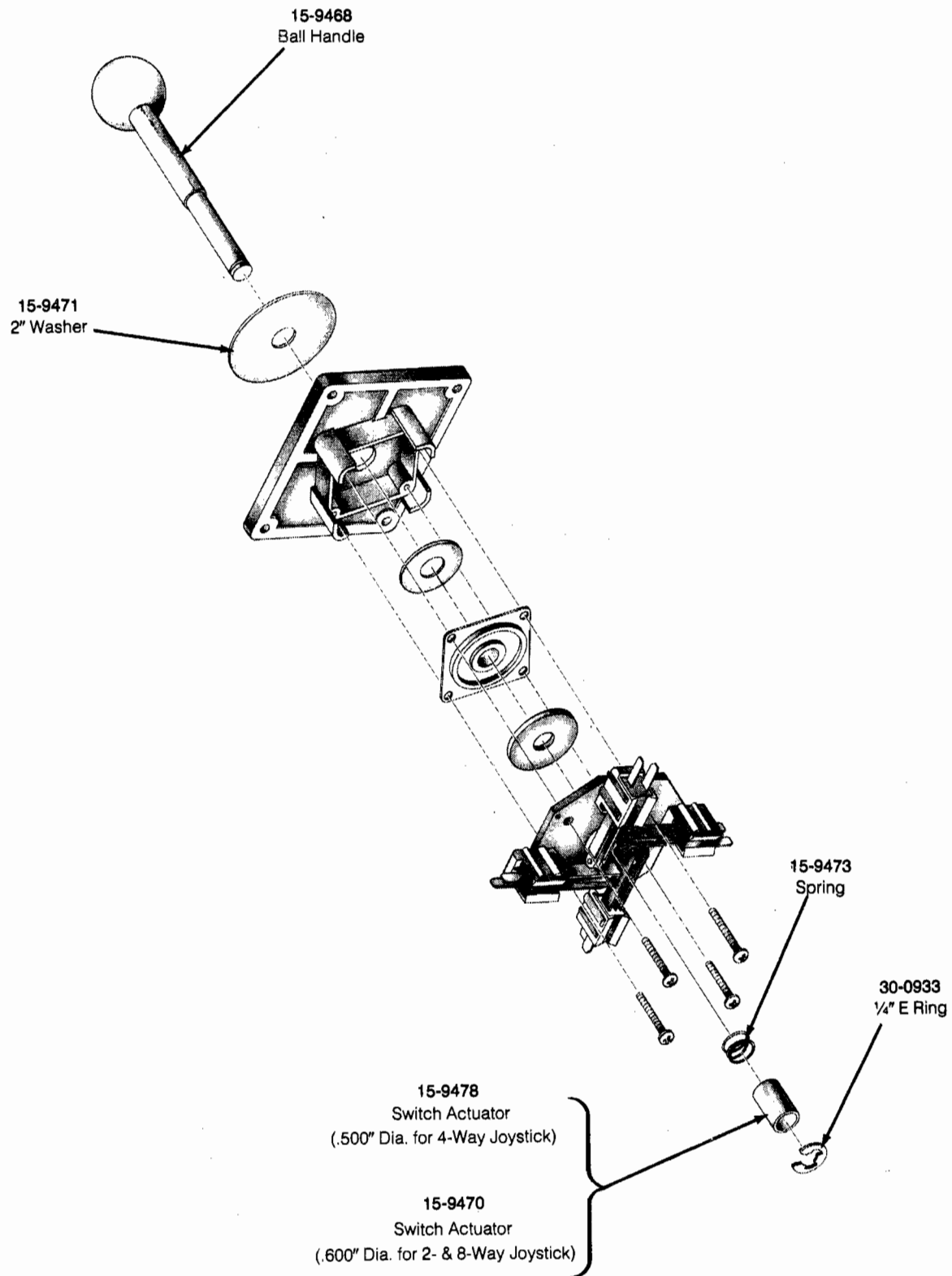
Attract Mode

1. When game is first powered on or when self-test mode is exited, a blank screen with the message loading appears for approximately 30 seconds. (This is to allow the sound circuitry to be initialized).
2. Title screen will appear (approx. 8 seconds).
3. High score screen will appear (approx. 8 seconds).
4. Demonstation screen will appear (approx. 8 seconds).
5. Credits screen will appear (approx. 10 seconds).
6. Excetera.
7. Cycle repeats from Step 2.

NOTE: FOR YOUR CONVENIENCE
THESE ARE WICO PART NUMBERS.



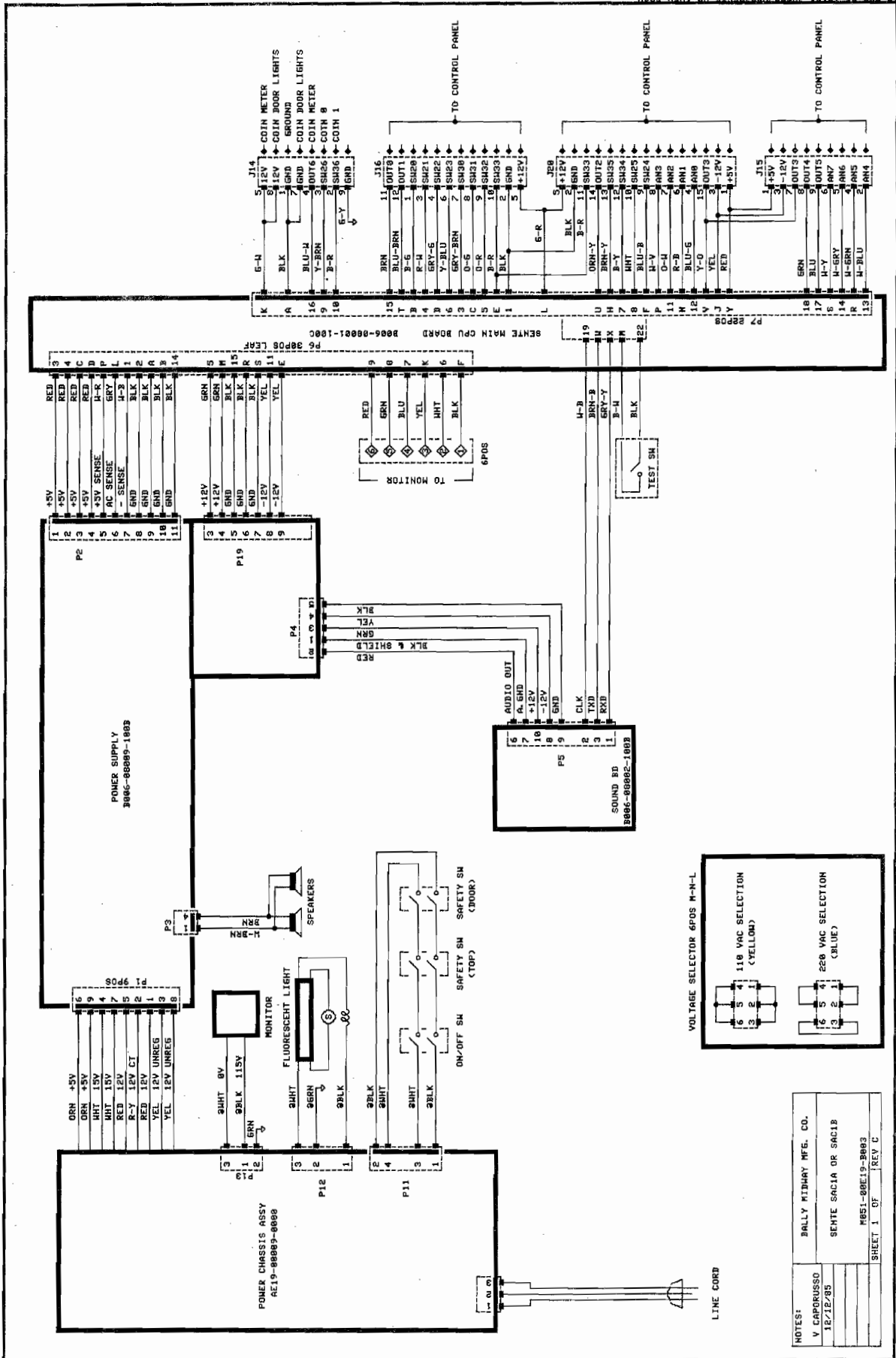
Track Ball Assembly
(700-0162-01)



**Wico Joystick Assembly
(700-0163-01)**

**WICO JOYSTICK ASSEMBLY
(700-0163-01)
PARTS LIST**

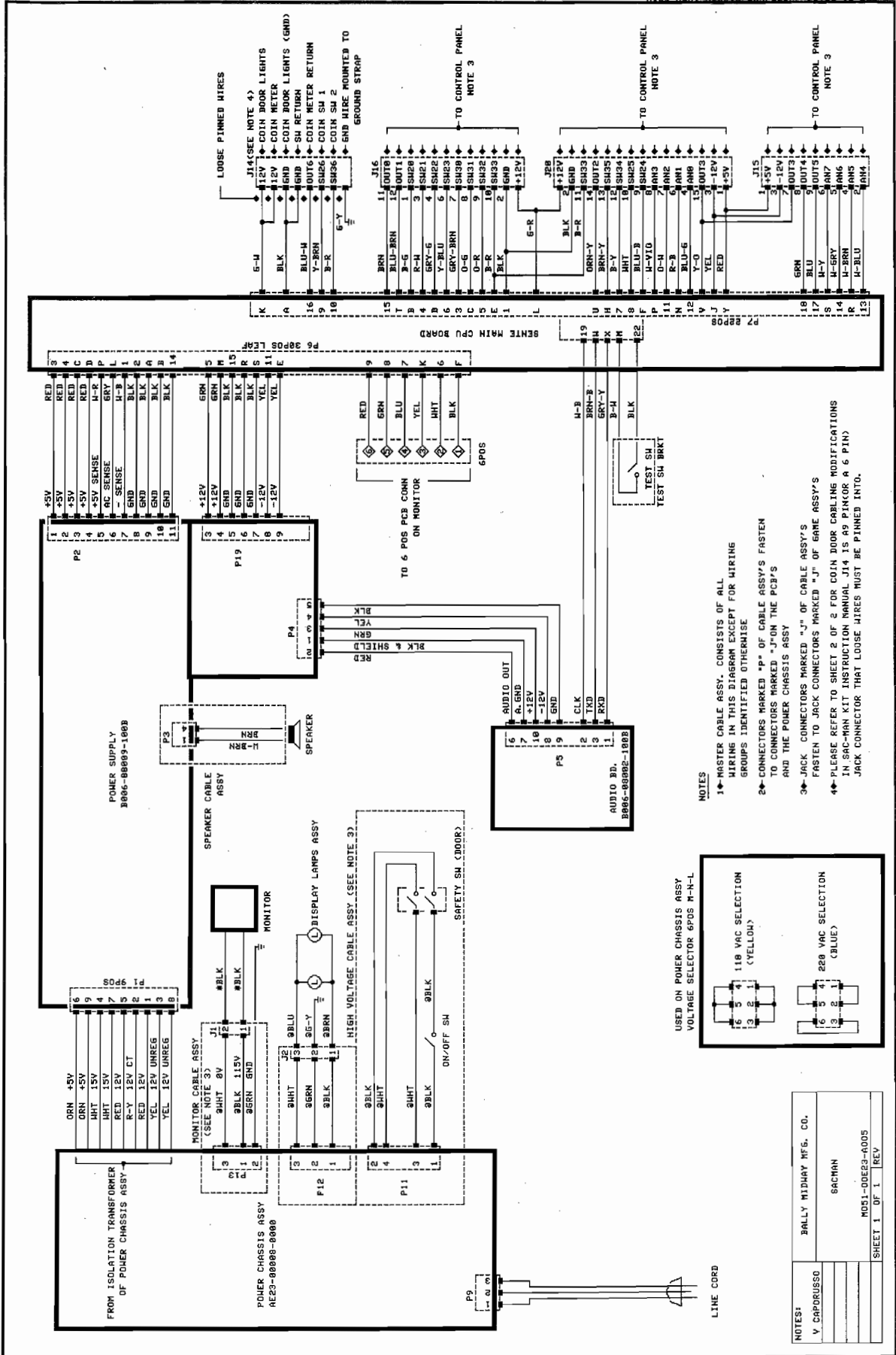
PART NO. (WICO)	DESCRIPTION	QUANTITY
15-9468	BALL HANDLE	1
15-9471	2" WASHER	1
15-9473	SPRING	1
15-9470	SWITCH ACTUATOR (.600" DIA. FOR 2- & 8-WAY JOYSTICK)	1
15-9478	SWITCH ACTUATOR (.500" DIA. FOR 4-WAY JOYSTICK)	1
30-0933	1/4" E RING	1



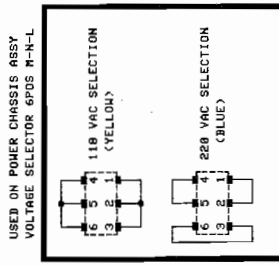
18 FEB 86 17:26 USER/MDBENTLE-DR INCH. DRN

NOTES:

BALLY KIDWAY MFG. CO.	
V. CAPORUSSO	
12/12/85	
SENTE SACIA OR SAC18	
M651-80E19-8883	
SHEET 1 OF	REV C

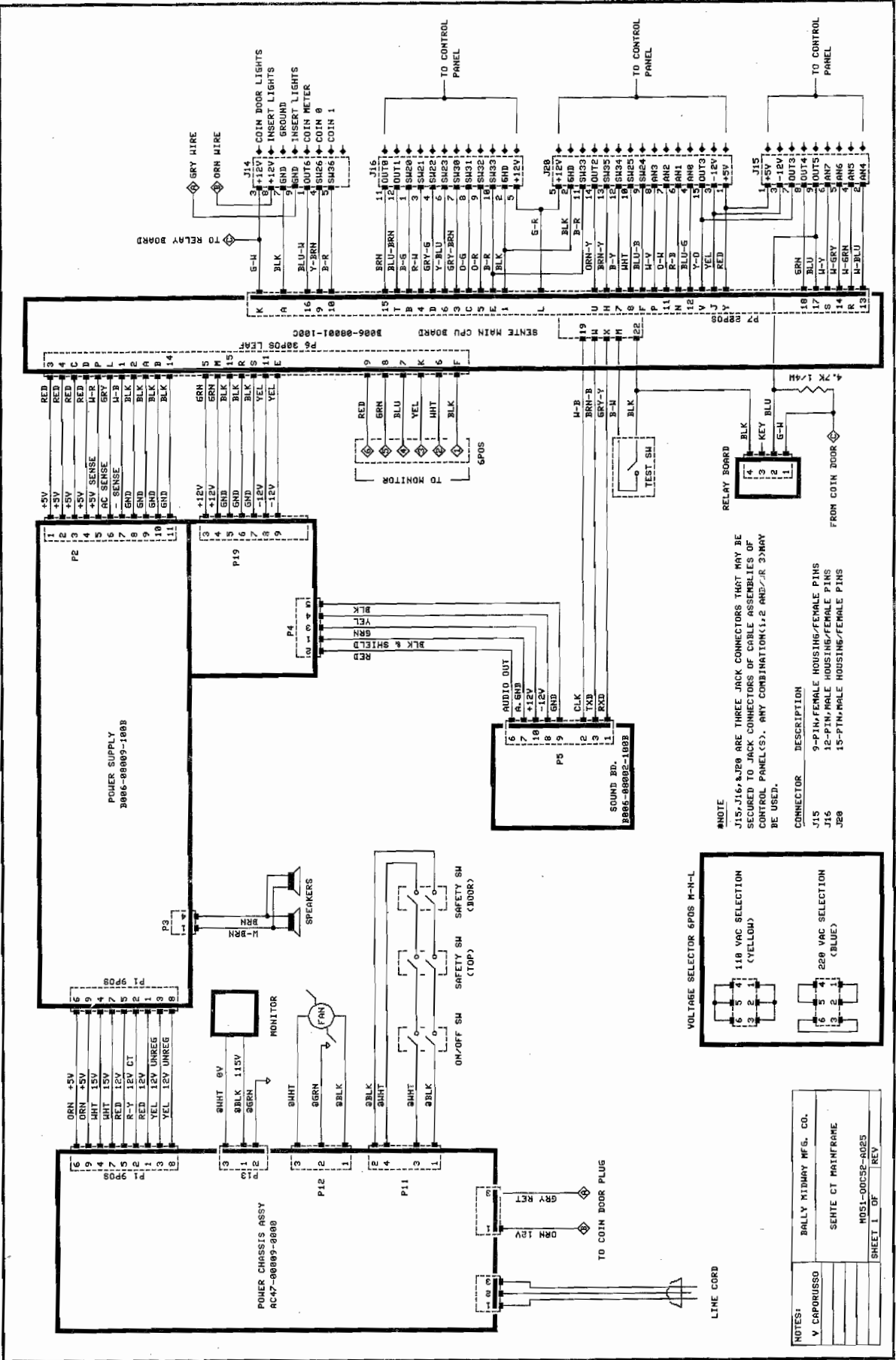


- NOTES**
- 1 MASTER CABLE ASSY. CONSISTS OF ALL WIRING IN THIS DIAGRAM EXCEPT FOR WIRING GROUPS IDENTIFIED OTHERWISE
 - 2 CONNECTORS MARKED "P" OF CABLE ASSY'S FASTEN TO CONNECTORS MARKED "J" ON THE PCB'S AND THE POWER CHASSIS ASSY
 - 3 JACK CONNECTORS MARKED "J" OF CABLE ASSY'S FASTEN TO JACK CONNECTORS MARKED "J" OF WARE ASSY'S
 - 4 PLEASE REFER TO SHEET 2 OF 2 FOR COIN DOOR CABLING MODIFICATIONS IN SAC-MAN KIT INSTRUCTION MANUAL J14 IS AS PIN (OR A 6 PIN) JACK CONNECTOR THAT LOOSE WIRES MUST BE PINNED INTO.



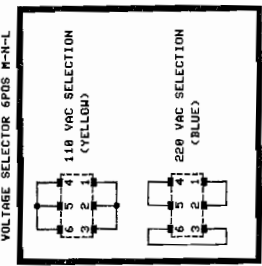
NOTES:

V. CAPORUSSO	BALLY MIDWAY MFG. CO.
	SACMAN
	MO51-00E23-RODS
	SHEET 1 OF 1 REV



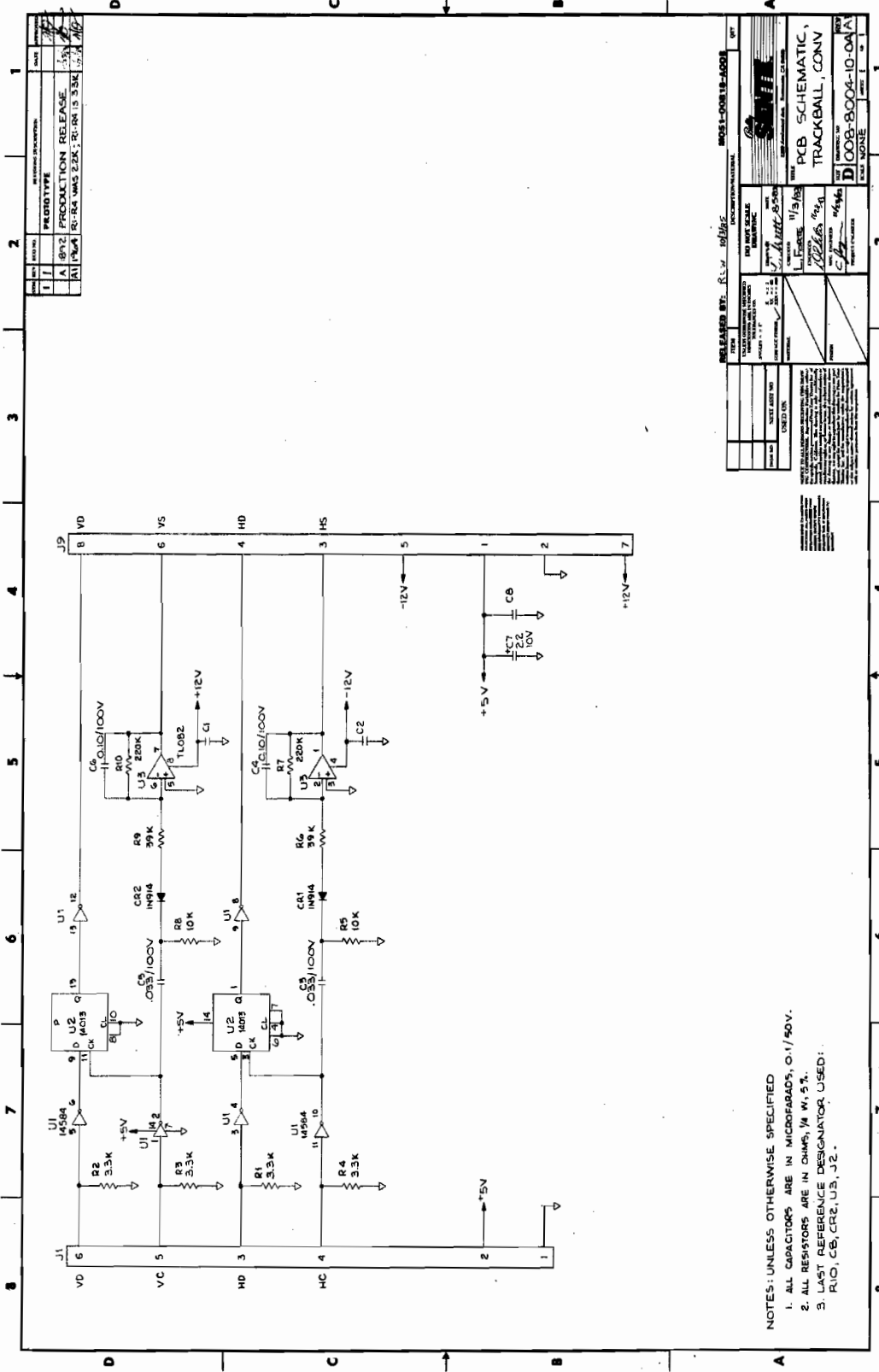
NOTE
 J15, J16 & J20 ARE THREE JACK CONNECTORS THAT MAY BE SECURED TO JACK CONNECTORS OF CABLE ASSEMBLIES OR CONTROL PANEL(S). ANY COMBINATION 1:2 HRS/D:R 3WAY BE USED.

CONNECTOR	DESCRIPTION
J15	9-PIN/FEMALE HOUSING/FEMALE PINS
J16	12-PIN/MALE HOUSING/FEMALE PINS
J20	15-PIN/MALE HOUSING/FEMALE PINS

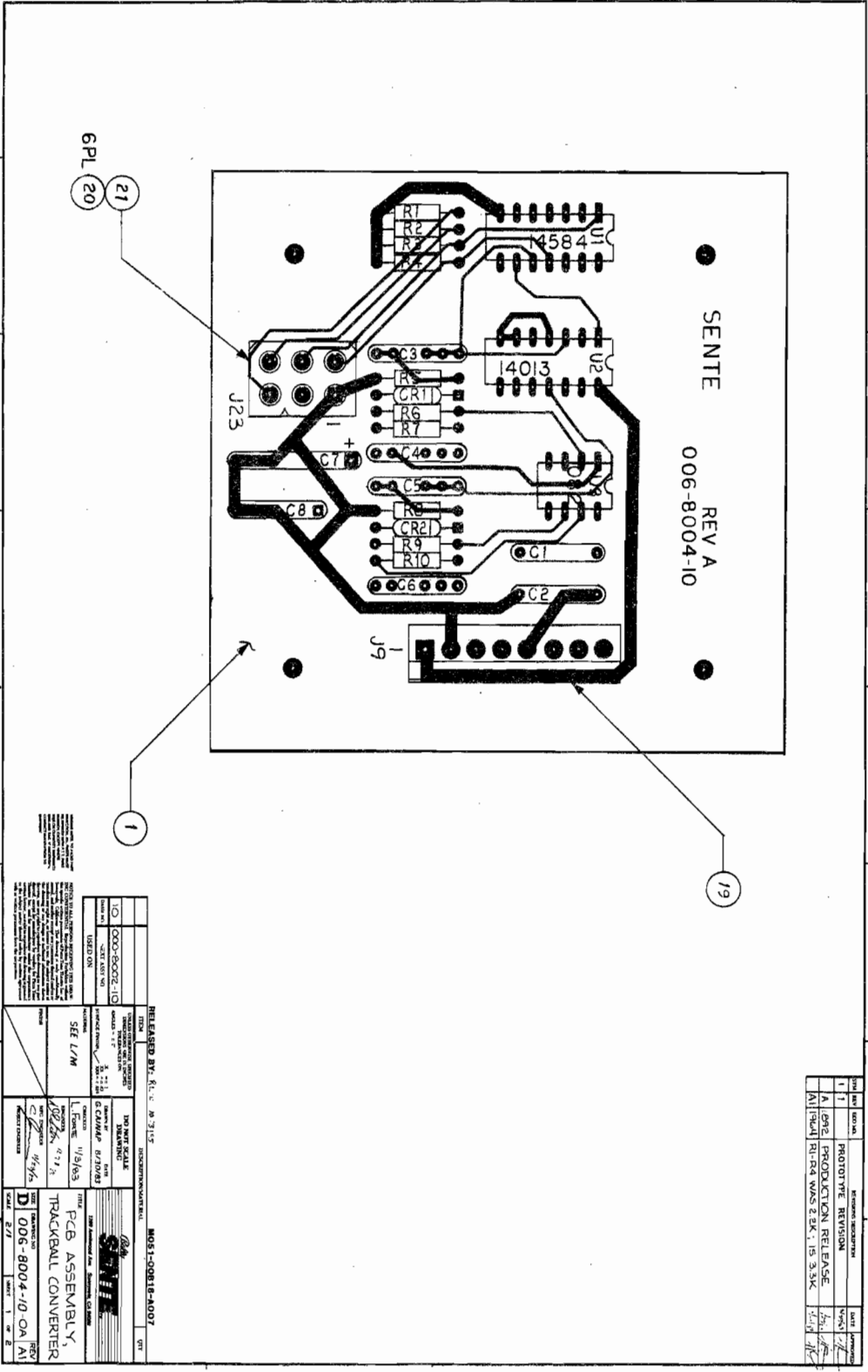


NOTES:

V CAPORUSSO	BALLY MIDWAY MFG. CO.
SENTE CT MAINFRAME	
M051-00C52-AD25	
SHEET 1 OF	REV



NOTES: UNLESS OTHERWISE SPECIFIED
 1. ALL CAPACITORS ARE IN MICROFARADS, 0.1/50V.
 2. ALL RESISTORS ARE IN OHMS, 1/4 W, 5%.
 3. LAST REFERENCE DESIGNATOR USED:
 R10, C8, CR2, U3, J2.



RELEASED BY: E.L. B. 3105 MOST-00818-A007	
ITEM NO. 006-8004-10 QTY. 1	DO NOT SCALE DATE 1/18/83 G. C. WARD / R. J. WARD
SEE L/M	DATE 1/18/83 1/18/83
PCB ASSEMBLY, TRACKBALL CONVERTER	D 006-8004-10-0A (A)

REV	DATE	DESCRIPTION	BY	CHKD
1		PROTOTYPE REVISION		
A		PRODUCTION RELEASE		
M		RE-PCB WAS 2 SKT. IS 3 SK		

**PCB ASSEMBLY, TRACKBALL CONVERTER
(006-8004-010A) (M051-00B18-A007)
PARTS LIST - SHEET 2 of 2**

ITEM	QTY.	PART NO.	REFERENCE	DESCRIPTION
1	1	007-8004-01-0A0		PCB,FAB,TRACKBALL CONVERTER
2				
3	1	210-0003-01	U2	IC,DIG,CMOS,4013B,DUAL D F/F
4	1	210-0009-01	U1	IC,DIG,CMOS,4584B,HEX INV.
5	1	260-0034-01	U3	IC,LIN,OP AMP,TL082,DUAL JFET
6				
7	2	330-0007-01	C3, C5	CAP,PES,RAD,0.033UF,100V,10%
8	1	310-0013-01	C7	CAP,TANT,AXL,2.2UF,10V,20%
9	3	30-0009-01	C1, C2, C8	CAP,CER,AXL,0.1UF,50V,20%
10	2	33-0008-01	C4, C6	CAP,RES,RAD,0.10UF,100V,10%
11				
12	4	40-03301-01	R1 - R4	RES,CF,1/4W,5%,3.3K OHM
13	2	40-01002-01	R5, R8	RES,CF,1/4W,5%,10K OHM
14	2	40-0220-01	R10, R7	RES,CF,1/4W,5%,220K OHM
15	2	40-0390-01	R6, R9	RES,CF,1/4W,5%,39K OHM
16				
17	2	10-0000-01	CR1, CR2	DIODE,SI,10MA,75PIV,IN914
18				
19	1	55-0006	J9	CONN,8P,MOLEX,09-74-1081
20	6	55-00018-01	J23	CONN,PC,F,PINS,MLX 02-09-1134
21	1	55-00061-01	J23	CONN,CBL,6P,RCP,MLX 03-09-1064
22				
23				