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INSTRUCTION MANUAL



GAME #736

(INSTALL 4 BALLS IN OUTHOLE AND ONE CAPTIVE BALL
UNDER TOP RIGHT RED PLASTIC RAMP.)

INSTRUCTION MANUAL

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GAME PROM:	DISPLAY PROM:	SOUND PROMS:	
(TYPE 26C512)	(TYPE 27C040-25)	(TYPE 27C256)	(TYPE 27C020-25)
736/GPROM	736/DSPROM	736/DROM1	736/AROM1
		736/YROM1	736/AROM2

NOTE: ANY PROM CHANGES DURING PRODUCTION WILL BE INDICATED BY A
REVISION NUMBER FOLLOWING THE GAME NUMBER. CONSULT YOUR
DISTRIBUTOR FOR ANY PROM CHANGE UPDATE.

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SYSTEM 3 OVERVIEW

System 3 contains many new features which improve game play and reliability. Some of these features are as follows:

- 1) New lithium battery provides data retention for a minimum of 5 years under normal operation and virtually eliminates battery leakage. Also a low battery warning is given in the displays when the voltage drops to the critical level.
- 2) New interlocking connector system for improved reliability.
- 3) Use of High Speed CMOS technology for low power consumption and cooler operation.
- 4) Improved solenoid driver reliability due to simplified circuitry and the use of Rugged Power MOSFETS.
- 5) Lamp short protection.
- 6) Switch matrix input protection.
- 7) Easy line voltage adjustment on location.
- 8) Improved bookkeeping functions.
- 9) New 128 x 32 Dot Matrix Display.
- 10) Capability for operators to enter their own messages in the attract mode.
- 11) Use of new SMART SWITCHtm technology which eliminates the use of contact points on switches. Therefore the need for cleaning dirty switches is eliminated.
- 12) Addition of a Tournament Mode switch which allows quick and easy way to replace current adjustment settings with special settings. This switch also provides an easy way to set the game for free play.

This equipment has been found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

I. INSTALLATION

A. SET-UP

1. Bolt the legs to the cabinet.
2. Lift lightbox into an upright position. Be sure none of the cables are crimped in between the lightbox and cabinet.
3. Engage the snap in the rear of the lightbox to the cabinet.
4. To remove the lightbox backglass and gain servicing access to the electronics panel and the insert lamp assembly, proceed as follows:

UNLOCK THE LIGHTBOX BY TURNING THE KEY A QUARTER TURN CLOCKWISE.

LIFT UP THE BACKGLASS RETAINING BOTTOM TRIM ABOUT 3/4" TO CLEAR THE "H" RETAINING CHANNEL ON THE TOP EDGE OF THE DISPLAY/SPEAKER PANEL, PIVOT OUT TOWARDS YOU AND SLIDE THE BACKGLASS DOWN AND OUT, CAREFULLY SET ASIDE.

REMOVE THE "H" RETAINING CHANNEL, SLIDE THE PLEXIGLASS INSERT UP AND OUT, SLIDE UP AND REMOVE THE DISPLAY/SPEAKER PANEL AND LAY FACE DOWN ON THE CABINET.

UNLOOSEN THE TWO WING NUTS ON THE LEFT SIDE AND PUSH THE LOCK SLIDE UPWARDS, THIS ALLOWS THE LIGHTBOX LAMP INSERT TO SWING OUT AND FOR GAINING ACCESS TO THE ELECTRONICS PANEL.

5. Secure the lightbox to the cabinet with the bolts and washers provided.

TO REPLACE THE BACKGLASS, INSERT THE DISPLAY/SPEAKER PANEL, ENSURE THAT THE METAL TABS ON THE PANEL MATE INTO THE WOOD RETAINERS, SLIDE IN THE PLEXIGLASS PANEL AND INSERT THE "H" RETAINING CHANNEL.

SLIDE THE BACKGLASS UP INTO THE LIGHTBOX, PIVOT INWARDS AND SLIDE DOWN INTO THE "H" CHANNEL, TURN THE KEY A QUARTER TURN COUNTER-CLOCKWISE TO LOCK THE LIGHTBOX.

6. Open the cabinet door and loosen the front moulding locking arm.
7. Remove the front moulding from the cabinet.
8. Slide the playfield glass toward you and remove it, carefully set aside.
9. Raise the playboard and pivot it upwards and back towards the lightbox,

hold in place and insert the prop stick into the countersunk hole on the underside of the playfield.

CAUTION!

Use prop stick when servicing under the playfield.

10. Unravel and straighten out the power line cord located at the rear of the cabinet.

11. Proceed to "B. CHECK-OUT".

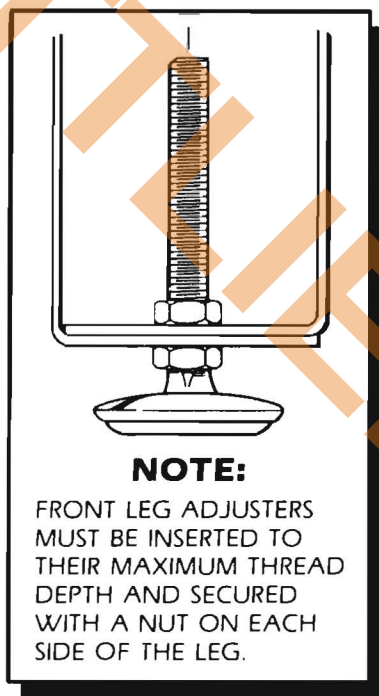
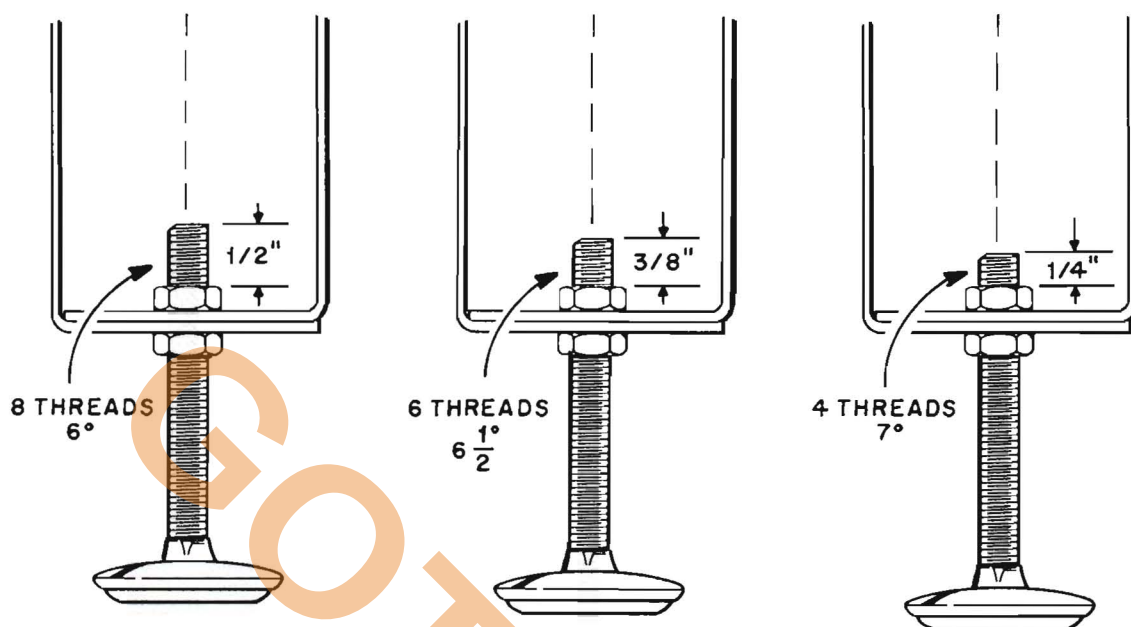
B. CHECK-OUT

1. Check that all cables are clear of moving parts.
2. Check for any loose wires.
3. Check switches for loose solder or other foreign matter.
4. Be certain all fuses are firmly seated.
5. Check transformer for any foreign matter across terminals.
6. Be sure that the Transformer Panel power input connector A12J5, corresponds to the supply voltage.
7. Check the setting of the normally open tilt switch on the underside of the playfield. One blade should be free-floating with a weight on the end.
8. The plumb-bob tilt can be adjusted by loosening the clip and raising the plumb-bob to increase its sensitivity, or lowering it to decrease its sensitivity.
9. Lower the playfield into the cabinet. Using the leg adjusters, level the playfield and set the pitch. Recommended pitch is 6°. For alternate settings, see illustration on facing page.
10. Plug the line-cord into a properly grounded 3-wire receptacle ONLY!
11. Refer to Section III to make all necessary game adjustments.
12. Re-install the playfield glass, front moulding and lock the cabinet door.
13. CAUTION! If this game has been subjected to extreme cold, allow to warm up to room temperature.

I. INSTALLATION

SET-UP PROCEDURE

TO ADJUST PLAYFIELD PITCH ANGLE
(REAR LEGS ONLY)



WARNING

DO NOT TRANSPORT GAME WITH LIGHTBOX IN THE UPRIGHT (PLAYING) POSITION.
USE LATCH ONLY TO TEMPORARILY HOLD LIGHTBOX UPRIGHT WHILE ATTACHING THE LIGHTBOX TO THE CABINET.
SECURE THE LIGHTBOX TO THE CABINET WITH THE TWO BOLTS AND LOCKWASHERS PROVIDED.

NOTES

GOTLIB®

I. INSTALLATION

C. COIN METER (OPTIONAL)

A +12vdc mechanical coin meter may be installed by the operator to count total coins accepted by the machine. The coin meter leads should be soldered to the lugs on the terminal strip mounted inside the front door on the right side (see Figure 1). If the coin meter is polarized, the positive lead (red) should be attached to the lug that has the cathode (banded) side of the diode attached to it otherwise the leads may be attached in any order. The COIN METER adjustment must be set to on and the following four adjustments should be set to the number of pulses (counts) required for each coin denomination used.

NOTE: Make sure that the GAME MODE adjustment is not set to either REPLAY + TICKETS or TICKETS ONLY (see Game Adjustments section).

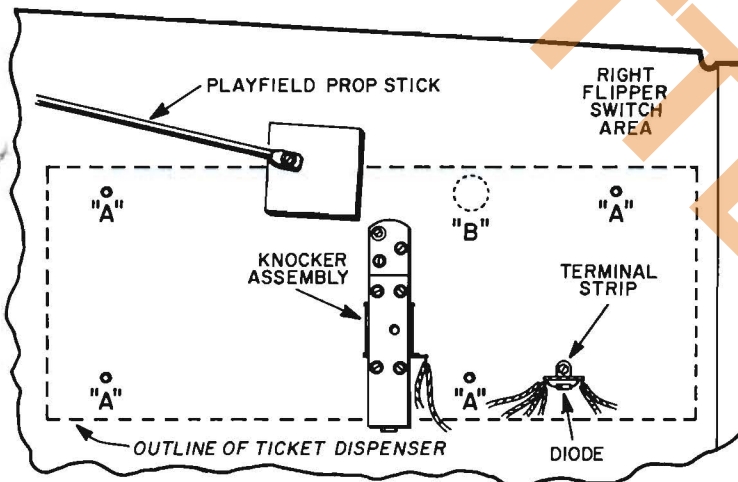


FIGURE 1.

D. TICKET DISPENSER (OPTIONAL)

This machine is equipped to easily interface to the Deltronic Labs #10001TY ticket dispenser with the outside mounting option. To install the dispenser, first locate the five partially drilled holes on the inside of the cabinet on the right side (see Figure 1). The four "A" holes are for

mounting the cabinet with #10 X 1-1/4" carriage bolts. The "B" hole is for cable access to the unit. Drill the "A" holes out from the inside of the cabinet using a 13/64" drill bit. Drill the "B" hole out from the inside of the cabinet using a 1" drill bit. The GAME MODE adjustment is used to set whether to dispense a number of tickets along with each replay awarded (REPLAY + TICKETS) or to dispense a number of tickets in place of each replay awarded (TICKETS ONLY). The TICKETS TO AWARD adjustment is used to set the number of tickets to dispense for each replay awarded (see Game Adjustments section).

NOTE: Make sure that the COIN METER adjustment is set to off when using a ticket dispenser.

E. BILL ACCEPTOR (OPTIONAL)

A bill acceptor can be easily interfaced electrically to this machine. The two unused 522 (green-red-red) and 622 (blue-red-red) center chute switch wires should be attached to the switch output of the bill acceptor (see Cabinet/Front Door Schematic Diagram). The line voltage validator outlet located inside the cabinet on the right side can be used for supplying power to the unit. The CHUTE 3 UNITS adjustment can then be used to set the value of the bill being used. The bill acceptor models known to fit the door mechanically are Mars model VFM2 and Tekbilt model NV110. The Tekbilt model also requires an adapter plate.

F. COMMUNICATIONS ADAPTER (OPTIONAL)

A kit (MA-1940) may be purchased through your distributor which will allow the system to output Bookkeeping data to a serial printer.

II. GAME PLAY AND SCORING



GENERAL GAME FEATURES

ALL RULE DESCRIPTIONS APPLY TO NORMAL (NON-ROUND/NON-MULTIBALL) PLAY UNLESS OTHERWISE NOTED.

MULTIBALL

MULTIBALL IS AWARDED FOR COMPLETING "GOLF HOLE" NUMBER NINE WHEN LIT OR MAY BE AWARDED FROM THE MYSTERY FEATURE. DURING MULTIBALL PLAY, HITTING THE CAPTIVE BALL ADDS TO THE JACKPOT VALUE. COMPLETING A STROBING SHOT COLLECTS THE JACKPOT VALUE. COMPLETING ALL STROBING SHOTS COLLECTS SUPER JACKPOT.

GO FORE PAR-TEE

MULTIBALL

LETTERS ARE AWARDED BY EITHER SPINNING THE "GOPHER WHEEL" OR THE MYSTERY FEATURE. COMPLETING ALL OF THE G-O-P-H-E-R LETTERS (INDICATED ON THE CARDHOLDER) AWARDS THE GO FORE PAR-TEE ROUND. DURING GO FORE PAR-TEE PLAY, THE VOLCANO (TOP LEFT UPKICKER) SHOT AND THE CENTER UPKICKER SCORE THE DISPLAYED AWARD VALUE.

RAINING CATS & DOGS / ANYTHING GOES

MULTIBALL

THESE FEATURES ARE AWARDED FOR COMPLETING "GOLF HOLE" NUMBER NINE WHEN LIT, BEING CHOSEN FROM "QUICK PICK" WHEN LIT, OR MAY BE AWARDED FROM THE MYSTERY FEATURE. THE ONLY DIFFERENCE BETWEEN "RAINING CATS & DOGS" AND "ANYTHING GOES" IS IN THE SCORING. "ANYTHING GOES" SCORING IS DOUBLE THAT OF "RAINING CATS & DOGS". DURING "RAINING CATS & DOGS" PLAY, ALL OF THE INDICATED SHOTS (STROBING LIGHTS) ADD TO THE DISPLAYED BONUS WHICH IS COLLECTED AT THE END OF BALL.

SKINS GAME

LETTERS ARE AWARDED IN "S-K-I-N-S-!" (ON THE CARDHOLDER) DURING THE "SPELL SKINS!" ROUND OR MAY BE AWARDED FROM THE MYSTERY FEATURE. COMPLETING "S-K-I-N-S-!" AWARDS "SKINS GAME". THE "SKINS GAME" CONSISTS OF CHOOSING A POINT AWARD OR THE "DOUBLE OR NOTHING" ROUND. DURING THE "DOUBLE OR NOTHING" ROUND, A PLAYER NEEDS TO COMPLETE A RANDOMLY CHOSEN OBJECTIVE BEFORE TIME EXPIRES. IF SUCCESSFUL, THEIR SCORE IS DOUBLED. OTHERWISE THEIR SCORE IS ZEROED. THEIR SCORE CAN BE RECOVERED HOWEVER BY SHOOTING THE "MEAN HOLE GREEN" (TOP LEFT HOLE) WHEN LIT.

ROUNDS

ALL OF THE FOLLOWING ROUNDS ARE ENABLED FOR TIMED DURATIONS. SHOOTING THE TOP LEFT UPKICKER (VOLCANO) WHEN THE "TEE" LAMP IS FLASHING BEGINS THE INDICATED ROUND ON THE BILLBOARD.

SPELL SKINS ROUND

EACH SHOT INTO THE TOP LEFT UPKICKER (VOLCANO) ADDS A LETTER TO S-K-I-N-S-!. COMPLETING S-K-I-N-S-! SCORES 30,000,000 POINTS AND AWARDS THE "SKINS GAME".

TEE'D OFF ROUND

EACH SHOT INTO THE CENTER UPKICKER SCORES AND ADVANCES THE DISPLAYED VALUE.

EXTRA BALL ROUND

HITTING THE RIGHT BULLSEYE TARGET (CENTER PIN) AWARDS EXTRA BALL.

FIND THE GOPHER ROUND

THE GOPHER IS HIDDEN IN ONE OF THE INDICATED SHOTS. FINDING THE GOPHER

II. GAME PLAY AND SCORING

AWARDS THE DISPLAYED SCORE AND ENDS THE ROUND.

PITCH 'N PUTT ROUND

DURING THIS ROUND, THE CAPTIVE BALL ADDS TO "COCONUT BONUS". EACH SHOT INTO THE PITCH 'N PUTT AREA OR THE LOWER RIGHT UPKICKER COLLECTS THE "COCONUT BONUS".

BIG SCORE

COMPLETING THE FIVE MAIN ROUNDS (INDICATED ON PLAYFIELD BILLBOARD) QUALIFIES THE "BIG SCORE" FEATURE. THIS FEATURE REMAINS ACTIVE FOR THE REMAINDER OF THE BALL IN PLAY. HITTING THE "BIG SCORE" TARGET WHEN FLASHING AWARDS AND ADVANCES THE DISPLAYED VALUE.

OTHER FEATURES

SLICE

THE RIGHT BULLSEYE TARGET ADDS ONE LETTER TO "S-L-I-C-E". COMPLETING S-L-I-C-E FLASHES THE "HURRY-UP 50M" FOR A SHORT TIMED DURATION, AND RESETS THE WORD "S-L-I-C-E".

HOOK

THE "HOOK" VALUE FOR THE LEFT BULLSEYE TARGET IS ADVANCED FROM COMPLETING AN ODD NUMBERED GOLF HOLE WHEN LIT OR MAY BE ADVANCED FROM THE MYSTERY FEATURE.

QUICK PICK

COMPLETING THE REQUIRED NUMBER OF HOLES-IN-ONE (SEE DISPLAY) LIGHTS THE PITCH 'N PUTT AREA FOR QUICK PICK. THIS FEATURE GIVES THE PLAYER A CHOICE BETWEEN SELECTING "RAINING CATS & DOGS" OR "LIGHT SPECIAL".

PLUNGER SKILL SHOT

THE PLAYER RECEIVES A HOLE-IN-ONE AND A MYSTERY AWARD IF THE BALL LANDS IN THE "MEAN HOLE GREEN" (TOP HOLE).

CHEAT SHOT

THIS FEATURE AWARDS A POINT VALUE AS INDICATED ON THE DISPLAY.

GOLF BALL

SHOOTING THE VOLCANO FLASHES THE GOLF BALL LAMP AND ONE SIDE SPOT TARGET. THE PLAYER THEN GETS ONE SHOT AT THE FLASHING TARGET TO COLLECT THE DISPLAYED POINT AWARD.

GOLF HOLES (1-9)

ALL GOLF HOLES MUST BE COMPLETED IN ROTATION. THE ACTIVE HOLE IS INDICATED BY A FLASHING LAMP. MAKING A HOLE IN ONE OR ENTERING A ROUND ALSO ADVANCE THE ACTIVE GOLF HOLE. COMPLETING NINE HOLES AWARDS THE LIT FEATURE.

GOPHER WHEEL BONUS SPIN

AT THE END OF EACH PLAYER'S GAME A LETTER FROM THE WORD GOPHER APPEARS IN THE DISPLAY AND THEN THE GOPHER WHEEL IS SPUN. IF THE BALL LANDS IN A HOLE NEXT TO THE LETTER THAT IS DISPLAYED, THEN THE PLAYER IS AWARDED 5,000,000 POINTS. THIS FEATURE CAN BE TURNED ON OR OFF USING GAME ADJUSTMENT STEP 62.

PLAYFIELD FEATURES

TOP HOLE ("MEAN HOLE GREEN")

- * SCORE 300,000.
- * RECOVER PLAYERS SCORE WHEN FLASHING.
- * AWARD HOLE-IN-ONE WHEN FLASHING.
- * AWARD MYSTERY WHEN LIT.
- * DURING PITCH 'N PUTT, COLLECT BONUS.
- * LOCK BALL WHEN "LOCK" IS FLASHING.

TOP LEFT SPOT TARGET

- * SCORE 1,000,000.
- * AWARD EXTRA BALL WHEN FLASHING.

- * AWARD 20,000,000 WHEN FLASHING.

POP BUMPER, TOP KICKING RUBBER, AND TOP RIGHT SPOT TARGET (ALL IN CAPTIVE BALL AREA)

- * SCORE 100,000.
- * CHANGE INDICATED ROUND (BILLBOARD).
- * ADD JACKPOT WHEN FLASHING DURING MULTIBALL.
- * ADVANCE COCONUT BONUS WHEN LIT OR FLASHING.
- * SUPER ADVANCE COCONUT BONUS WHEN FLASHING (DURING PITCH 'N PUTT).

II. GAME PLAY AND SCORING

BOTTOM KICKING RUBBERS

- * SCORE 90.
- * CHANGE INDICATED ROUND (BILLBOARD).

LEFT RETURN ROLLOVER

- * SCORE 3,000.
- * FLASH "DOG-LEG" FEATURE WHEN LIT.

RIGHT RETURN ROLLOVER

- * SCORE 3,000.
- * FLASH "CHEAT SHOT" FEATURE WHEN LIT.

LEFT AND RIGHT OUTLANES

- * SCORE 100,000.
- * AWARD HOLE-IN-ONE WHEN LIT.

LEFT SIDE ROLLOVER

- * SCORE 100,000.
- * AWARD SPECIAL WHEN FLASHING.

BOTTOM UPKICKER

- * SCORE 100,000.
- * COMPLETE AND ADVANCE GOLF HOLE WHEN FLASHING.
- * DURING "FIND THE GOPHER", AWARD 30M IF THE GOPHER IS HIDING HERE.
- * ADD BONUS DURING "RAINING CATS & DOGS" OR "ANYTHING GOES".
- * AWARD JACKPOT(S) WHEN STROBING DURING MULTIBALL.

RIGHT RAMP (OPTO)

- * SCORE 300,000.
- * FLASH 10M (PITCH 'N PUTT RAMP).
- * FLASH "TEE" WHEN LIT, RAMP DOES NOT LIGHT IF "BIG SCORE" IS FLASHING.
- * COMPLETE AND ADVANCE GOLF HOLE WHEN FLASHING.

- * ADD BONUS DURING "RAINING CATS & DOGS" OR "ANYTHING GOES".

- * AWARD JACKPOT(S) WHEN STROBING DURING MULTIBALL.

- * IF CHOSEN OBJECTIVE FOR THE SKINS GAME, THEN COMPLETES THIS OBJECTIVE.

CENTER ROLLOVER

- * SCORE 30,000.
- * COLLECT BONUS DURING PITCH 'N PUTT.
- * SCORE 10,000,000 WHEN FLASHING. (IF BALL JUST CAME FROM RIGHT RAMP.
- * AWARD "QUICK PICK" WHEN FLASHING.
- * AWARD JACKPOT(S) WHEN STROBING DURING MULTIBALL.
- * IF CHOSEN OBJECTIVE FOR THE SKINS GAME, THEN COMPLETES THIS OBJECTIVE.

LEFT SIDE SPOT TARGETS (3)

- * SCORE 300.
- * IF THIS GROUP OF THREE TARGETS IS CHOSEN AS THE OBJECTIVE FOR THE SKINS GAME, THEN THE COMPLETION OF ALL THREE TARGETS COMPLETES THIS OBJECTIVE.
- * AWARD DISPLAYED VALUE AND END GOLF BALL FEATURE WHEN FLASHING.

LEFT AND RIGHT OUTER BULLSEYE TARGETS (2)

- * SCORE 10,000.
- * CHANGE INDICATED ROUND (BILLBOARD).

LEFT INNER BULLSEYE TARGET

- * SCORE LIT "HOOK" VALUE.
- * ADD BONUS DURING "RAINING CATS & DOGS" OR "ANYTHING GOES".
- * AWARD JACKPOT(S) WHEN STROBING DURING MULTIBALL.
- * IF CHOSEN OBJECTIVE FOR THE SKINS GAME, THEN COMPLETES THIS OBJECTIVE,

II. GAME PLAY AND SCORING

UNLESS BOTH BULLSEYE TARGETS WERE ORIGINALLY SELECTED.

RIGHT INNER BULLSEYE TARGET

- * SCORE 5,000,000.
- * AWARD 50,000,000 WHEN FLASHING.
- * AWARD "EXTRA BALL" DURING EXTRA BALL ROUND.
- * ADD "S-L-I-C-E" WHEN LIT.
- * ADD BONUS DURING "RAINING CATS & DOGS" OR ANYTHING GOES.
- * AWARD JACKPOT(S) WHEN STROBING DURING MULTIBALL.
- * IF THIS IS OBJECTIVE FOR THE SKINS GAME, THEN COMPLETES THIS OBJECTIVE, UNLESS BOTH BULLSEYE TARGETS WERE ORIGINALLY SELECTED.

TOP RIGHT SPOT TARGETS (3)

- * SCORE 90.
- * CHANGE INDICATED ROUND (BILLBOARD).

LEFT CENTER SPOT TARGET

- * SCORE 300.
- * AWARD AND ADVANCE "BIG SCORE" WHEN FLASHING.

DROP TARGETS

- * SCORE 30,000.
- * IF CENTER "HOLE-IN-ONE" IS FLASHING, THEN CHANGE FLASHING LIGHT TO "SPIN".
- * ADD COCONUT BONUS WHEN LIT.
- * COMPLETION OF ALL TARGETS RESETS THE BANK AND IF "SPIN" IS FLASHING, SCORES 3,000,000 POINTS, AND CHANGES FLASHING LIGHT TO "HOLE-IN-ONE".

CENTER UPKICKER

- * SCORE 30,000.
- * AWARD HOLE-IN-ONE WHEN FLASHING.
- * SPIN GOPHER WHEEL WHEN FLASHING.
- * DURING "TEE'D OFF" ROUND, SCORE AND ADVANCE DISPLAYED VALUE.
- * DURING "FIND THE GOPHER", AWARD 30M IF THE GOPHER IS HIDING HERE.
- * DURING "GO FORE PAR-TEE", AWARD DISPLAYED VALUE.

* ADD BONUS DURING "RAINING CATS & DOGS" OR "ANYTHING GOES".

* IF CHOSEN OBJECTIVE FOR THE SKINS GAME, THEN COMPLETES THIS OBJECTIVE.

GOPHER WHEEL

* AFTER A "SPIN", A LETTER IS SPOTTED IN THE WORD G-O-P-H-E-R. NOTE: IF THE GAME DOES NOT SEE THE GOPHER WHEEL BALL LAND IN ANY HOLE AFTER A TIMED PERIOD, THEN A NEW LETTER IS SPOTTED.

TOP LEFT UPKICKER (VOLCANO)

- * SCORE 30,000.
- * AWARD "CHEAT SHOT" WHEN FLASHING.
- * DURING "SPELL SKINS!" ROUND, ADD A LETTER TO S-K-I-N-S-!. COMPLETING S-K-I-N-S-! STARTS THE "SKINS GAME".
- * DURING "FIND THE GOPHER", AWARD 30M IF THE GOPHER IS HIDING HERE.
- * DURING "GO FORE PAR-TEE", AWARD DISPLAYED VALUE.
- * IF "TEE" IS FLASHING, THEN BEGIN INDICATED ROUND.
- * COMPLETE AND ADVANCE GOLF HOLE WHEN FLASHING.
- * ENABLE "GOLF BALL" FEATURE.
- * ADD BONUS DURING RAINING "CATS & DOGS" OR "ANYTHING GOES".
- * AWARD JACKPOT(S) WHEN STROBING DURING MULTIBALL.
- * IF CHOSEN OBJECTIVE FOR THE SKINS GAME, THEN COMPLETES THIS OBJECTIVE.

RIGHT LANE (OPTO)

- * SCORE 50,000 WHEN BALL DOES NOT COME FROM SHOOTER LANE.
- * AWARD JACKPOT(S) WHEN STROBING DURING MULTIBALL.
- * DURING "FIND THE GOPHER", AWARD 30M IF THE GOPHER IS HIDING HERE.

OUTHOLE (END OF BALL)

- * COLLECT COCONUT BONUS.
- * COLLECT "RAINING CATS & DOGS" / "ANYTHING GOES" BONUS.

III. TEST MODE

There are several functions accessible to the operator while in the test mode. These functions are Self-Test, Bookkeeping, Game Adjustments, and Utilities. Each of these functions will be explained in detail later in this section. To enter the test mode, the game must be in the attract mode (game over). Then depress the Test button located just inside the front door of the game. The operator will then be given a choice as to which function he wants to access. Use the left flipper button to choose (highlight) the function desired and then either the Test button or the right flipper button to enter the chosen function.

NOTE: The Test button may be held in to fast forward through the steps of a particular function.

To exit the test mode or change functions the Slam switch (front door) must be activated or the power must be turned off.

I. SELF-TEST

This function will allow the operator to test all the hardware related devices in the game. Each test is described below.

A. MEMORY TEST

This function tests all memory devices on the Control Board (A1). If all the devices pass the test an "OK" will be displayed. If a failure occurs, a description of the faulty component will be displayed. Then after a short period of time the Game Prom check sum will be displayed. The Credit button can be used to restart this test.

B. LAMP CHECK

This function will flash all the controlled lamps and flasher lamps continuously. This will allow the operator to easily check for and replace any burned out light bulbs.

C. LAMP MATRIX TEST

This test will allow the operator to single step through and check the operation of each lamp in the game. The left flipper button will

decrement the active lamp number by one while the right flipper button will increment the active lamp number by one. The strobe number and the return number are combined to form the lamp number (strobe,return) which is shown in the display along with a description of the lamp. The Credit button can be used to restart this test. Only one lamp at a time should flash during this test.

D. RELAY AND SOLENOID TEST

This test will allow the operator to single step through and check the operation of each relay and solenoid driver in the game. The left and right flipper buttons are used to change the active driver number. The selected driver description and number will appear in the display. The Credit button is then used to activate the driver for a short time period. Solenoid #31 ("Q" relay) is always on during this test so as to provide power to devices such as the pop bumpers and kicking rubbers (see Playboard Schematic Diagram).

E. SWITCH MATRIX TEST

The first part of this test will report any inactive switches. If a switch has not been actuated in the course of the last 15 games the switch name and number will be displayed.

The second part of the test will allow the operator to test the operation of all the switches used in the game. If no switches are closed when this test is started, the message "ALL SWITCHES OPEN" will be displayed. If any switches are closed either before or after this test is started, the closed switch(s) name and number will be displayed. The strobe number and the return number are combined to form the switch number (strobe,return). The Credit button can be used to restart this test.

F. DISPLAY TEST

This test allows the operator to check the operation of the 128 x 32 dot matrix display. The right flipper button is used to advance this test. The first two steps check the different levels of display intensity.

III. TEST MODE

Each block that appears on the display should be of lesser intensity than the one to the left of it. During the next four steps a diagonal pattern is stepped from left to right in the display. While in this part of the test every fourth pixel only in each row of dots should be lit. During the next eight steps another diagonal pattern is stepped from left to right in the display. While in this part of the test every eighth pixel only in each row of dots should be lit. The Credit button can be used to restart this test.

G. SOUND TEST

This test allows the operator to test the interface lines from the Control Board (A1) to the Sound Board (A6). Every time the right flipper button is pressed, a different tone should be heard from the Sound Board. During each tone, the sound line connection which is being tested will be shown in the display. After the tone stops the sound line which is being tested will still be kept at a low level (<.8v) until the right flipper button is pressed again or the Credit button is used to restart the test.

H. FRONT DOOR TEST

This test allows the operator to check the operation of the coin chutes used in the game. Utilizing this function will not affect any bookkeeping values. Each coin chute closure is categorized and shown in the display. The Credit button can be used to restart this test.

I. AUXILIARY DRIVER TEST

This test will allow the operator to single step through and check the operation of each driver transistor on the Auxiliary Driver Board (A11). The left and right flipper buttons are used to change the active driver number. The selected driver description and number will appear in the lower display. The Credit button is then used to activate the driver for a short time period.

II. BOOKKEEPING

The Test button is used to step through bookkeeping. The display will contain a description of each step,

the step number, and two different bookkeeping values. The value in the leftmost column represents long term bookkeeping. The value in the rightmost column (in brackets) represents short term bookkeeping. These two values are provided so that the operator may compare recent performance with long term performance and then make any necessary game adjustments.

NOTE: The left column of steps 1 (earnings) and 17-20 (coin chute counts) will not be displayed unless the credit button is pressed during that active step number.

The left flipper button will allow the operator to reset all of the left (long term) and right (short term) bookkeeping values. The right flipper button will allow the operator to reset all of the right (short term) bookkeeping values only. If the R.BOOK AUTO-RESET adjustment is on, the right (short term) bookkeeping will automatically be reset after every 2000 plays (see Game Adjustments). Therefore, the operator does not need to reset the short term bookkeeping himself unless he prefers to follow his own procedure. Also, this feature will aid in adjusting the game payout percentage to the caliber of players in different locations. If there happens to be a major error in a long term bookkeeping value the word ERROR will appear to the right of that bookkeeping value. To correct this error the long term bookkeeping must be reset. A description of each bookkeeping step is given in the test mode flowchart.

III. GAME ADJUSTMENTS

This function allows the operator to make any adjustments to his game as necessary.

A. FACTORY SETTINGS

Upon entering the game adjustment section of bookkeeping, the operator is given a choice to load all factory settings or to single step through the game adjustments and adjust each section individually. If he chooses

III. TEST MODE

to enter the factory settings by depressing the Credit button, he will also be given a choice of what language to load. By using the right flipper button he may choose the appropriate language and then depress the Credit button again to enter the settings. After the settings are loaded the display should show the message "FACTORY SETTINGS LOADED" for a short time and then proceed to game adjustment step 1. At any time during the previous steps the operator may either exit the test mode or depress the Test button to proceed immediately to game adjustment step 1.

WARNING

Loading the factory settings will affect all previous game adjustment settings. Therefore be careful when selecting this feature.

B. GAME ADJUSTMENT STEPS

Each time the Test button is pressed a description of the next step appears in the display along with the step number and the current status of that step. Unless otherwise specified, the left and right flipper buttons are used to change the possible selections in each step.

- 1) SCORE REPLAY LEVEL 1
- 2) SCORE REPLAY LEVEL 2
- 3) SCORE REPLAY LEVEL 3

Each Score Replay Level may be set by using the left flipper button to decrement the score and the right flipper button to increment the score. The Credit button can be used to load the factory setting for each individual level if desired. If the Auto-Percentaging adjustment is on, Replay Levels 2 & 3 can only be set to on or off. If Replay Level 2 is on, the score level will be set to two times Replay Level 1. If Replay Level 3 is on, the score level will be set to three times Replay Level 1. This allows the operator several combinations of levels in the Auto-Percentaging mode (i.e. 1, 1 & 2, 1 & 3, or 1 & 2 & 3).

- 4) HIGH GAME TO DATE 1
- 5) HIGH GAME TO DATE 2
- 6) HIGH GAME TO DATE 3

7) HIGH GAME TO DATE 4

8) HIGH GAME TO DATE 5

Each High Game To Date may be set by using the left flipper button to decrement the score and the right flipper button to increment the score. The Credit button can be used to load the factory setting for the displayed level and all those below it.

9) GAME PRICING

This step provides a choice of loading a standard setting for a particular country or a custom setting. When a standard setting is selected, the following steps (10-17) are skipped.

10) CHUTE 1 UNITS (L)

11) CHUTE 2 UNITS (R)

12) CHUTE 3 UNITS (C)

13) CHUTE 4 UNITS

14) UNITS REQUIRED FOR CREDIT

15) UNITS REQUIRED FOR BONUS

16) BONUS CREDITS

17) MINIMUM UNITS REQUIRED FOR CREDIT

Steps 10-17 are used if a custom setting is selected in step 9 (GAME PRICING). Steps 10-13 select the number of units that each chute is worth when a coin is dropped into that particular chute. The value entered for step 14 determines how many units must be accumulated for a credit to be issued on the game. Steps 15 and 16 determine how many units must be accumulated for any bonus credits to be issued. A value of zero entered for step 15 will disable the bonus feature. Step 17 indicates the number of units required before any credits are issued (see Coin Chute Setting Table for examples).

18) COIN METER

If set to ON, the pulses to be given for each of the four coin chutes can be defined so that the number of pulses for a given chute are in relation to the currency denomination. If set to OFF, steps 19-22 will be skipped.

19) CHUTE 1 PULSES

20) CHUTE 2 PULSES

21) CHUTE 3 PULSES

22) CHUTE 4 PULSES

The four steps above are used to set

III. TEST MODE

COIN CHUTE SETTING TABLE

COIN CHUTE SETTING TABLE																
Country		Coin Chutes				Plays/Coin(s)	Chute Adjustment Steps									
		Left 1	Right 2	Center 3	4		10	11	12	13	14	15	16	17		
USA		.25	.25	\$1		1/.50, 2/.75, 3/\$1	03	03	12	00	04	00	00	00		
USA (Custom)						1/.50, 3/\$1	01	01	04	00	02	04	01	00		
						1/.25, 4/\$1	01	01	04	00	01	00	00	00		
						1/.25, 5/\$1	01	01	04	00	01	04	01	00		
Australia	1	.20	\$1	\$2	-	1/3x.20, 2/\$1, 5/\$2	02	10	20	00	05	20	01	00		
	2	.20	\$1	\$2	-	1/5x.20, 1/\$1, 3/\$2	01	05	10	00	05	10	01	00		
	3	.20	\$1	\$2	-	1/5x.20, 1/\$1, 2/\$2	01	05	10	00	05	00	00	00		
Belgium		5Fr	20Fr	50Fr	-	1/20Fr, 2/40Fr, 3/50Fr	01	04	10	00	04	10	01	00		
Canada		.25	\$1	-	-	1/.50, 2/.75, 3/\$1	03	12	00	00	04	00	00	00		
Canary Islands		25P	100P	-	-	1/25P, 4/100 Pesetas	01	04	00	00	01	00	00	00		
Denmark		1Kr	10Kr	-	-	1/3x1Kr, 4/10 Kroner	01	10	00	00	03	10	01	00		
Finland		5Mka	1Mka	-	-	1/3x1 Markka, 2/5 Markkaa	10	02	00	00	05	00	00	00		
France	1	1Fr	5Fr	10Fr	20Fr	1/3x1Fr, 2/5Fr, 5/10Fr	02	10	20	40	05	20	01	00		
	2	1Fr	5Fr	10Fr	20Fr	2/5Fr, 4/10Fr, 9/20Fr	02	10	20	40	05	40	01	10		
	3	1Fr	5Fr	10Fr	20Fr	1/5Fr, 3/10Fr, 7/20Fr	03	15	30	60	10	60	01	15		
Germany	1	5DM	2DM	1DM	-	1/1DM, 2/2DM, 6/5 D-Mark	05	02	01	00	01	05	01	00		
	2	5DM	2DM	1DM	-	1/2DM, 2/3DM, 3/4DM, 5/5DM	20	08	04	00	05	20	01	00		
	3	5DM	2DM	1DM	-	1/2DM, 3/5DM	05	02	01	00	02	05	01	00		
Italy		500L	500L	-	-	1/2x500L, 2/3x500L, 3/4x500L	03	03	00	00	04	00	00	00		
Japan		100Y	100Y	-	-	1/100 Yen, 3/2x100 Yen	01	01	00	00	01	02	01	00		
New Zealand		\$1	\$2	-	-	1/\$1, 3/\$2	01	02	00	00	01	02	01	00		
Norway		5Kr	10Kr	-	-	1/5Kr, 2/10 Kroner	01	02	00	00	01	00	00	00		
Spain		500P	100P	-	-	1/100P, 6/500 Pesetas	05	01	00	00	01	05	01	00		
Sweden		10Kr	5Kr	-	1Kr	1/5x1Kr, 1/5Kr, 2/10Kr	10	05	00	01	05	00	00	00		
Switzerland		1Fr	5Fr	2Fr	-	1/1Fr, 3/2Fr, 7/5 Francs	01	07	03	00	01	00	00	00		
United Kingdom	1	1£	50P	20P	10P	1/3x10P, 2/50P, 4/1 Pound										
	2	1£	50P	20P	10P	1/50P, 3/1 Pound										
Universal		-	-	-	-	1/1 Coin	01	01	00	00	01	00	00	00		

III. TEST MODE

the number of pulses to be issued for each of the four coin chutes.

23) COIN DOOR TYPE

This step provides a choice of loading a standard setting for a particular country or a custom setting. When a standard setting is selected, the following steps (24-28) are skipped.

24) COLLECTION TEXT

25) CHUTE 1 VALUE

26) CHUTE 2 VALUE

27) CHUTE 3 VALUE

28) CHUTE 4 VALUE

Step 24 is used to enter the name of the currency in use. The remaining four steps are used to set the monetary value of each coin chute.

29) 1 COIN BUY-IN BONUS

At the end of a game a 10-second timer is initialized allowing each player that participated in the previous game a chance to purchase 1 credit for each coin inserted.

30) GAME PERCENT PAYOUT

This step is used to set the game payout percentage used when the Auto-Percentaging adjustment is on. The value entered for this step is compared to the value calculated by dividing total replays by total plays (see Bookkeeping section). Total replays include all replays won from beating the score replay level, achieving a new high game to date, winning a playfield special, and all match replays.

When the GAME MODE adjustment is set to Add a Ball this setting refers to extra ball percentage rather than replay percentage. The value entered in this case will be compared to the value calculated by dividing total extra balls won by total plays (see Bookkeeping section).

31) MATCH PERCENT PAYOUT

This step is used to set the match payout percentage. If this step is set to zero, the match will be disabled.

NOTE: The MATCH PERCENT PAYOUT value is included in the value entered for GAME PERCENT PAYOUT (step #30). Therefore in order to retain the same

payout percentage for the other payout features in the game such as score level replays, the GAME PERCENT PAYOUT will be automatically adjusted by the same amount as this step when changed.

32) HIGH GAME REPLAYS

This step is used to set the number of replays to award when the highest game to date has been beaten.

33) MAXIMUM CREDITS

This step sets the maximum number of credits allowed on the game.

34) TILT WARNINGS

This step sets the number of tilts allowed before the current player's ball in play is terminated.

35) BALLS PER GAME

This step sets the game to 3-ball play or 5-ball play.

36) GAME MODE

This step allows the game to be played in Replay, Replay + Tickets, Tickets Only, Add a Ball, or Novelty mode. In Replay mode all Specials and replays are allowed. Replay + Tickets mode is the same as Replay mode with the addition of one or more tickets to be issued (TICKETS TO AWARD) along with each replay. In Tickets Only mode one or more tickets will be issued in place of each replay won. In Add a Ball mode all Score Level Replays and Playfield Specials award an extra ball in place of a replay. Also the Match and High Game To Date awards are disabled. However, after the Add a Ball mode is selected, the PLAYFIELD SPECIAL, MATCH PERCENT PAYOUT, and HIGH GAME REPLAYS adjustments may be individually set to whatever setting may be desired. In Novelty mode all Specials award 50,000,000 points, Extra Balls award 20,000,000 points and the Score Replay Levels, Match, and High Game to Date awards are disabled.

NOTE: If either the Replay + Tickets or Tickets Only setting is selected do not set the COIN METER setting to on.

37) TICKETS TO AWARD

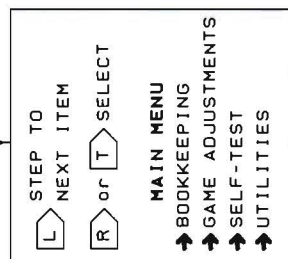
This step allows the operator to set the number of tickets to award

NOTE:

THE TEST MODE CAN ONLY BE ACCESSED DURING THE ATTRACT MODE (GAME OVER).

THE TEST MODE MAY BE EXITED BY EITHER ACTUATING THE SLAM SWITCH ON THE FRONT DOOR OR TURNING THE POWER OFF.

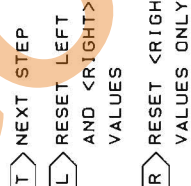
TEST MODE



UTILITIES



BOOKKEEPING

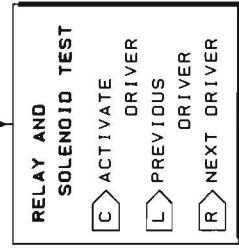
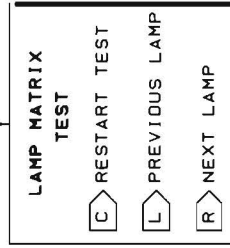
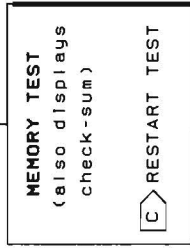


STEP

- 1) TOTAL EARNINGS (a)
 - 2) TOTAL PLAYS
 - 3) BALL TIME <MIN-SEC>
 - 4) GAME TIME <MIN-SEC>
 - 5) TOTAL EXTRA BALLS
 - 6) PERCENT EXTRA BALLS
 - 7) TOTAL REPLAYS
 - 8) PERCENT REPLAYS
 - 9) PLAYFIELD SPECIALS
 - 10) SCORE LEVEL REPLAYS
 - 11) HIGH GAME REPLAYS
 - 12) MATCH REPLAYS
 - 13) TOTAL TILTS
 - 14) TILT WARNINGS
 - 15) SERVICE CREDITS
 - 16) TOTAL PLAYS PAID
 - 17) <L> CHUTE 1 COINS (a)
 - 18) <R> CHUTE 2 COINS (a)
 - 19) <C> CHUTE 3 COINS (a)
 - 20) CHUTE 4 COINS (a)
 - 21) INCOMPLETE GAMES
- Includes games slammed and games reset in the middle of another game

- 22) 0-24.9M SCORES
- 23) 25M-49.9M SCORES
- 24) 50M-69.9M SCORES
- 25) 70M-79.9M SCORES
- 26) 80M-89.9M SCORES
- 27) 90M-99.9M SCORES

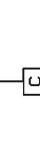
SELF-TEST



GAME ADJUSTMENTS



[C]



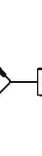
[C]



[R]



[C]



[T] NEXT STEP

[L] CHANGE ADJUSTMENT

[R] CHANGE ADJUSTMENT

[C] SET TO FACTORY DEFAULT
(Applies only to steps below that are followed by an asterisk *)

STEP

- 1) FIRST REPLAY LEVEL *
- 2) SECOND REPLAY LEVEL *
- 3) THIRD REPLAY LEVEL *
- 4) HIGHEST GAME TO DATE *
- 5) HIGH GAME TO DATE 2 *
- 6) HIGH GAME TO DATE 3 *
- 7) HIGH GAME TO DATE 4 *
- 8) HIGH GAME TO DATE 5 *
- 9) GAME PRICING

Steps 10-17 are skipped
If GAME PRICING is not set to CUSTOM.

- 10) <L> CHUTE 1 UNITS
- 11) <R> CHUTE 2 UNITS
- 12) <C> CHUTE 3 UNITS
- 13) CHUTE 4 UNITS
- 14) UNITS/CREDIT
- 15) UNITS/BONUS CREDIT
- 16) BONUS CREDITS
- 17) MINIMUM UNITS
- 18) COIN METER

Steps 19-22 are skipped
If COIN METER is off

Steps 19-22 are skipped
if COIN METER is off.

- 19) CHUTE 1 PULSES
- 20) CHUTE 2 PULSES
- 21) CHUTE 3 PULSES
- 22) CHUTE 4 PULSES
- 23) COIN DOOR TYPE

Steps 24-28 are skipped
if COIN DOOR TYPE is not
set to CUSTOM.

- 24) COLLECTION TEXT
- 25) CHUTE 1 VALUE
- 26) CHUTE 2 VALUE
- 27) CHUTE 3 VALUE
- 28) CHUTE 4 VALUE

- 29) 1 COIN BUY-IN BONUS
- 30) GAME PERCENT PAYOUT
- 31) MATCH PERCENT PAYOUT
- 32) HIGH GAME REPLAYS
- 33) MAXIMUM CREDITS
- 34) TILT WARNINGS
- 35) BALLS PER GAME
- 36) GAME MODE

- 37) TICKETS TO AWARD
- 38) LANGUAGE
- 39) AUTO PERCENTAGING
- 40) REPLAY LIMIT
- 41) HIGH GAMES 2-S
- 42) ATTRACT SOUND
- 43) ATTRACT MESSAGE 1

Use the credit button
to enter a message.

- 44) ATTRACT MESSAGE 2
- 45) RIGHT BOOK AUTO-RESET
- 46) PLAYFIELD SPECIAL
- 47) REPLAY LEVEL BOOST
- 48) GAME DIFFICULTY
- 49) ROUND TIMING
- 50) EXTRA BALL PERCENTAGE
- 51) SUPERSCORE MAX AWARD
- 52) CHEAT SHOT MAX AWARD
- 53) HURRY UP TIMING
- 54) AUTO SKILL

- 55) S-K-I-N-S-I
- 56) HIGHEST HOLES IN ONE
- 57) REDUCED SCORING
- 58) G-O-P-H-E-R
- 59) HOLE IN ONE AWARD
- 60) HOLE IN ONE LEVEL
- 61) TARGET BANK RESET
- 62) GOPHER WHEEL BONUS

LEGEND

- PRESS TEST BUTTON
- PRESS CREDIT BUTTON
- PRESS LEFT FLIPPER BUTTON
- PRESS RIGHT FLIPPER BUTTON

- 25) 70M-79.9M SCORES
- 26) 80M-89.9M SCORES
- 27) 90M-99.9M SCORES
- 28) 100M-124.9M SCORE
- 29) 125M-149.9M SCORE
- 30) 150M-199.9M SCORES
- 31) 200M-299.9M SCORES
- 32) 300M-399.9M SCORES
- 33) 400M+ SCORES
- 34) FIRST REPLAY LEVEL
- 35) HIGHEST GAME TO DATE
- 36) LOWEST GAME TO DATE
- 37) 1-15 SEC. BALL TIME
- 38) 16-30 SEC. BALL TIME
- 39) 31-45 SEC. BALL TIME
- 40) 46-60 SEC. BALL TIME
- 41) 61 SEC.+ BALL TIME
- 42) % L OUTLANE DRAINS
- 43) % R OUTLANE DRAINS
- 44) SPELL SKINS ROUNDS
- 45) SPELL SKINS LETTERS
- 46) TEE'0 OFF ROUNDS
- 47) TEE'0 OFF COLLECTS
- 48) EXTRA BALL ROUNDS
- 49) EXTRA BALL ROUNDS WON
- 50) CATCH GOPHER ROUNDS
- 51) GOPHERS CAUGHT
- 52) PITCH'N PUTT ROUNDS
- 53) PITCH'N PUTT COLLECTS
- 54) REGULAR MULTIBALL
- 55) JACKPOT COLLECTED
- 56) SUPER JACKPOTS WON
- 57) RAINING CATS & DOGS
- 58) CATS & DOGS ADD BONUS
- 59) ANYTHING GOES ROUNDS
- 60) GO FOR PAR-TEE RNDOS
- 61) TOTAL HOLES-IN-ONE
- 62) HOLE-IN-ONE XTRA BALL
- 63) HIGH HOLES-IN-ONE
- 64) SKINS GAMES
- 65) SCORE DOUBLED
- 66) SCORE ZEROED
- 67) SCORE RECOVERED
- 68) BIG POINTS QUALIFIED
- 69) BIG POINTS COLLECTED
- 70) GOLF HOLE COMPLETIONS
- 71) JACKPOT SCORE WON (M)
- 72) MYSTERIES
- 73) HOOK ADVANCES
- 74) E.O.B. ADD BONUS
- 75) PITCH'N PUTT ADD BON
- 76) QUICK PICKS
- 77) GOPHER SPINS
- 78) HURRY-UP 50M AWARD

SWITCH MATRIX
TEST

RESTART TEST

DISPLAY TEST

RESTART TEST

NEXT STEP

SOUND TEST

RESTART TEST

NEXT STEP

FRONT DOOR TEST

RESTART TEST

III. TEST MODE

when a replay has been won. This setting will only apply when the GAME MODE is set to either Replay + Tickets, or Tickets Only.

38) LANGUAGE

This step allows the Test Mode steps to be displayed in English, German, or French.

39) AUTO-PERCENTAGING

If this step is set to on, the Score Replay Levels will be adjusted periodically so that the Game Percent Payout setting will match the actual Replay Percentage displayed in Bookkeeping.

NOTE: If the GAME MODE is set to Add a Ball, the Extra Ball Percentage in bookkeeping is used in place of the Replay Percentage.

40) REPLAY LIMIT

This step may be set to no limit or one per player per game.

41) HIGH GAMES 2-5

This step will determine if High Games to Date (2-5) will be saved or erased when power is turned off.

42) ATTRACT SOUND

This step determines whether or not sounds are enabled during the attract mode (game over).

43) ATTRACT MESSAGE 1

This step is used to enter, enable, or disable an operator message. The message is permanently stored in memory and will be periodically displayed during the attract mode (game over). To enter a message press the Credit button. The current message will be displayed and the cursor

position will be indicated by the flashing character. If the current position is blank, a flashing directional arrow will appear. This type of arrow will indicate which direction the cursor will move if the Credit button is pressed. The characters are chosen using the left and right flipper buttons and then entered into memory by pressing the Credit button.

44) ATTRACT MESSAGE 2

This step is used to enter, enable, or disable an second operator message. See step 43 above for details. When both messages are enabled they will be displayed consecutively.

45) RIGHT BOOKKEEPING AUTO-RESET

If this step is set to on, all the short term bookkeeping steps (in brackets) will reset after 2000 plays. Otherwise they will not reset until 10,000 games have been played on the machine.

46) PLAYFIELD SPECIAL

When a playfield special is won, either a replay or an extra ball is awarded to the player based on the setting of this step.

47) REPLAY LEVEL BOOST

This step may be set anywhere from 0 to 99,000,000 in increments of 1,000,000. If set to zero, the boost is disabled. Otherwise the Replay Level will be increased by the boost value after completing a game where a player has won a replay and his skill level has been determined to be above average. The Replay Level will return back to its base level once all of the replays won have been played.

III. TEST MODE



OPERATOR ADJUSTMENT SETTINGS (*** = FACTORY DEFAULT SETTING)

48) GAME DIFFICULTY

THE ADJUSTMENTS LISTED IN THE TABLE BELOW ARE AUTOMATICALLY SET AS INDICATED IN THE TABLE UNLESS FINE-TUNE IS SELECTED USING THE RIGHT FLIPPER BUTTON. IF FINE-TUNE IS SELECTED, EACH STEP IN THE TABLE CAN BE ADJUSTED INDIVIDUALLY. OTHERWISE, THESE STEPS ARE SKIPPED.

STEP						
				(GER.)	(FR.)	
				(ENG.)		
				***	***	
48	GAME DIFFICULTY	VERY EASY	EASY	MEDIUM	HARD	VERY HARD
49	ROUND TIMING	VERY EASY	EASY	MEDIUM	HARD	VERY HARD
50	EXTRA BALL %	VERY EASY	EASY	MEDIUM	HARD	VERY HARD
51	SUPERSCORE MAX AWARD	EASY	EASY	MEDIUM	MEDIUM	HARD
52	CHEAT SHOT MAX AWARD	EASY	EASY	MEDIUM	MEDIUM	HARD
53	HURRY-UP TIMING	EASY	EASY	MEDIUM	MEDIUM	HARD

49) ROUND TIMING

VERY EASY = Slowest

EASY = Slow

*** MEDIUM = Average

HARD = Faster

VERY HARD = Fastest

50) EXTRA BALL PERCENTAGE

Controls how often an extra ball is awarded in mystery. If actual extra ball percentage is less than the below setting, then mystery could award an extra ball.

VERY EASY = 50%

EASY = 40%

*** MEDIUM = 30%

HARD = 20%

VERY HARD = 10%

51) SUPERSCORE MAX AWARD

The maximum value that a successful superscore shot can award.

EASY = 80,000,000

*** MEDIUM = 40,000,000

HARD = 20,000,000

52) CHEAT SHOT MAX AWARD

The maximum value that a successful cheat shot can award.

EASY = 20,000,000

*** MEDIUM = 10,000,000

HARD = 5,000,000

53) HURRY-UP TIMING

Time that any hurry-up feature is active.

EASY = 15 SEC.

*** MEDIUM = 10 SEC.

HARD = 7 SEC.

54) AUTO-SKILL

Various game features become more difficult as the game recognizes a player's increased skill level.

OFF = Disabled

*** ON = Enabled

55) S-K-I-N-S-!

This adjustment determines whether or not a letter is added to S-K-I-N-S-! at the end of the game.

EASY - ADD A LETTER IF S-K-I-N-S-! IS NOT ALREADY SPELLED.

*** MEDIUM - ADD A LETTER IF S-K-I IS NOT ALREADY SPELLED.

HARD - DO NOT ADD A LETTER.

56) HIGHEST HOLES-IN-ONE TO DATE

0 - 99 (default is 10).

III. TEST MODE

57) REDUCED SCORING

*** OFF = Bonus in Cats and Dogs Round is incremented by 25,000,000.
Super Jackpot award is 300,000,000.
Tee'd Off Round maximum award is 30,000,000.
No maximum limit for Coconut bonus.

ON = Bonus in Cats and Dogs Round is incremented by 10,000,000.
Super Jackpot award is 100,000,000.
Tee'd Off Round maximum award is 20,000,000.
Coconut bonus maximum is 50,000,000.

58) G-O-P-H-E-R

This adjustment determines whether or not a letter is added to G-O-P-H-E-R at the end of the game.

EASY - ADD A LETTER IF G-O-P-H-E IS NOT ALREADY SPELLED.

*** MEDIUM - ADD A LETTER IF G-O-P IS NOT ALREADY SPELLED.

HARD - DO NOT ADD A LETTER.

59) HOLE-IN-ONE AWARD

Award an extra ball for reaching the hole-in-one threshold or score 20,000,000.

OFF - Award 20,000,000.

*** ON - Award extra ball.

60) HOLE-IN-ONE AWARD LEVEL

The threshold at which an extra ball or 20,000,000 is awarded AND when the QUICK-PICK light is flashed.

VERY EASY = 4 / 6

EASY = 5 / 7

*** MEDIUM = 6 / 8

HARD = 7 / 9

VERY HARD = 8 / 10

61) TARGET BANK RESET

This step determines whether or not the drop target bank resets automatically after the end of a round or multiball.

ON - AUTO RESET

*** OFF - NO RESET

62) GOPHER WHEEL BONUS

This setting determines whether or not the Gopher Wheel will spin at the end of each player's game for a possible 5,000,000 point award.

*** ON - ENABLED

OFF - DISABLED

IV. UTILITIES

Use the left flipper button to choose (highlight) a function and then the right flipper button to select or change the value of the function. Each utility is described below.

A. PRINT

Bookkeeping - all values

Short Bookkeeping - first 8 values

B. PRINTER SET-UP

Type - NSM DATA or SERIAL

Baud Rate - 1200, 2400, 4800, 9600

Data - 7 bit or 8 bit

Parity - none, even, or odd

C. ID NUMBERS

Two six digit numbers can be entered in permanent memory during this step. One is a GAME ID and the other is an ARCADE ID. These two ID's appear on all printouts. Also the GAME ID number will appear in the display on power-up. The left and right flipper buttons alter the digit value and the credit button enters the displayed value into memory and then proceeds to the next digit position.

D. BURN-IN

This function can be used to continuously exercise all the lamps and solenoids in the game.

V. TOURNAMENT MODE

The Tournament Mode switch provides a simple way to alter some of the normal game settings in order to provide for tournament play. The switch is located on a circuit board just inside the front door of the game to the lower left. The game must be in a game over condition in order to recognize the switch changing states. When the switch is moved to the "ON" position with the front door open, four Tournament Mode adjustments will appear on the display. These adjustments can be altered by using the left flipper button to select the function and the right flipper button to alter the current setting. Once these settings have been chosen they will remain in permanent memory so that all that has to be done each subsequent time that tournament play is desired is to move the switch to the "ON" position. When the Tournament Mode settings are in effect they

III. TEST MODE

override the normal Game Adjustment settings. When the switch is moved to the "OFF" position, all the normal Game Adjustment settings are back in effect.

NOTE: Even if the game will not be used for tournament play, this switch can be used to provide an easy way to set the game for FREE PLAY without affecting any other game settings by setting the remaining three Tournament Mode adjustments to "NORMAL".

Each Tournament Mode adjustment is described below.

*** = Factory Default Setting

1) FREE PLAY

*** OFF = Credits are required to start a game.
ON = A game may be started without any credits posted.

2) GAME FEATURES

*** NORMAL = Normal play.
TOURNAMENT =
Various game features are altered as described below in order to provide the same odds for all players.

- a) The SKINS! carryover feature resets to S-K-I at the beginning of each ball.
- b) The Mystery feature always awards "ADD 5 MIL TO BONUS".
- c) The "GOPHER" feature is disabled.

3) SPECIAL/REPLAY

*** NORMAL = Normal play.
POINTS =
Playfield Special awards 50,000,000 points. Match, High Game to Date, and Score Replay Level payouts are disabled.

4) EXTRA BALL

*** NORMAL = Normal play.
POINTS =
Extra Ball awards 20,000,000 points.

SERVICE SWITCH

The switch is actuated when the front door is closed. With the front door closed, all bookkeeping steps are incremented normally. When the front door is opened all bookkeeping steps are frozen at their current values. Any credits that are added with the front door open are recorded in the SERVICE CREDITS bookkeeping steps.

SOUND ADJUSTMENTS

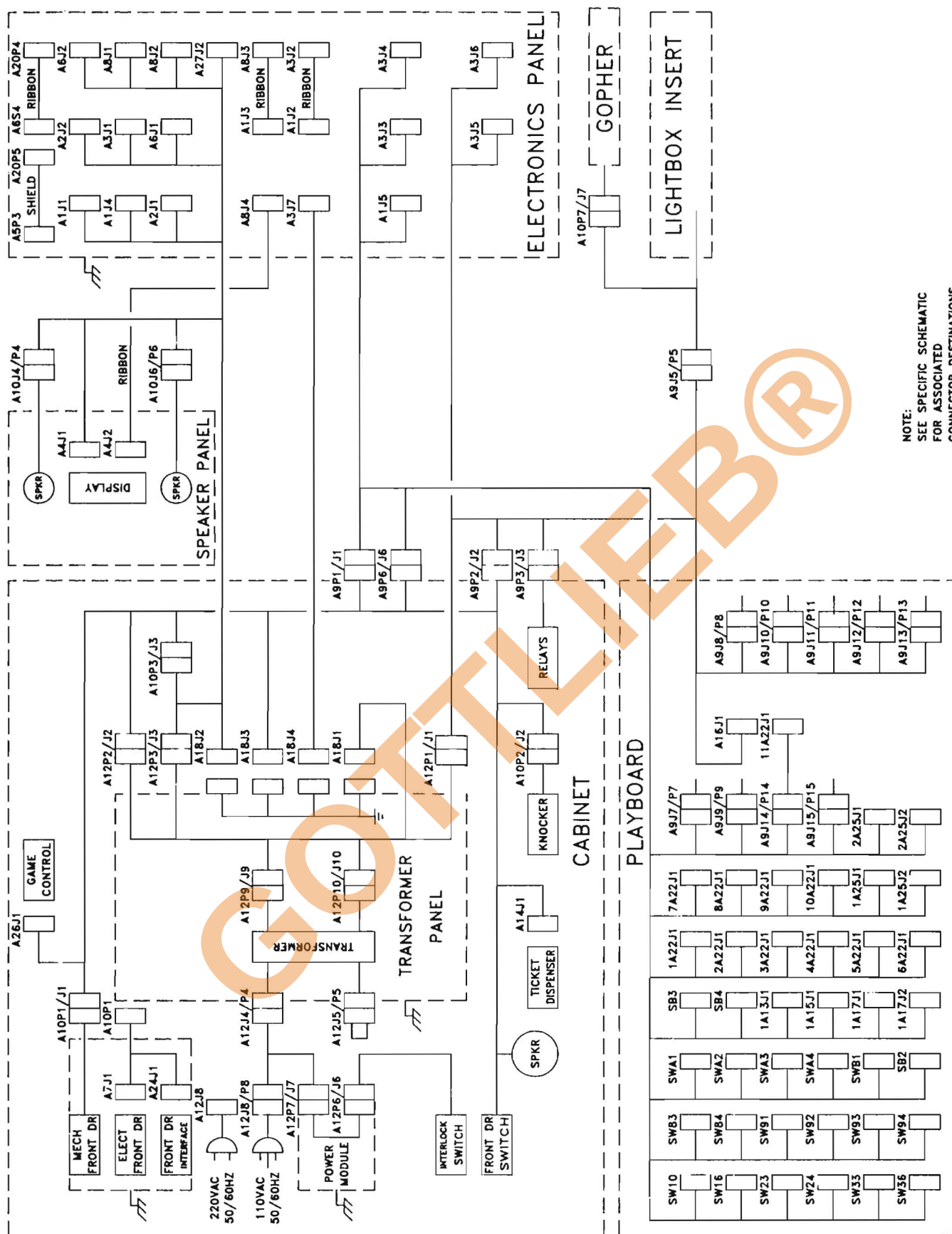
The speaker(s) output is controlled by the volume control located on a circuit board just inside the front door of the game to the lower left.

Turning the volume control counter-clockwise will decrease the volume. Turning it clockwise will increase the volume.

POST ADJUSTMENTS

The posts located just above the left and right outlanes can be positioned for liberal/intermediate/conservative play. The smaller opening produces a more liberal play.

IV. THEORY OF OPERATION



NOTE:
SEE SPECIFIC SCHEMATIC
FOR ASSOCIATED
CONNECTOR DESTINATIONS.

FIGURE 1. INTERCONNECTION DIAGRAM

IV. THEORY OF OPERATION

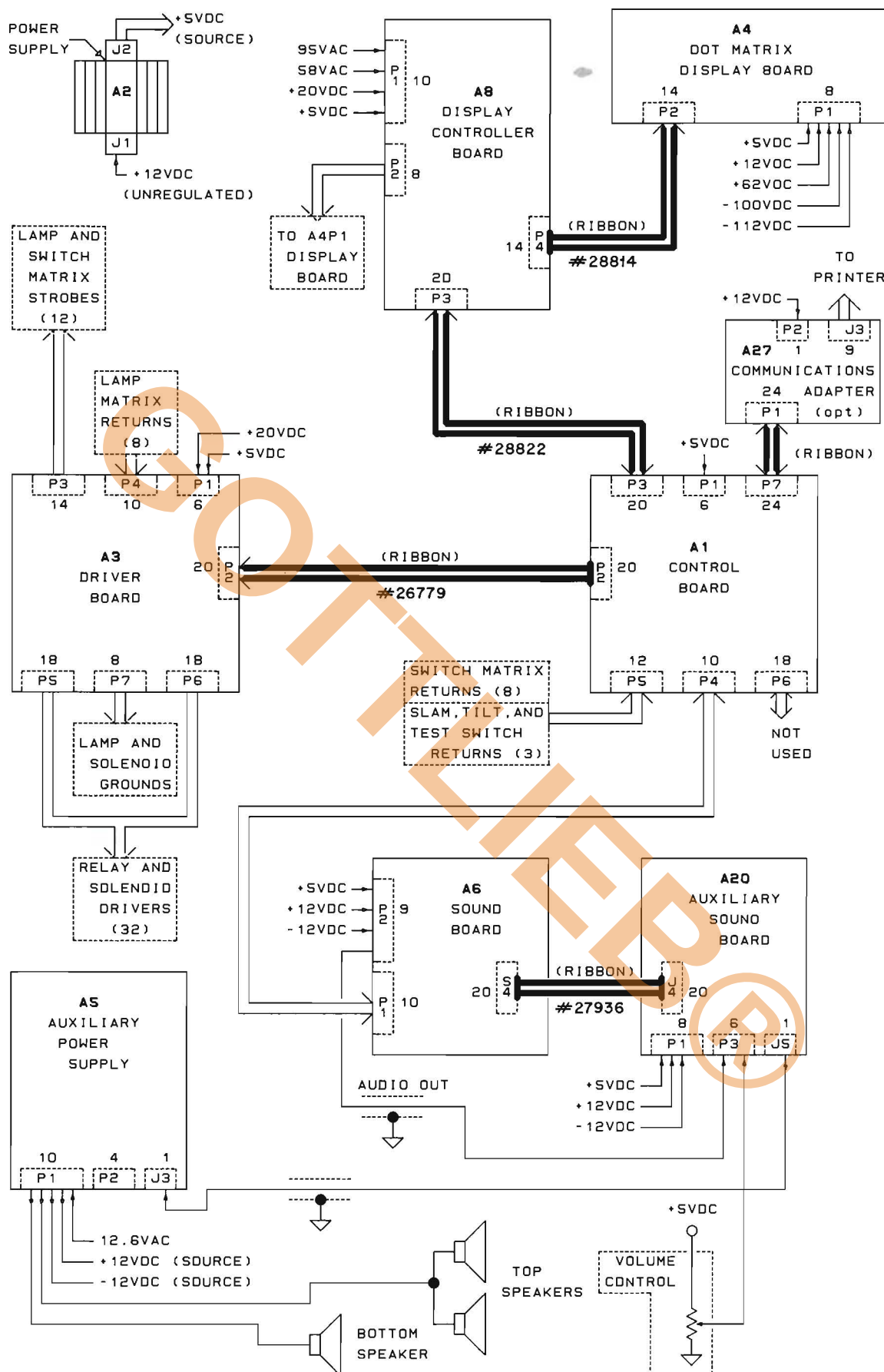


FIGURE 2. SYSTEM 3 BLOCK DIAGRAM

IV. THEORY OF OPERATION

A. CONTROL BOARD (A1)

The Control Board is supplied with 5vdc (A1P1) from the Power Supply (A2P2). The data contained in ram (U3) is kept valid when power is turned off by the lithium battery (BAT1) and controller (U6).

NOTE: When replacing either the battery, ram, or the controller there may be a message that appears in the display on power up the first time that indicates a low battery condition. If this occurs, turn the power off and back on again. The board should power up normally this time. If not, there is another problem on the board.

The Control Board can accomodate either a 27512 or a 27256 Eprom. JP1 must be installed for a 27512 or JP2 for a 27256 Game Prom. A 4 Mhz oscillator is configured using U17, R1, R2, C22, C23, and XTAL1. The oscillator output is then divided by 2 to a 2Mhz clock by U18 which is used as the input clock to the 65C02 (U1) microprocessor. The clock output of U1 (pin 39) is used as a sync signal for reading from or writing to the peripheral devices.

Two versatile interface adapters (U4, U5) are used to develop the necessary control signals for the system. The display connector (A1P3) is comprised of several signals. U4-15 and U4-17 are used as inputs to receive data from the Display Controller Board. Data is output to the Display Controller Board by U7 (BD0-BD7) and then latched by pulsing the DS0 line at U9-4. The output at DS1 (U9-5) is used to reset the Display Controller Board if it does not respond to data output by the Control Board.

The Driver Board connector (A1P2) contains all the signals necessary to operate the lamp and switch matrix strobes, the lamp matrix returns, and the solenoids. The lamp clear (LCLR), lamp strobe (LSTB), and lamp strobe data (LDATA) are generated by U4-12, U4-11, and U4-10 respectively. The appropriate lamp return data

during each active lamp strobe is output by U7 and latched into U5 on the Driver Board by the lamp return data strobe (LDS). The solenoid data is output by U7 (BD0-BD7) and latched into the appropriate Driver Board device (U1-U4) by the solenoid strobes (SS0-SS3).

The switch matrix returns are input at A1P5, buffered by U19 and U20 and then input to U4. Discrete inputs are provided at A1P5 for the slam, tilt, and test switches.

The connection to the Sound Board (A1P4) is made up of eight sound data lines (SD0-SD7), a return line (SRET), and a reset line (MR).

A reset circuit is configured using U13, U14, R3, and C24. When power is applied to the system, the microprocessor reset pin (U1-40) is held low for approximately 10 milliseconds. The system can also be reset by pressing the switch (SW1) on the board. Whenever a reset occurs the master reset signal (MR) (U18-9) is held low until the display strobe (DSTB) becomes active. At this point the master reset goes high which enables the peripheral IC's on the Display Board and Driver Board to accept data.

A watchdog circuit is employed to monitor both the display digit strobe and the lamp strobe. This circuit is made up of U11, U12, U13, U16, R5, R6, R29, R32, R33, C20, C21, C28, and C29. If either the display strobe (DSTB) or the lamp strobe (LSTB) is missing for 330 milliseconds the system will be reset. The system will also be reset if the supply voltage drops below 4vdc. This voltage monitor is configured using U21, VR1, D1, D2, R34, and R35.

B. POWER SUPPLY (A2)

The transformer panel delivers 12vdc to the input of the power supply. The regulated output voltage should be set to 5vdc by using potentiometer R3. This voltage is then supplied to the Control Board (A1), Driver Board (A3), Display Board (A4), Sound Board

IV. THEORY OF OPERATION

(A6), Display Controller Board (A8), and any other auxillary board which may require it.

C. DRIVER BOARD (A3)

Two voltages are supplied to this board at A3P1. The 5vdc is supplied from the Power Supply (A2) and the 20vdc is supplied from the transformer panel. The 20vdc is used to source the controlled lamps and the switch matrix. The Driver Board receives its data at A3P2 from the Control Board (A1P2). Solenoid data is latched into U1-U4. Lamp return data is latched into U5. Lamp and switch strobe data is shifted through U6 and U7. The comparators (U10,U11) are used to protect the MOSFETS (Q33-Q49). If a sensed input voltage exceeds the reference voltage (Vref), the corresponding MOSFET is turned off immediately following the lamp clear pulse (LCLR) supplied by U12 thus limiting the duty cycle. If the master reset signal (MR) is held low all lamps and solenoids will be disabled.

D. DISPLAY CONTROLLER (A8)

This board is comprised of the power supply section and the digital section. The power supply is used to generate the necessary voltages that are required to power the Display Board. All voltages are input at A8P1 and then output to the Display Board at A8P2.

The digital section controls the information which appears in the display and also the refresh of the display information. The clock circuit runs at 3.579 MHz and is divided by two through U5 and then fed to the microprocessor (U1-37) as the master clock. The LED on the board will flash if the microprocessor (U1) is running properly. A controller chip (U2) is used to refresh the Display Board independent from the code which is being executed by the microprocessor (U1). U1 uses the data bus during the phase 2 portion of the clock while U2 uses it during the phase 1 portion. The address lines from both U1 and U2 are multiplexed through U9-U11 to determine which device has control of

the ram (U4). The necessary data is then output to the Display Board at A8P4. Data is both transmitted and received from the Control Board at A8P3. If the Control Board cannot successfully communicate with the Display Controller Board it will attempt to reset the Controller Board by sending a negative going signal on A8P3-14 (DS1).

E. DISPLAY BOARD (A4)

The Display Board consists of a 128 column X 32 row gas plasma display. The drive electronics located on the backside of the board convert low voltage serial data in to high voltage parallel data out for driving the display. The column drivers contain output latches so that column data for the following row can be entered while the present row is being displayed. All voltages required by the display are input at A4P1. All control signals needed to multiplex the display are input at A4P2. The Display Controller Board sends 128 bits of serial column data on the SDATA line for every row of display information. The data is shifted through the driver IC's by the dot clock signal (DCLK). The column data for a particular row is then latched by the column latch (CLATCH) signal. The row clock (RCLK) signal is used to clock the row driver data (RDATA) through the row driver IC. There is only one active row at a time. Between rows the display enable (DE) signal is used to prevent the display from flickering.

F. SOUND BOARD (A6)

The Sound Board consists of two 6502 microprocessor systems, a dual DAC, an input port to receive commands from the system Control Board, and a low level audio output at A6P2-9 which is sent to the summing amplifier located on the Auxiliary Sound Board (A20) for amplification.

The Sound Board requires three supply voltages +5vdc, +12vdc, and -12vdc. In addition, a power-up reset signal is required from the Control Board. If a manual reset is desired, pressing SW2 will reset both processors.

IV. THEORY OF OPERATION

A 4MHz oscillator is configured with R11, R12, C14, C15, C22, XTAL1, and T1. This clock is then divided down by S1 into either a 2MHz or 1MHz clock signal for the processors N1 and T3. A 250 KHz clock signal from S1-11 is used by the programmable timer section consisting of N5, H5, T5, and K5.

Eight lines from the Control Board are input at A6P1 on the Sound Board and sent to the two input code latches A3 and B2. When any of these inputs goes low (except for A6P1-9 when JP7 is not installed) A2-8 goes high which causes the input code data to be latched into A3 and B2. Also at the same time the flip-flops contained in A4 are clocked which cause the IRQ input of each microprocessor to go low. The outputs of A4 will remain in the low state until each flip-flop is cleared by a signal from its associated microprocessor after each IRQ is processed.

The Sound Board is designed to accomodate different types of Eproms. Jumpers JP1, JP2, JP3, and JP4 should be set to their proper positions based on the density of the Eproms being used.

G. AUXILIARY SOUND BOARD (A20)

The Auxiliary Sound Board contains a sound generator YM2151 (U9) and a sound/speech generator MSM6295 (U1). Both of these IC's operate under the control of the T3 microprocessor on the master Sound Board (A6). The sound generator YM2151 responds to its commands by sending serial data to the YM3014 DAC (U10). The DAC then converts this data into an analog signal which is filtered through a series of op-amps and then sent to the main summing amplifier (U11).

A 74HCT74 IC (U6) is used to divide the 4 MHz clock signal present at A20P4-9 into both a 1 MHz and 2 MHz signal which is selectable via JP3 (2 MHz) or JP4 (1 MHz). This signal is then used as the master clock for the speech generator (U1). When the speech generator (U1) receives a command, it then retrieves its data from the Eproms (U4, U5). The analog output at pin 36 (DAO) is then sent

through an active filter network and then to the main summing amplifier (U11).

The output of the main summing amplifier (U11-7) is input to a voltage controlled amplifier (VCA) (U13). The volume is controlled by a potentiometer located just inside the front door of the game. The potentiometer acts as a resistor divider which supplies a 0 to 5 volt signal to the VCA at U13-2. The output of the VCA is then sent to Auxiliary Power Supply (A5) for amplification.

H. SENSOR BOARD (A15)

This board is used to detect if any flipper is energized and then inputs the data to the Control Board to be processed. This board therefore eliminates the need for a second switch to be used on the flipper assembly itself. U1 is an optocoupler device which converts the input signal from the flipper circuit when energized to a signal which can be recognized by the Control Board as a valid switch closure.

I. OPTICAL INTERFACE (A25)

The optical interface assembly generates and receives the infrared light pulses needed to optically detect the ball breaking an infrared light beam. It also provides a visual indication that the interface assembly is functioning properly.

This method of detection transmits infrared light pulses from an opto LED to an opto phototransistor receiver. The LED light pulses are generated from a switch strobe that is buffered and current amplified by two sections of the LM339 voltage comparitor (output pins 1 & 2) and transistor Q2.

When no ball is present, the light pulses reach the opto receiver which passes the pulses 180 degrees out of phase with the switch strobe on to two additional sections of the comparitor (pins 9 & 10). Because the strobe pulses and receive pulses are out of phase, they cancel at resistors R1 & R3 and keep comparitor

IV. THEORY OF OPERATION

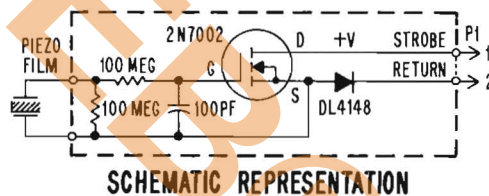
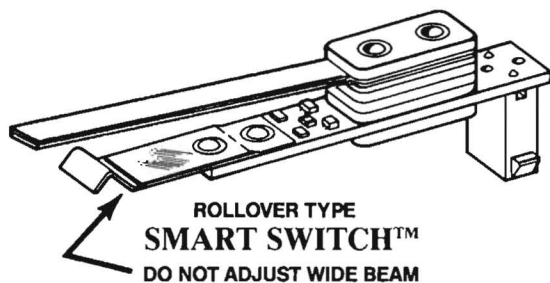
output pin 13 high therefore preventing Q1 from passing strobes on to the switch return line.

As a ball passes between the opto transmitter and receiver, the light beam is broken. Now, with no out of phase pulses coming from the receiver, the strobe appears at comparator inputs 9 & 10. Comparator output pin 13 begins pulsing low and passes the strobes through Q1 to the return line to signal a closed switch. Also positive strobe pulses at output pin 14 of the comparator turn Q3 on and light LED D2. D2 lit indicates a broken light beam and a closed optical switch.

J. SMART SWITCH™ (Piezo Film Sensor)

These devices take the place of the the normal contact point type switches used for sensing the ball on various different devices in the game. These devices should not require any adjustment. DO NOT ATTEMPT TO ADJUST THE WIDE CANTILEVER BEAM used in a switch assembly. This could cause permanent damage to the device. The lifetime of these switches has been determined to be over 10 million

cycles. The main advantage of these switches is the fact that they cannot be contaminated by such elements as moisture, dust, or smoke. Each switch assembly consists of a wide cantilever beam which has a piezo film sensor element laminated to its surface. When this beam is deflected, it induces a strain on the laminated piezo film sensor element. As the beam is returning to its rest position it generates an output voltage which triggers the on board circuit. This circuit then generates a momentary output which resembles that of contact points being closed. The switch design used in rollover and spot target applications generates an output signal as the beam which contains the piezo film returns to its rest position after it is actuated. The switch design used for pop bumpers generates an output signal as the beam is deflected in order to provide an immediate response by the pop bumper solenoid. This immediate response type of switch can be distinguished from the other because either the film itself or the printed circuit board will be colored blue. BE CAREFUL not to interchange these two different types of switches.



NOTES

GOTTFELDER®

V. GENERAL INFORMATION

A. PRINTED CIRCUIT BOARDS ARE DESIGNATED AS FOLLOWS:

A1 - Control Board
A2 - Power Supply
A3 - Driver Board
A4 - Dot Matrix Display
A5 - Auxiliary Power Supply
A6 - Sound Board
A8 - Display Controller
A11 - Auxiliary Driver Board
A13 - Resistor Board
A15 - Sensor Board
A16 - Filter Board
A17 - Diode Board
A20 - Auxiliary Sound Board
A22 - LED Board
A25 - Optional Interface Board
A26 - Game Controls Board
A27 - Communications Adapter (Optional)

Printed circuit board connectors will be labeled AX-JX. For example, A3-J4 is the connector J4 to the driver board (A3).

B. WIRE COLORS ARE SHOWN AS NUMBERS:

0 Black
1 Brown
2 Red
3 Orange
4 Yellow
5 Green
6 Blue
7 Violet
8 Gray
9 White

For example, 688 is a BLUE-GRAY-GRAY striped wire.

C. FUSE AND COIL INFORMATION

TRANSFORMER PANEL

F1	Line Input.....	110V AC....	8 Amp	SLO-BLO
		220V AC....	4 Amp	SLO-BLO
F2	Primary Power.....	110V AC....	5 Amp	SLO-BLO
		220V AC....	2-1/2 Amp	SLO-BLO
F3	Display.....		3/8 Amp	SLO-BLO
F4	Display.....		3/8 Amp	SLO-BLO
F5	Power Supply.....		2-1/2 Amp	SLO-BLO
F6	Controlled Lamps and Switches.....		10 Amp	SLO-BLO
F7	Solenoids.....		8 Amp	SLO-BLO
F8	Lightbox Illumination.....		15 Amp	
F9	Playfield Illumination.....		7-1/2 Amp	
F10	Auxiliary Power Supply.....		3 Amp	SLO-BLO
F11	Auxiliary Power Supply.....		3 Amp	SLO-BLO

NOTE:

FUSE DESIGNATIONS F12 THRU F14 NOT USED.

V. GENERAL INFORMATION

PLAYBOARD FUSES, COILS/COLORS/SLEEVES

FUSE	RATING	PART NO.	USAGE	COIL/COLOR	SLEEVE
F15	1 AMP SLO-BLO	EL-6	POP BUMPER (Q1)	17876 (TAN)	5064
F16	1-1/2 AMP SLO-BLO	EL-24	LEFT KICKING RUBBER (Q2)	5195 (WHITE)	5064
F17	1-1/2 AMP SLO-BLO	EL-24	RIGHT KICKING RUBBER(Q3)	5195 (WHITE)	5064
F18	1 AMP SLO-BLO	EL-6	TOP KICKING RUBBER (Q4)	17876 (TAN)	5064
F19	2-1/2 AMP SLO-BLO	EL-21	BOTTOM LEFT FLIPPER	25959 (RED)	5065
F20	1-1/2 AMP SLO-BLO	EL-24	TOP RIGHT FLIPPER	27642 (YELLOW)	5065
F21	2-1/2 AMP SLO-BLO	EL-21	BOTTOM RIGHT FLIPPER	25959 (RED)	5065
F22	1/2 AMP SLO-BLO	EL-20	BALL RELEASE (Q28)	26451 (YELLOW)	5065
			OUTHOLE (Q29)	26451 (YELLOW)	5065
			HOLE (Q5)	26450 (PINK)	5064
F23	1/2 AMP SLO-BLO	EL-20	PLUNGER GATE (Q6)	26451 (YELLOW)	5064
F24	2 AMP SLO-BLO	EL-7	5 BANK RESET (Q7)	19300 (ORANGE)	25605
F25	2 AMP SLO-BLO	EL-7	TOP UPKICKER (Q8)	16570 (GREEN)	21411
F26	1 AMP SLO-BLO	EL-6	CENTER UPKICKER (Q9)	17876 (TAN)	21411
F27	1/2 AMP SLO-BLO	EL-20	BOTTOM UPKICKER (Q10)	26450 (PINK)	21411

V. GENERAL INFORMATION

D. COIL CHART

SOLENOID COILS					
PART NUMBER	WHERE USED	RESISTANCE (OHMS)	NUMBER OF TURNS	WIRE GAUGE	WRAPPER COLOR
A-19300	GENERAL PURPOSE	7.8	1075	#25	ORANGE
A-5195	GENERAL PURPOSE	12.3	1305	#26	WHITE
A-16570	GENERAL PURPOSE	15.5	1450	#27	GREEN
A-17876	GENERAL PURPOSE	24	1750	#28	TAN
A-26450	GENERAL PURPOSE	42	2400	#29	PINK
A-26451	GENERAL PURPOSE	65.8	3000	#30	YELLOW
A-26926	3-BANK RESET	32.8	2650	#27	BLUE
A-29876	FLIPPER (NEW UNIT)	2.36/202	560/3325	#23/#33	ORANGE
A-25959	FLIPPER (NEW UNIT)	3.85/202	720/3325	#24/#33	RED
A-26646	FLIPPER (NEW UNIT)	4.57/201	725/3470	#25/#33	BLUE
A-28740	FLIPPER (NEW UNIT)	6.02/207	790/3600	#26/#33	TAN
A-27642	FLIPPER (NEW UNIT)	9.1/203	950/3700	#27/#33	YELLOW
A-27643	FLIPPER (OLD UNIT)	11.4/202	960/3670	#28/#33	GREEN
A-27926	GENERAL PURPOSE	64.7	3475	#29	BLUE
RELAY COILS					
PART NUMBER	WHERE USED	RESISTANCE (OHMS)	NUMBER OF TURNS	WIRE GAUGE	WRAPPER COLOR
A-26452	DROP TAR. TRIP	137	2450	#35	PINK
A-16890	GENERAL PURPOSE	231	4000	#35	ORANGE

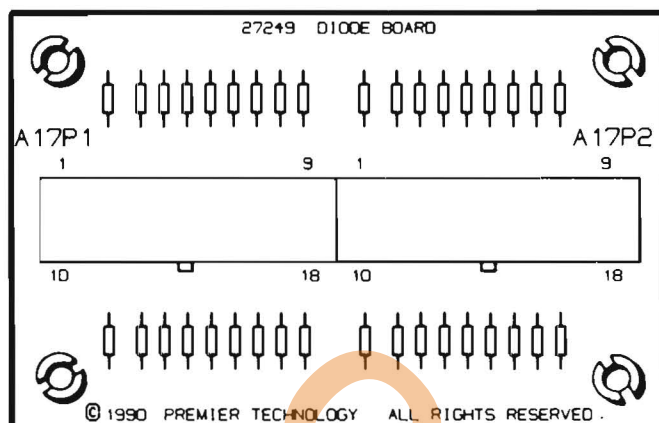
VI. WIRING AND SCHEMATIC DIAGRAMS, PARTS LISTS

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VI. WIRING AND SCHEMATIC DIAGRAMS, PARTS LISTS

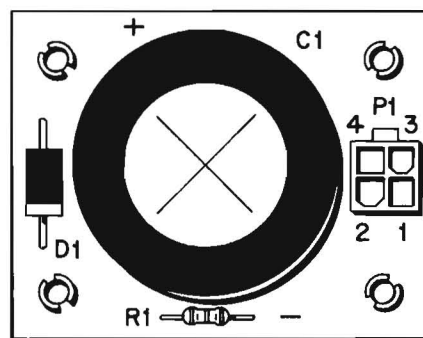
DIODE BOARD (A17) COMPONENT LOCATION



DIODE BOARD (A17) PARTS LIST

REFERENCE	DESCRIPTION	PART NUMBER
1A17	Diode Matrix Assembly	MA-1448
D1-D32	Diode, 1N4148	XO-261
P1, P2	Header, 18 Position	XO-916
R1-R4	Resistor, 220 OHM, 5%, 1/4W	XO-21
	Circuit Board Support (4)	23984

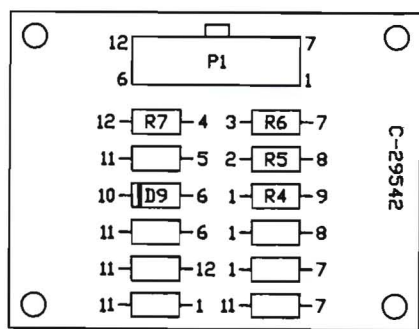
FILTER BOARD (A16) COMPONENT LOCATION



FILTER BOARD (A16) PARTS LIST

REFERENCE	DESCRIPTION	PART NUMBER
	FILTER BOARD ASSEMBLY	MA-1745
C1	CAPACITOR, 2200UF, 100V	XO-923
D1	DIODE, 1N5401	XO-263
R1	RESISTOR, 24K OHM, 5%, 1/4W	XO-10
P1	HEADER, 4 POSITION	XO-909
	CIRCUIT BOARD SUPPORT (4)	23984

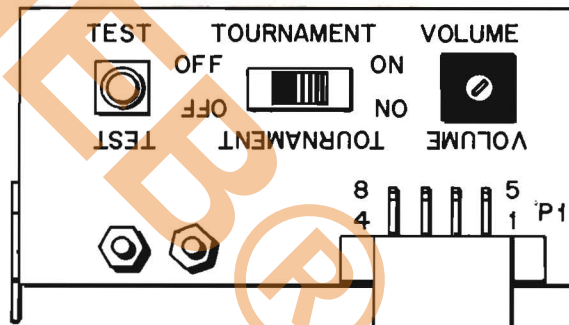
RESISTOR BOARD (A13) COMPONENT LOCATION



RESISTOR BOARD (A13) PARTS LIST

REFERENCE	DESCRIPTION	PART NUMBER
	RESISTOR BOARD (A13)	29643
D9	DIODE, 1N4004	XO-254
R4-R7	RESISTOR, 220 OHM, 5%, 1/4W	XO-21
P1	HEADER, 12 POSITION	XO-913
	SPACER, (4)	23984

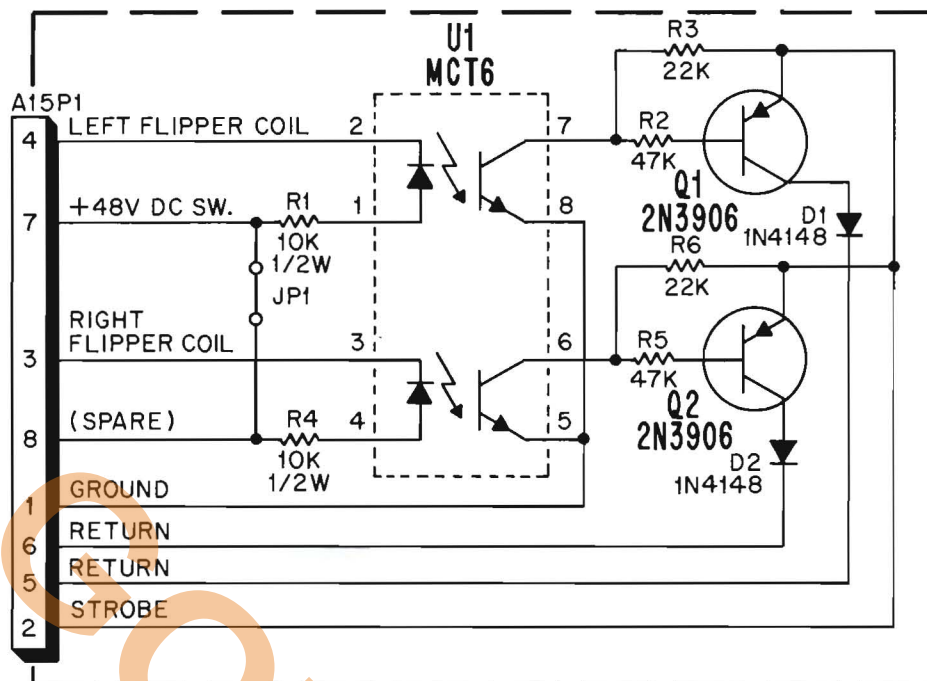
GAME CONTROLS BOARD (A26) COMPONENT LOCATION



GAME CONTROLS BOARD (A26) PARTS LIST

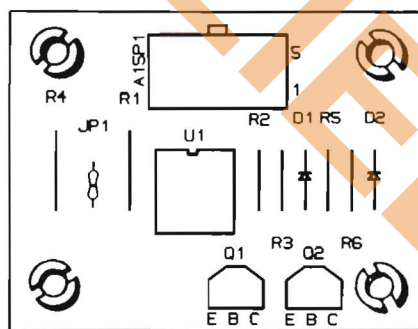
DESCRIPTION	PART NUMBER
Game Controls Board (A26)	MA-1851
Potentiometer, 10K OHM, 20%, 15W	XO-1194
Pushbutton Switch	XO-897
Slide Switch	XO-1193
Header, 8 Position	XO-920
Mounting Bracket	28619
Key Cap, Yellow	XO-1198

VI. WIRING AND SCHEMATIC DIAGRAMS, PARTS LISTS



Premier Technology			
TITLE			
SENSOR BOARD (A15)			
SCHEMATIC DIAGRAM			
DRAWN	APPROVED	DATE	E-27041
W.P.S.	RHM	10-12-89	

SENSOR BOARD (A15) COMPONENT LOCATION

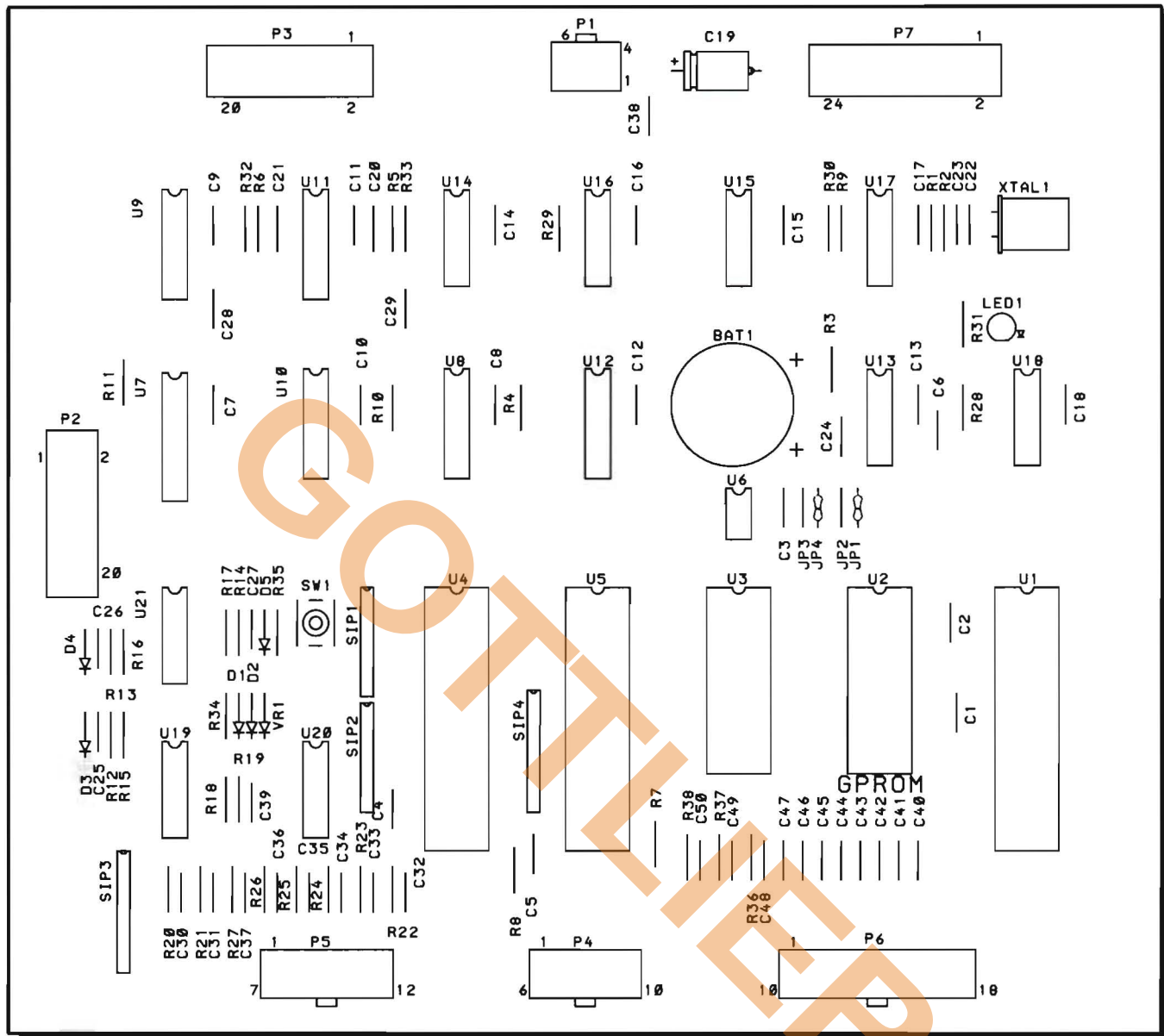


SENSOR BOARD (A15) PARTS LIST

REFERENCE	DESCRIPTION	PART NUMBER
	Sensor Board Assembly (A15)	MA-1334
D1,D2	Diode, 1N4148	XO-261
JP1	Jumper, Resistor, 0 OHM	XO-469
Q1,Q2	Transistor, 2N3906 (PNP)	XO-588
R1,R4	Resistor, 10K Ohm, 5%, 1/2W	XO-62
R2,R5	Resistor, 47K Ohm, 5%, 1/4W	XO-30
R3,R6	Resistor, 22K Ohm, 5%, 1/4W	XO-42
U1	IC, Optocoupler, MCT6	XO-1000
A15P1	Header, 8 Position	XO-911
	Spacer (4)	23984

VI. WIRING AND SCHEMATIC DIAGRAMS, PARTS LISTS

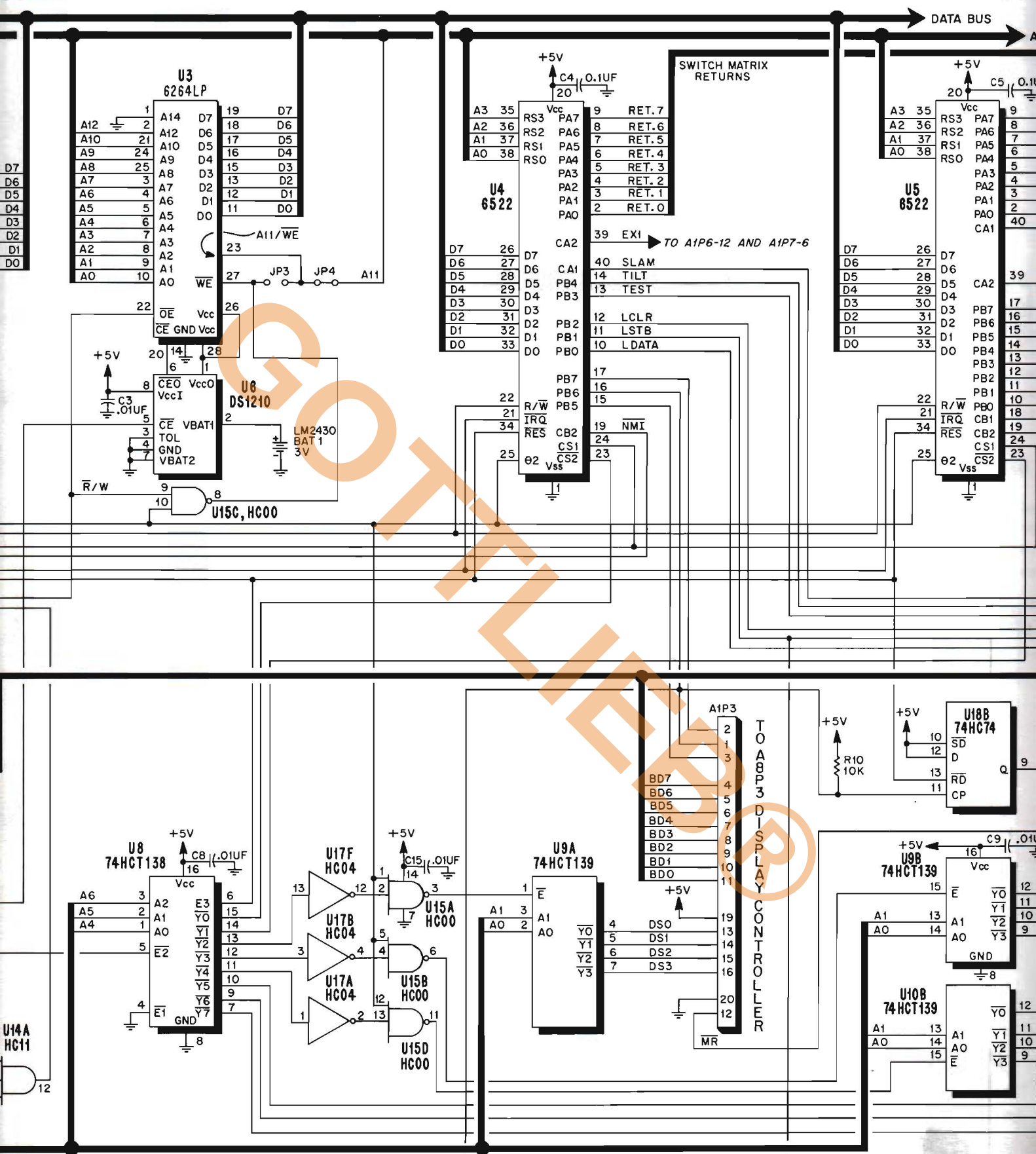
CONTROL BOARD (A1) COMPONENT LOCATION

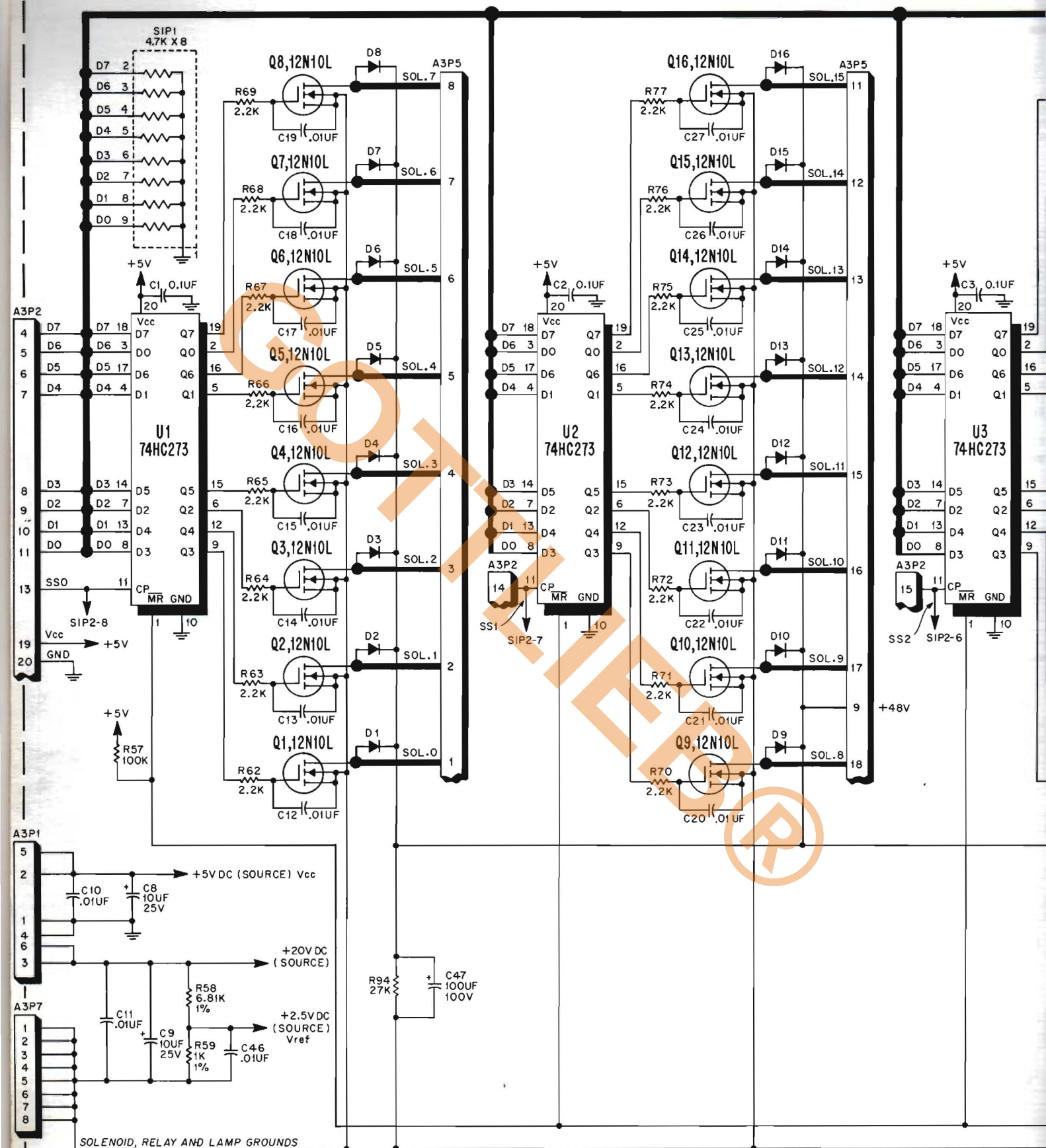


CONTROL BOARD (A1) PARTS LIST

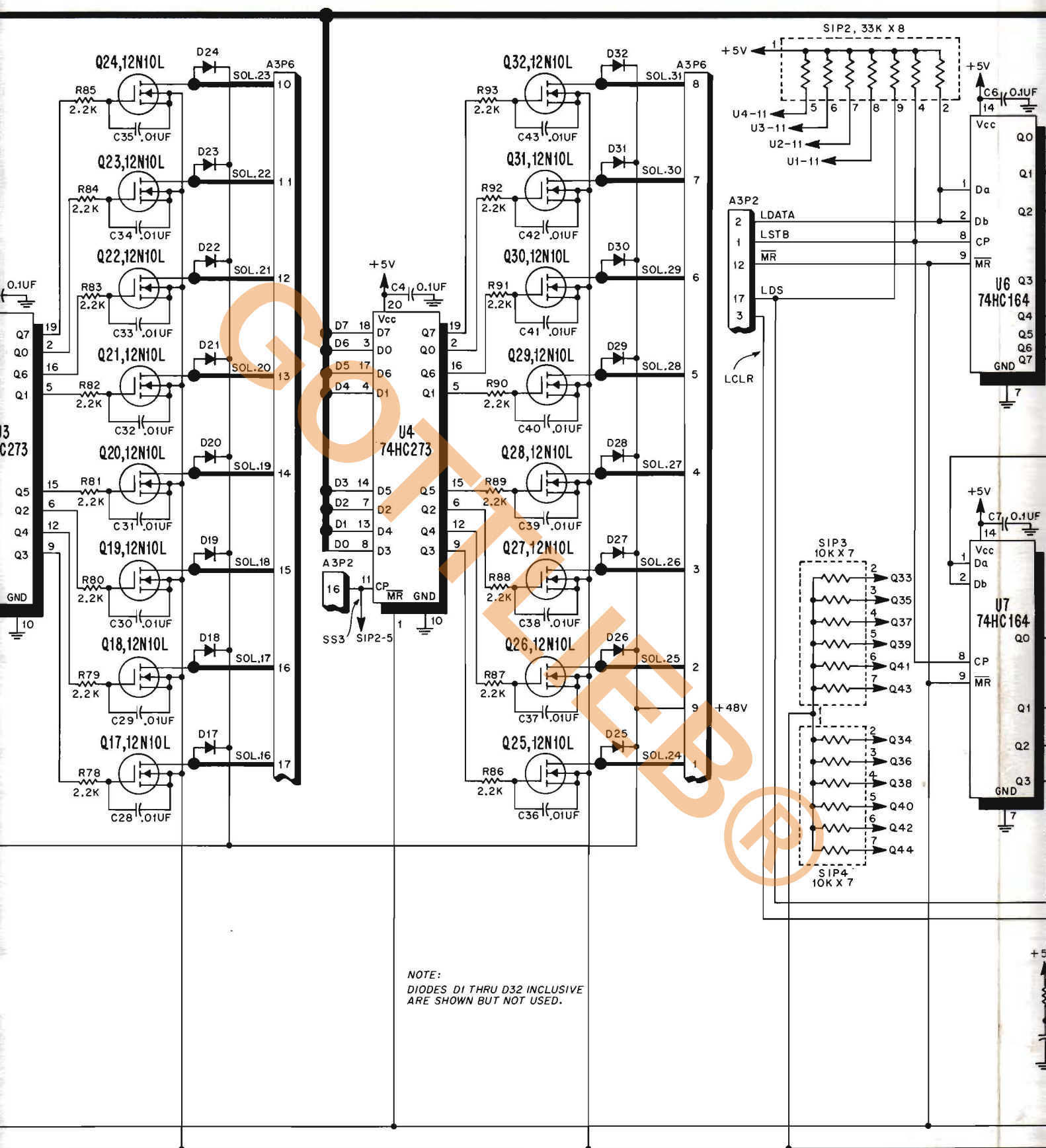
REFERENCE	DESCRIPTION	PART NUMBER	REFERENCE	DESCRIPTION	PART NUMBER
BAT 1	Control Board Assembly (A1)	MA-1934	SIP3,SIP4	Resistor Pack, 4.7K OHM X 8	X0-161
C3, C7-C18, C30-C50	Lithium Battery, LM2430, 3V	X0-925	SW1	Switch, N.O.	X0-897
C1,C2,C4	Capacitor, .01UF, +80% -20%, 50V	X0-229	U1	IC, 65CO2P2, CPU, 2MHZ	X0-927
C5,C25,C27	Capacitor, 0.1UF, +80% -20%, 50V	X0-230	U3	IC, 6264LP, 8K X 8, Static Ram	X0-781
C6,C22,C23	Capacitor, 33PF, 10%, 50V	X0-896	U4,U5	IC, 6522AP, Versatile Interface Adaptor (VIA)	X0-929
C19	Capacitor, 100UF, +80% -20%, 10V	X0-211	U6	IC, DS1210, Non-Volatile Controller	X0-930
C20,C21	Capacitor, 1UF, 20%, 50V	X0-746	U7	IC, 74HCT373, Octal Latch	X0-931
C24	Capacitor, .022UF, 10%, 50V	X0-873	U8	IC, 74HCT138, Decoder	X0-932
C28,C29	Capacitor, 1000PF, 10%, 100V	X0-296	U9,U10	IC, 74HCT139, Dual Decoder	X0-933
D1-D5	Diode, 1N4148	X0-261	U11	IC, 74HC123, Dual Multivibrator	X0-934
LED 1	LED, MV5752 (Red)	X0-270	U12	IC, 74HC161, Binary Counter	X0-935
R1	Resistor, 22 MEGOHM, 5%, 1/4W	X0-74	U13	IC, 74HC14, Schmitt Hex Inverters	X0-936
R2,R10,R11	Resistor, 10K OHM, 5%, 1/4W	X0-18	U14	IC, 74HC11, Triple "And" Gates	X0-937
R18,R28,R30			U15,U16	IC, 74HC00, Quad "Nand" Gates	X0-782
R3	Resistor, 560K OHM, 5%, 1/4W	X0-169	U17	IC, 74HC04, Hex Inverters	X0-888
R5,R6	Resistor, 330K OHM, 5%, 1/4W	X0-47	U18	IC, 74HC74, Dual "D" Flip-Flop	X0-939
R4,R7-R9	Resistor, 3K OHM, 5%, 1/4W	X0-23	U19,U20,U21	IC, LM339, Quad Comparators	X0-583
R12-R14	Resistor, 2.2K OHM, 5%, 1/4W	X0-27	VR1	Zener Diode, 1N5225B, 3V, 5%	X0-269
R15-R17	Resistor, 3.3K OHM, 5%, 1/4W	X0-38	XTAL1	Crystal, 4MHZ	X0-366
R19-R27, R36-R38	Resistor, 4.7K OHM, 5%, 1/4W	X0-7	A1P1	Header, 6 Position	X0-910
R31	Resistor 330 OHM, 5%, 1/4W	X0-34	A1P2,A1P3	Header, 20 Position (Ribbon)	X0-940
R32-R33	Resistor, 100K OHM, 5%, 1/4W	X0-45	A1P4	Header, 10 Position	X0-912
R34	Resistor, 1K OHM, 5%, 1/4W	X0-5	A1P5	Header, 18 Position	X0-916
R35	Resistor, 100 OHM, 5%, 1/4W	X0-28	A1P6	Header, 24 Position	X0-1201
SIP1,SIP2	Resistor Pack, 10K OHM X 7, 5%, 1/4W	X0-926	A1P7	Jumper, Resistor, 0 OHM (2)	X0-469
				Socket, 28 Pin Dip	X0-536

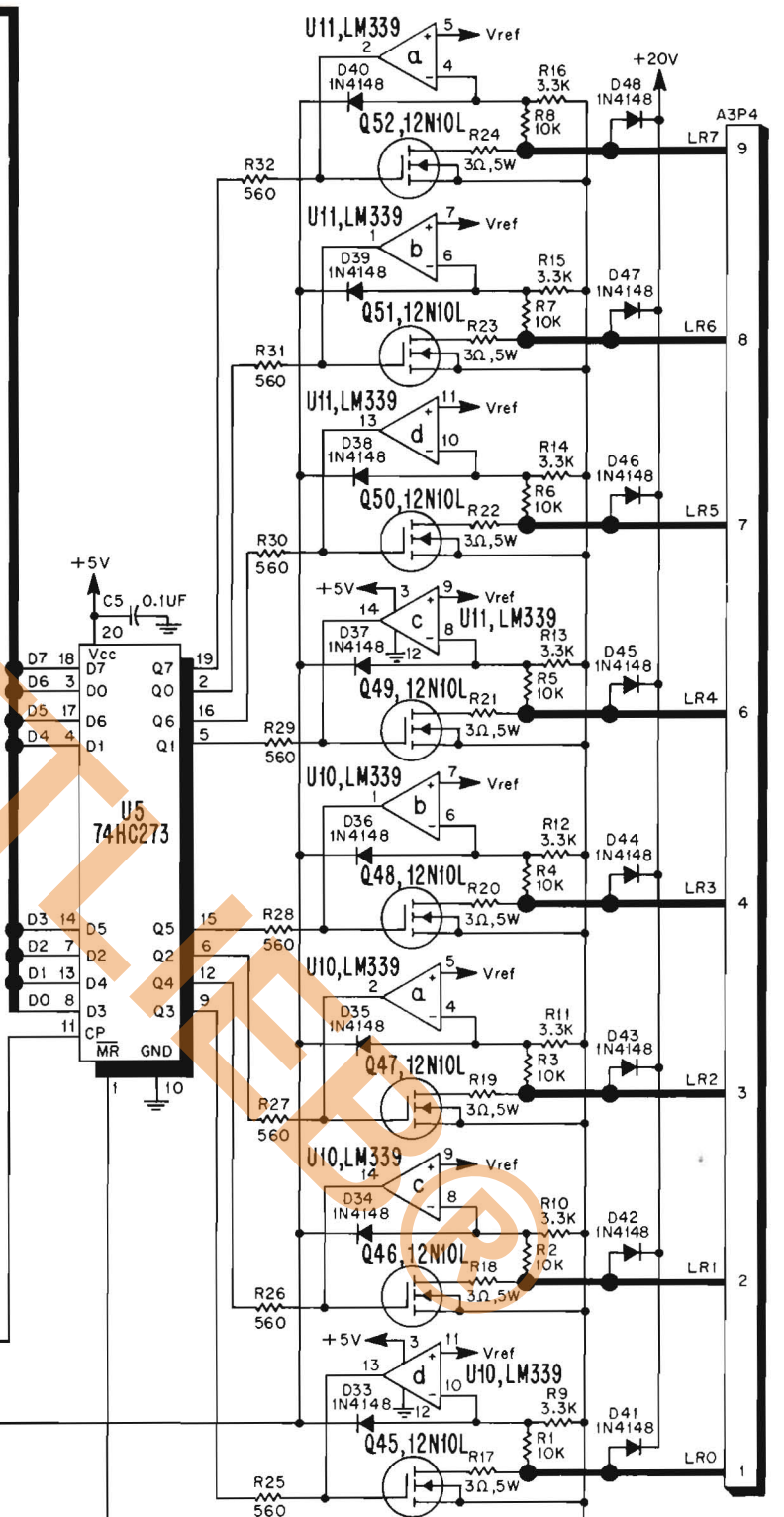
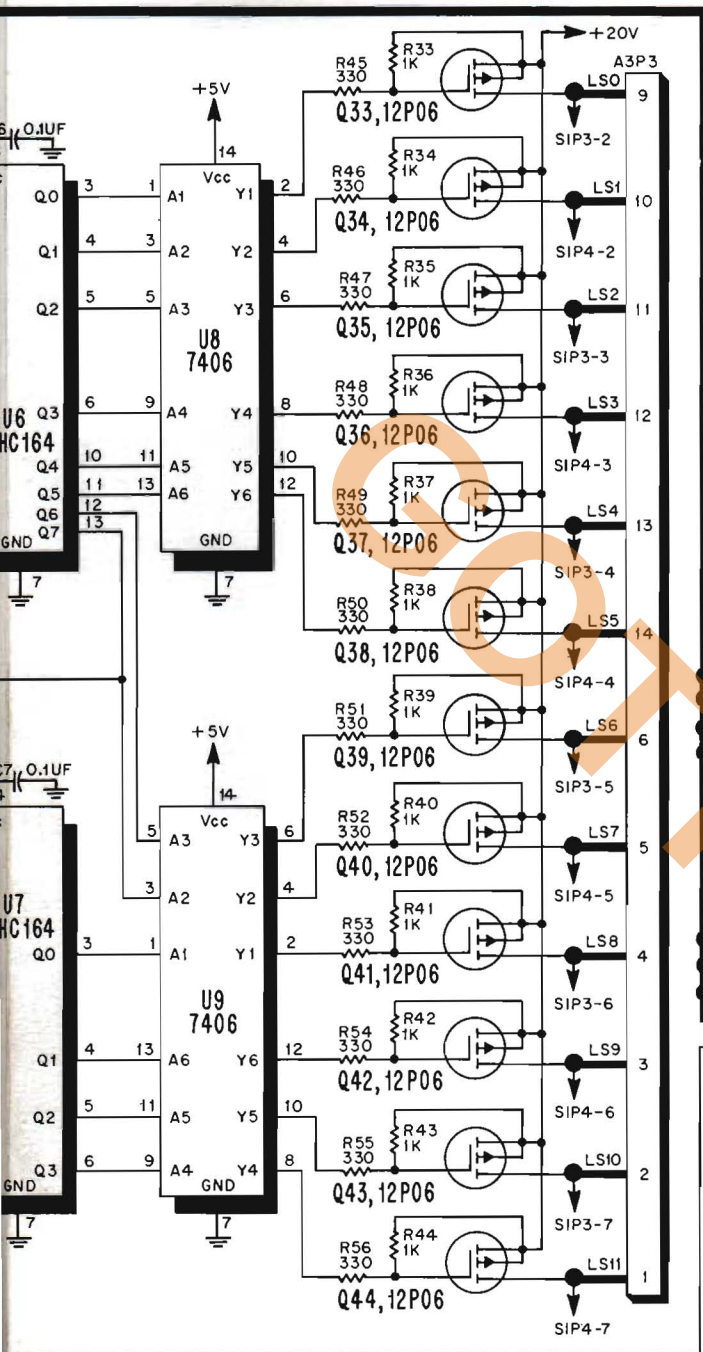
VI. WIRING AND SCHEMATIC DIAGRAMS, PARTS LISTS





VI. WIRING AND SCHEMATIC DIAGRAMS, PARTS LISTS

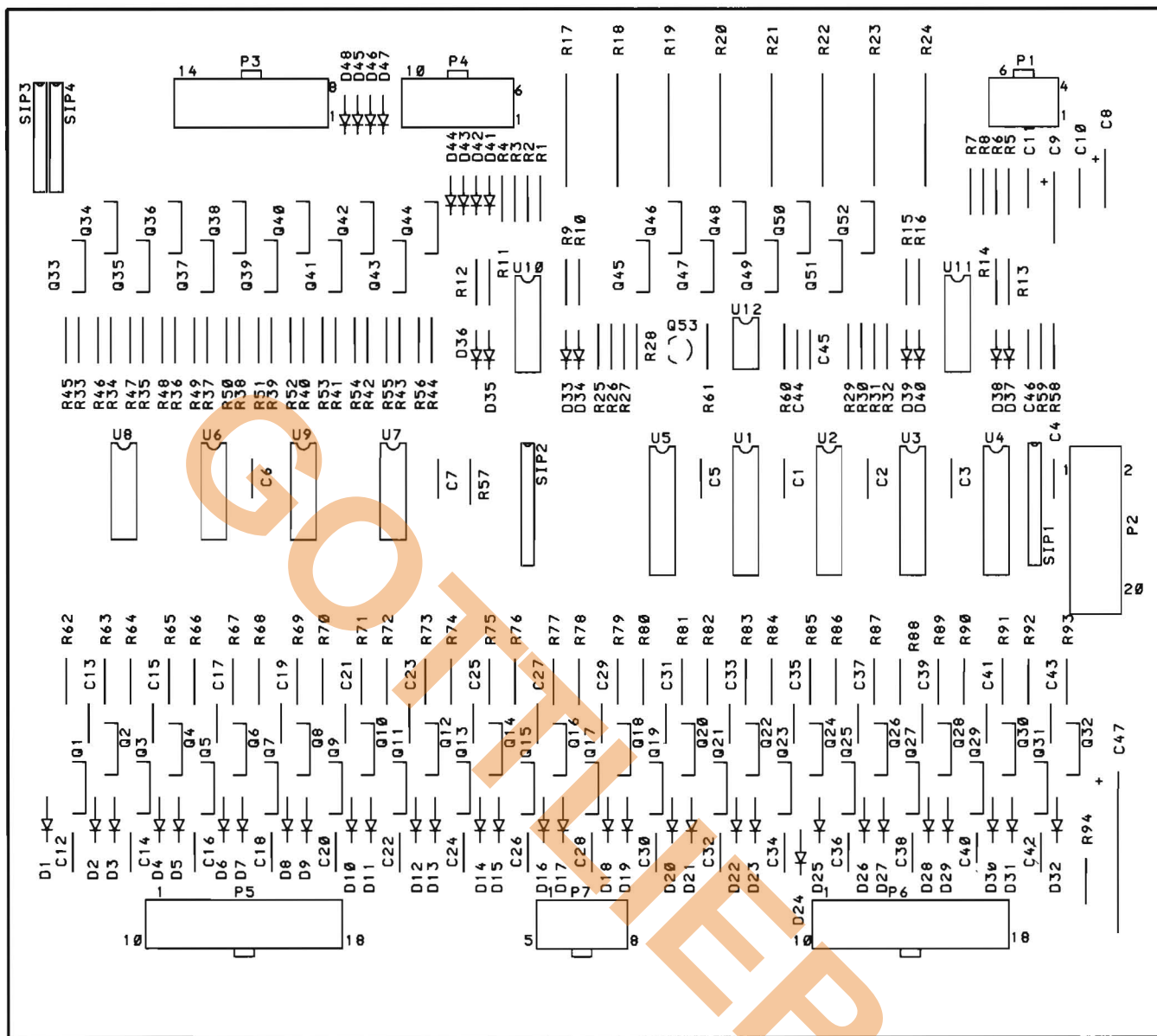




Premier Technology			
TITLE			
DRIVER BOARD (A3)			
SCHEMATIC DIAGRAM			
DRAWN	APPROVED	DATE	
R.P.S.	R.H.M.	10-12-89	E-27034

VI. WIRING AND SCHEMATIC DIAGRAMS, PARTS LISTS

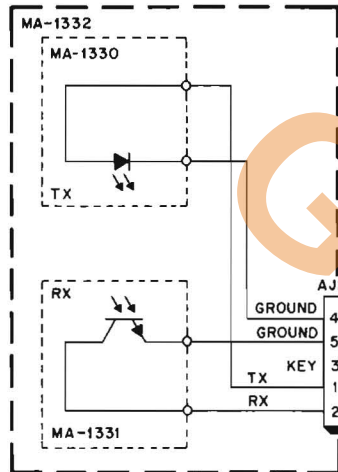
DRIVER BOARD (A3) COMPONENT LOCATION



DRIVER BOARD (A3) PARTS LIST

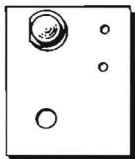
REFERENCE	DESCRIPTION	PART NUMBER	REFERENCE	DESCRIPTION	PART NUMBER
C1-C7	Driver Board Assembly (A3)	MA-1358	R58	Resistor, 6.81K Ohm, 1%, 1/4W	XO-943
C8	Capacitor, 0.1 UF, +80% -20%, 50V	XO-230	R59	Resistor, 1K Ohm, 1%, 1/4W	XO-944
C9	Capacitor, 10UF, 20%, 25V	XO-127	R60	Resistor, 4.7K Ohm, 5%, 1/4W	XO-7
C10, C11	Capacitor, 10UF, +80% -20%, 25V	XO-225	R61-R93	Resistor, 2.2K Ohm, 5%, 1/4W	XO-27
C45, C46	Capacitor, .01UF, +80% -20%, 50V	XO-229	R94	Resistor, 27K Ohm, 5%, 1/4W	XO-11
C12-C44	Capacitor, .01UF, 10%, 50V	XO-696	SIP1	Resistor Pack, 4.7K Ohm X 8,5%, 1/4W	XO-161
C47	Capacitor, 100UF, 20%, 100V	XO-958	SIP2	Resistor Pack, 33K Ohm X 8,5%, 1/4W	XO-945
D33-D48	Diode, 1N4148	XO-261	SIP3	Resistor Pack, 10K Ohm X 7,5%, 1/4W	XO-926
Q1-Q32, Q45-Q52, Q54	Transistor, RFP12N10L, OR IRL530, N-Channel MOSFET	XO-947	SIP4		
Q33-Q44	Transistor, RFP12P06, OR IRF9531, P-Channel MOSFET	XO-948	U1-U5	IC, Octal "D" Flip-Flops, 74HC273	XO-949
Q53	Transistor, MPSA13, Darlington	XO-304	U6-U7	IC, Shift Register, 74HC164	XO-950
R1-R8	Resistor, 10K Ohm, 5%, 1/4W	XO-18	U8-U9	IC, Buffer, 7406	XO-85
R9-R16	Resistor, 3.3K Ohm, 5%, 1/4W	XO-38	U10-U11	IC, Quad Comparator, LM339	XO-583
R17-R24	Resistor, 3 Ohm, 5%, 5W	XO-942	U12	IC, Timer, N5555	XO-631
R25-R32	Resistor, 560 Ohm, 5%, 1/4W	XO-36	A3P1	Header, 6 Position	XO-910
R33-R44	Resistor, 1K Ohm, 5%, 1/4W	XO-5	A3P2	Header, 20 Position (Ribbon)	XO-940
R45-R56	Resistor, 330 Ohm, 5%, 1/4W	XO-34	A3P3	Header, 14 Position	XO-914
R57	Resistor, 100K Ohm, 5%, 1/4W	XO-45	A3P4	Header, 10 Position	XO-912
			A3P5,	Header, 18 Position	XO-916
			A3P6		
			A3P7	Header, 8 Position	XO-911

OPTO LED TRANSMITTER BOARD SCHEMATIC DIAGRAM



OPTO PHOTOTRANSISTOR RECEIVER BOARD SCHEMATIC DIAGRAM

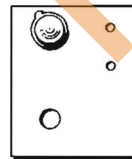
OPTO LED TRANSMITTER BOARD COMPONENT LOCATION



OPTO LED TRANSMITTER BOARD PARTS LIST

REFERENCE	DESCRIPTION	PART NUMBER
TX	Opto LED Transmitter Assembly Plastic Transmitter LED	MA-1330 XO-994

OPTO PHOTOTRANSISTOR RECEIVER BOARD COMPONENT LOCATION

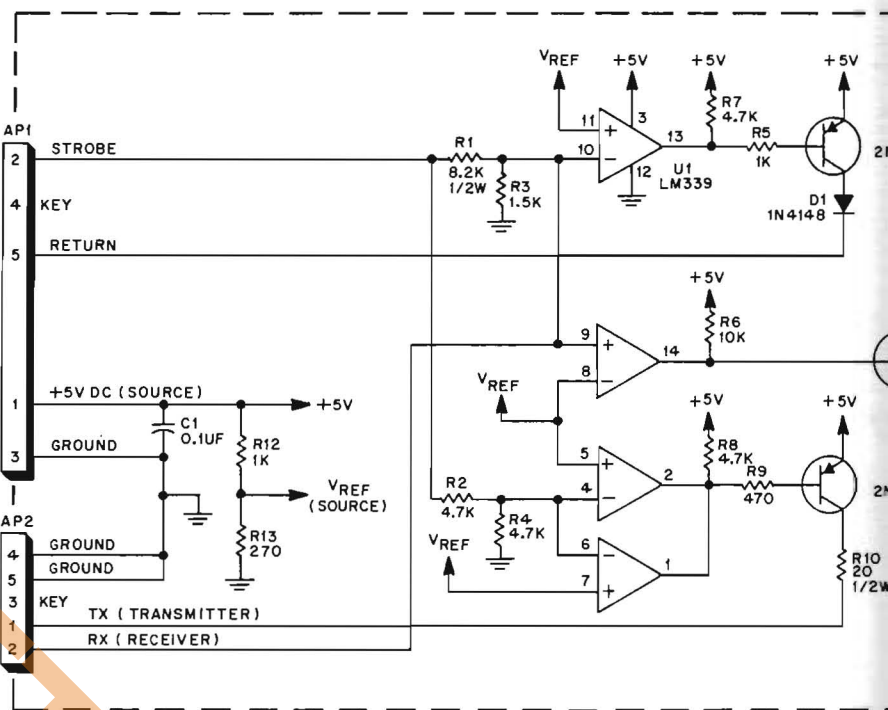


OPTO PHOTOTRANSISTOR RECEIVER BOARD PARTS LIST

REFERENCE	DESCRIPTION	PART NUMBER
RX	Opto Phototransistor Receiver Assembly Plastic Phototransistor	MA-1331 XO-993

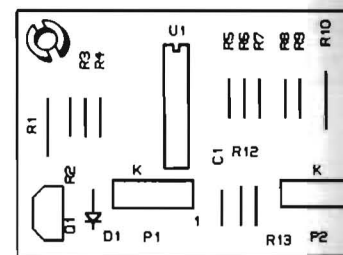
BRACKET AND OPTIC BOARD ASSEMBLIES REFERENCE			
PART NO.	CONNECTOR NO.	BRACKET NO.	LOCATION
MA-1942	1A25P2	29976	RIGHT RAMP
MA-1953	2A25P2	29802	RIGHT LANE

NOTE: BRACKET AND OPTIC BOARD ASSEMBLY
DOES NOT INCLUDE WIRING HARNESS.



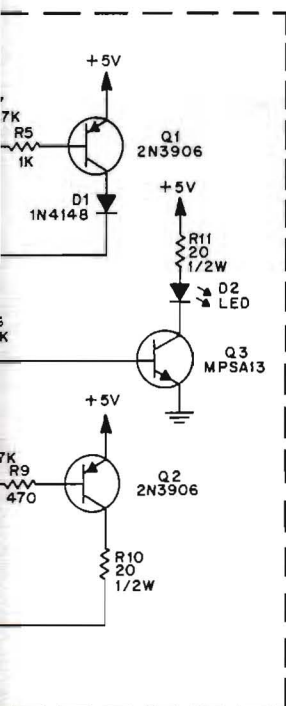
OPTICAL INTERFACE BOARD SCHEMATIC DIAGRAM

OPTICAL INTERFACE BOARD COMPONENT LOCATION



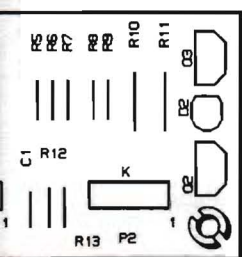
OPTICAL INTERFACE BOARD PARTS LIST

REFERENCE	DESCRIPTION
AP1, AP2	Optical Interface Board Assembly
C1	5 Pin Header
C2	Capacitor, 0.1uF, +80% -20%
D1	Diode, 1N4148
D2	Diode, MV5752 (LED, Red)
Q1, Q2	Transistor, PNP, 2N3906
Q3	Transistor, NPN, MPSA13
R1	Resistor, 8.2K Ohm, 5%, 1/2W
R2, R4, R7, R8	Resistor, 4.7K Ohm, 5%, 1/4W
R3	Resistor, 1.5K Ohm, 5%, 1/4W
R5, R12	Resistor, 1K Ohm, 5%, 1/4W
R6	Resistor, 10K Ohm, 5%, 1/4W
R9	Resistor, 470 Ohm, 5%, 1/4W
R10, R11	Resistor, 20 Ohm, 5%, 1/2W
R13	Resistor, 270 Ohm, 5%, 1/4W
U1	IC, Quad Comparators, LM339
U2	Support, SRS-8-6N, (2)



FRONT PANEL (A25)

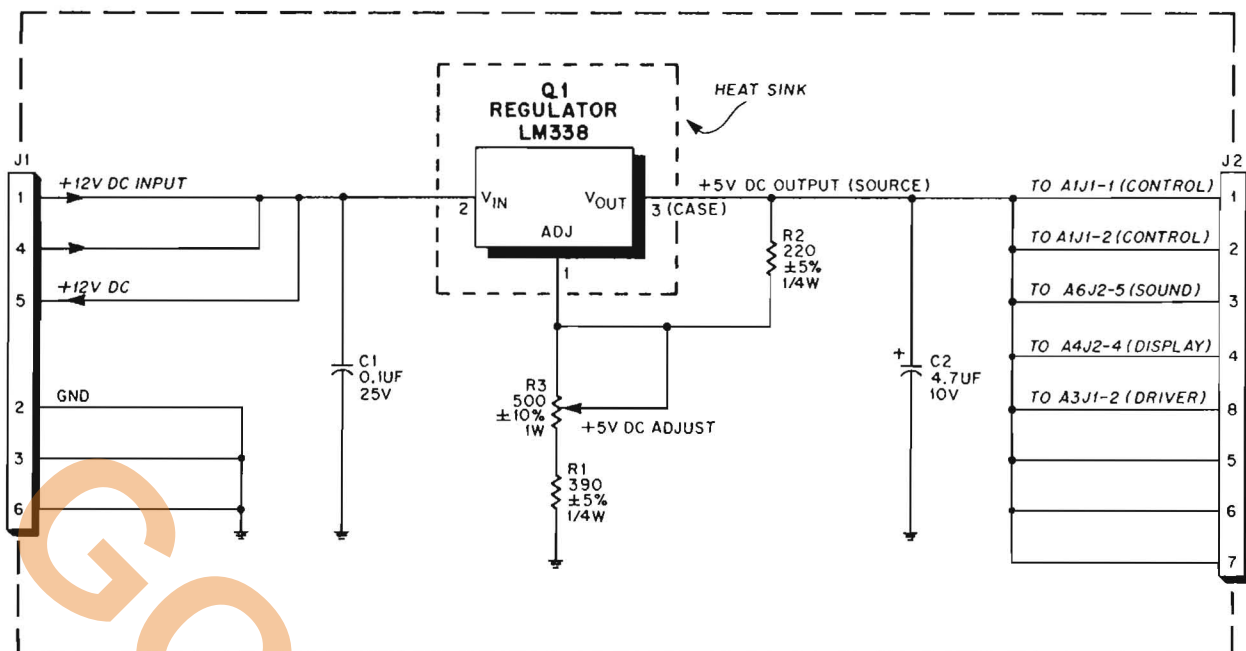
COMPONENT LOCATION



FRONT PANEL (A25)

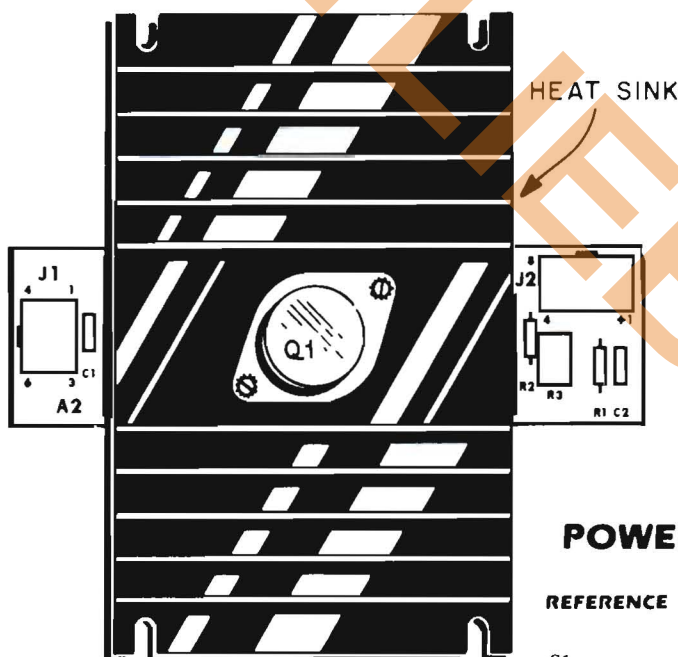
PARTS LIST

	PART NUMBER
Front Panel Assembly	MA-1558
Capacitor, 0.1uF, +80% -20%, 50V	XO-1002
Capacitor, 4.7uF, 10% 10V	XO-230
LED (Red)	XO-261
PNP, 2N3906	XO-270
NPN, MPSA13	XO-588
Resistor, 20 Ohm, 5%, 1/2W	XO-304
Resistor, 20 Ohm, 5%, 1/4W	XO-1022
Resistor, 20 Ohm, 5%, 1/4W	XO-7
Resistor, 20 Ohm, 5%, 1/4W	XO-18
Resistor, 20 Ohm, 5%, 1/4W	XO-35
Resistor, 20 Ohm, 5%, 1/2W	XO-65
Resistor, 20 Ohm, 5%, 1/4W	XO-68
Regulators, LM339	XO-583
Resistor, 20 Ohm, 5%, 1/4W	23984



POWER SUPPLY (A2)

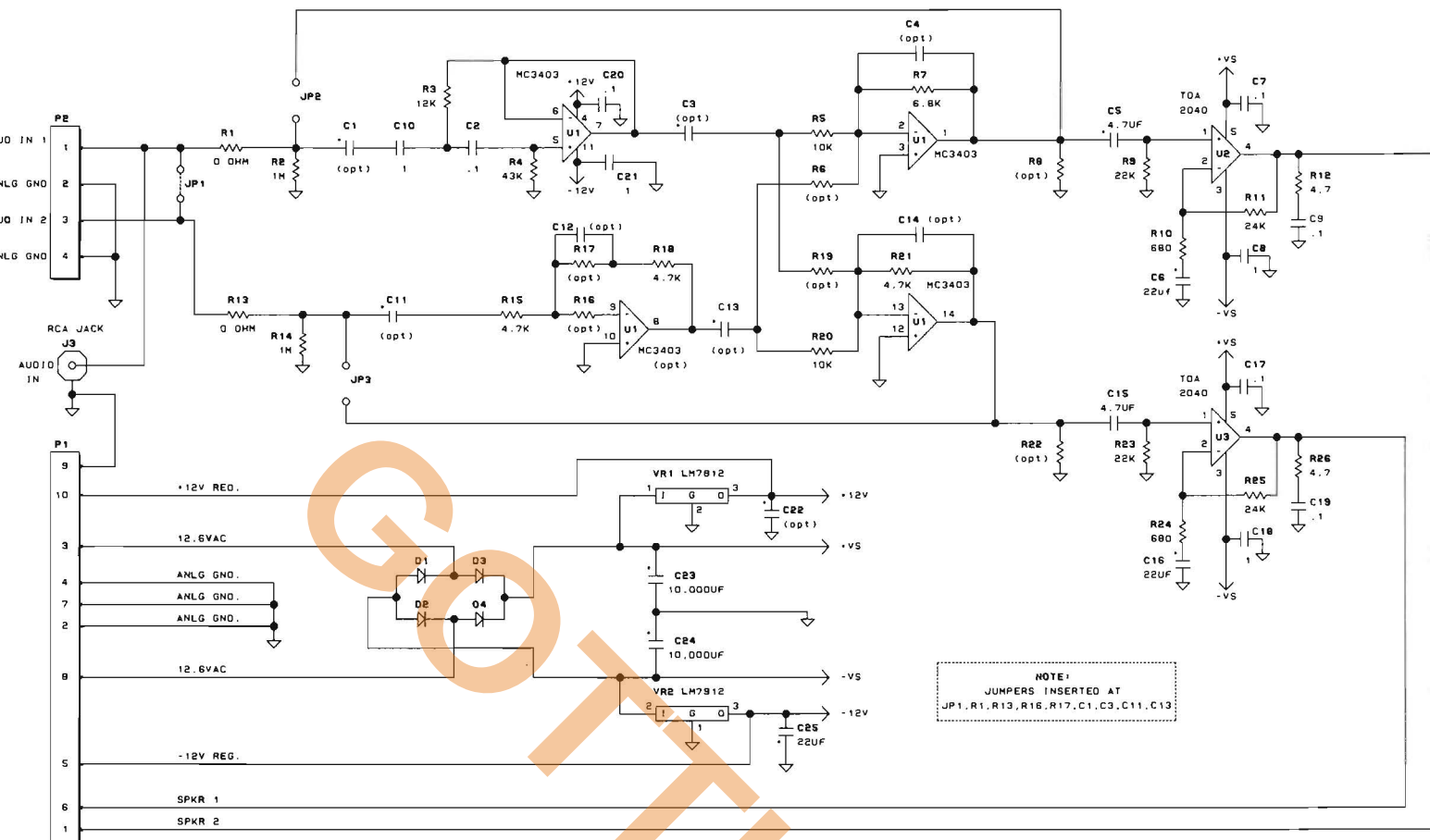
COMPONENT LOCATION



POWER SUPPLY (A2) PARTS LIST

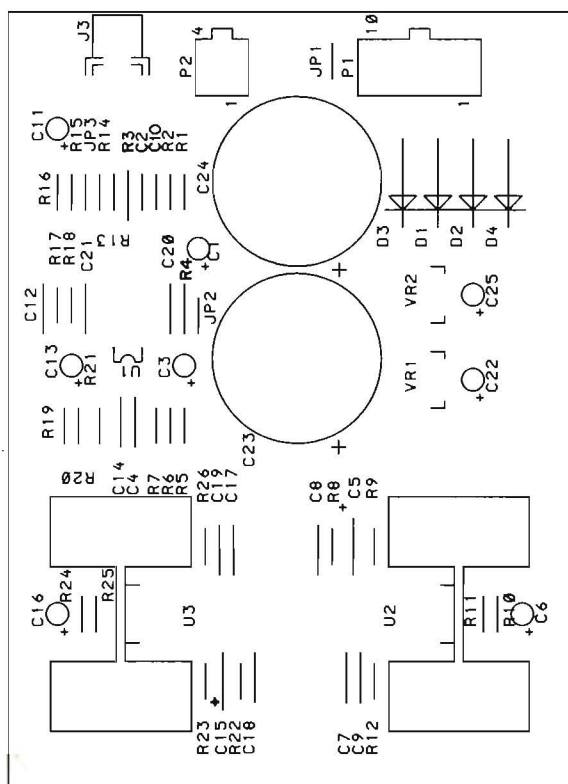
REFERENCE	DESCRIPTION	PART NUMBER
	Power Supply (A2)	MA-1359
C1	Capacitor, 0.1uF, +80% -20%, 50V	XO-230
C2	Capacitor, 4.7uF, 10% 10V	XO-226
J1	Header, 6 Position	XO-910
J2	Header, 8 Position	XO-911
Q1	Regulator, LM338, (5 Amp)	XO-839
R1	Resistor, 390 Ohm, 5%, 1/4W	XO-845
R2	Resistor, 220 Ohm, 5%, 1/4W	XO-21
R3	Resistor, (Pot) 500 Ohm, 10%, 1W	XO-112
	Heat Sink	XO-534
	Insulator (Regulator)	XO-522
	Insulator (Regulator)	XO-523

VI. WIRING AND SCHEMATIC DIAGRAMS, PARTS LISTS



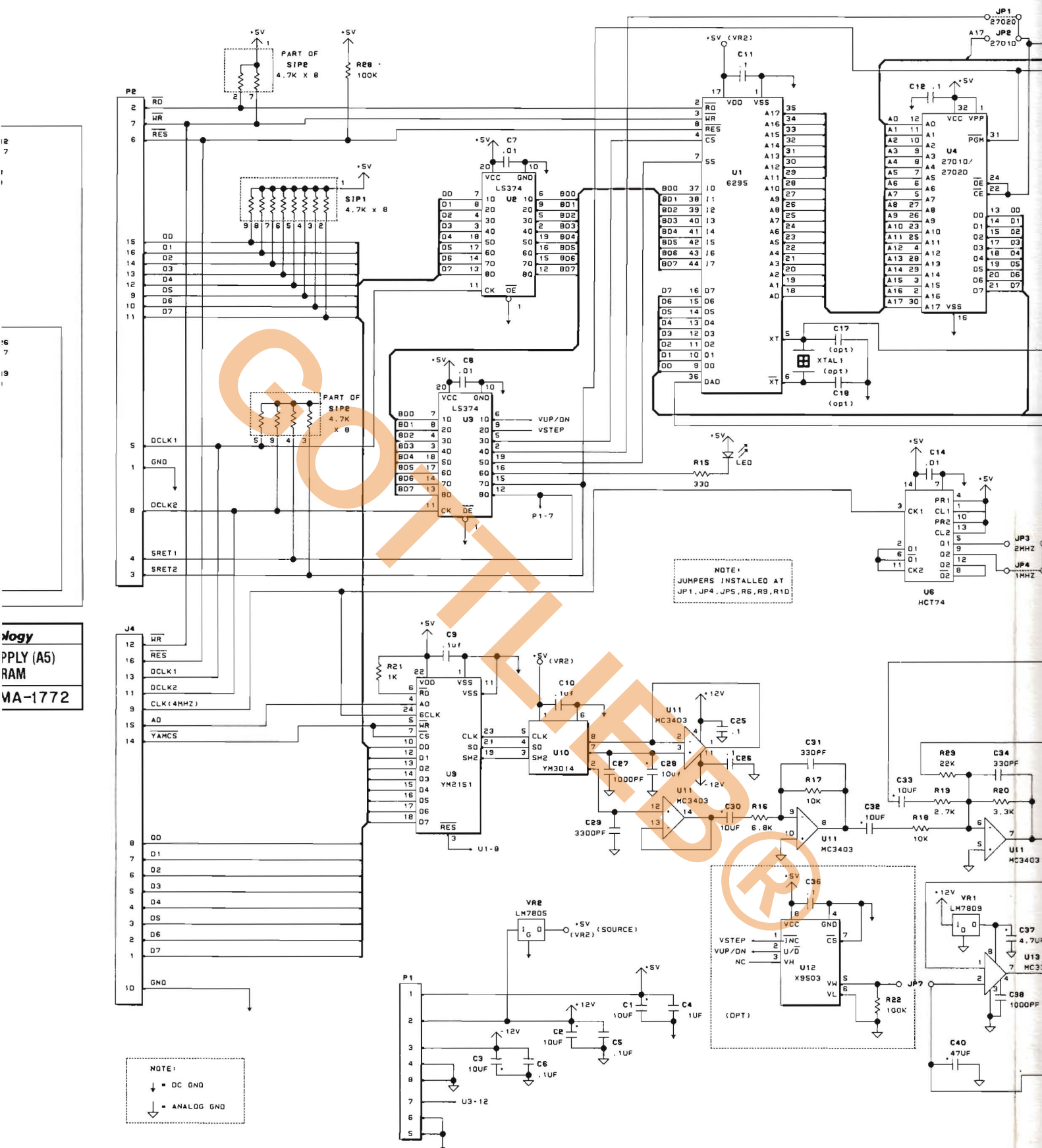
Premier Technology				
TITLE AUXILIARY POWER SUPPLY (A5) SCHEMATIC DIAGRAM				
DRAWN J.B.	APPROVED RHM	DATE 4-8-92	MA-1772	

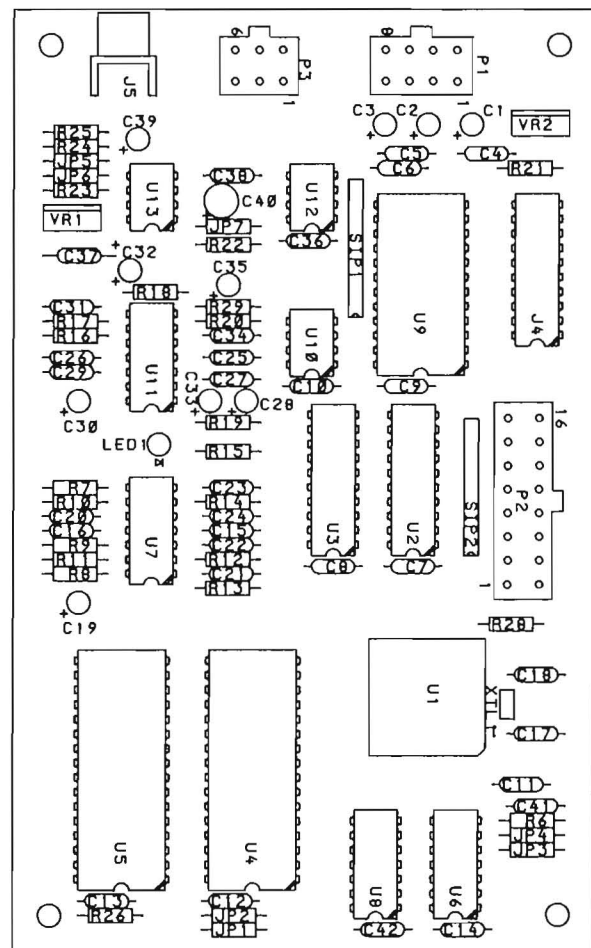
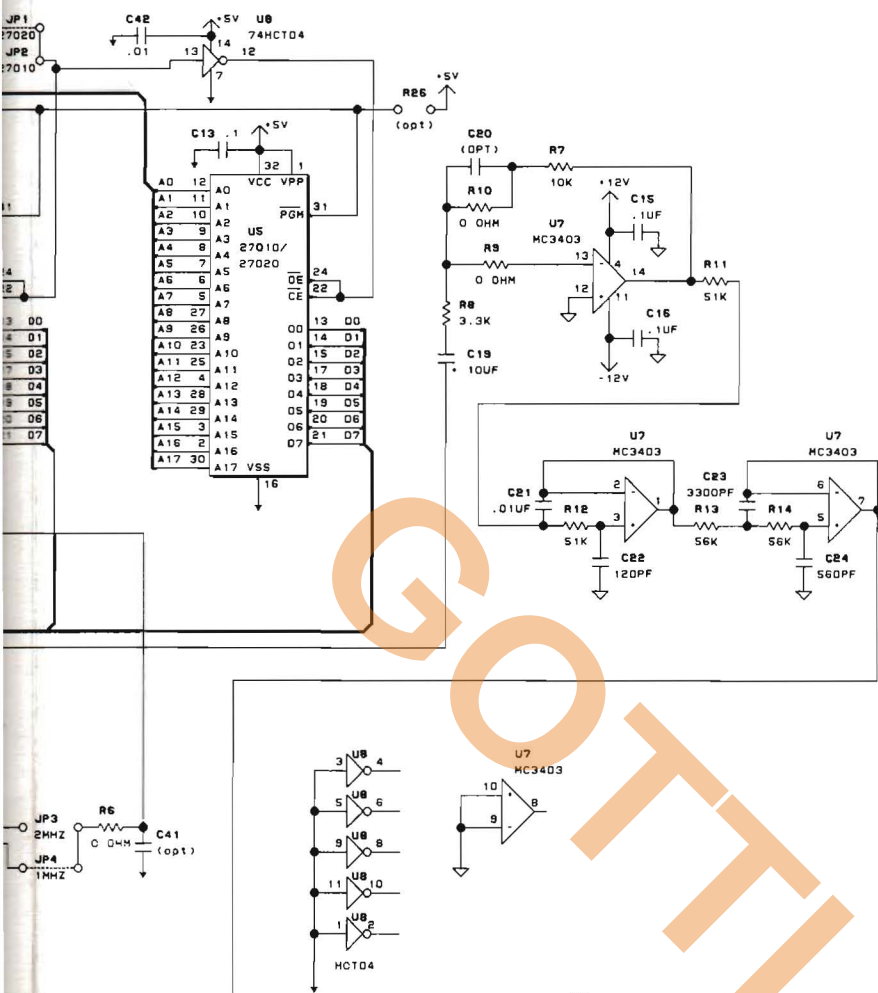
AUXILIARY POWER SUPPLY (A5) COMPONENT LOCATION



AUXILIARY POWER SUPPLY (A5) PARTS LIST

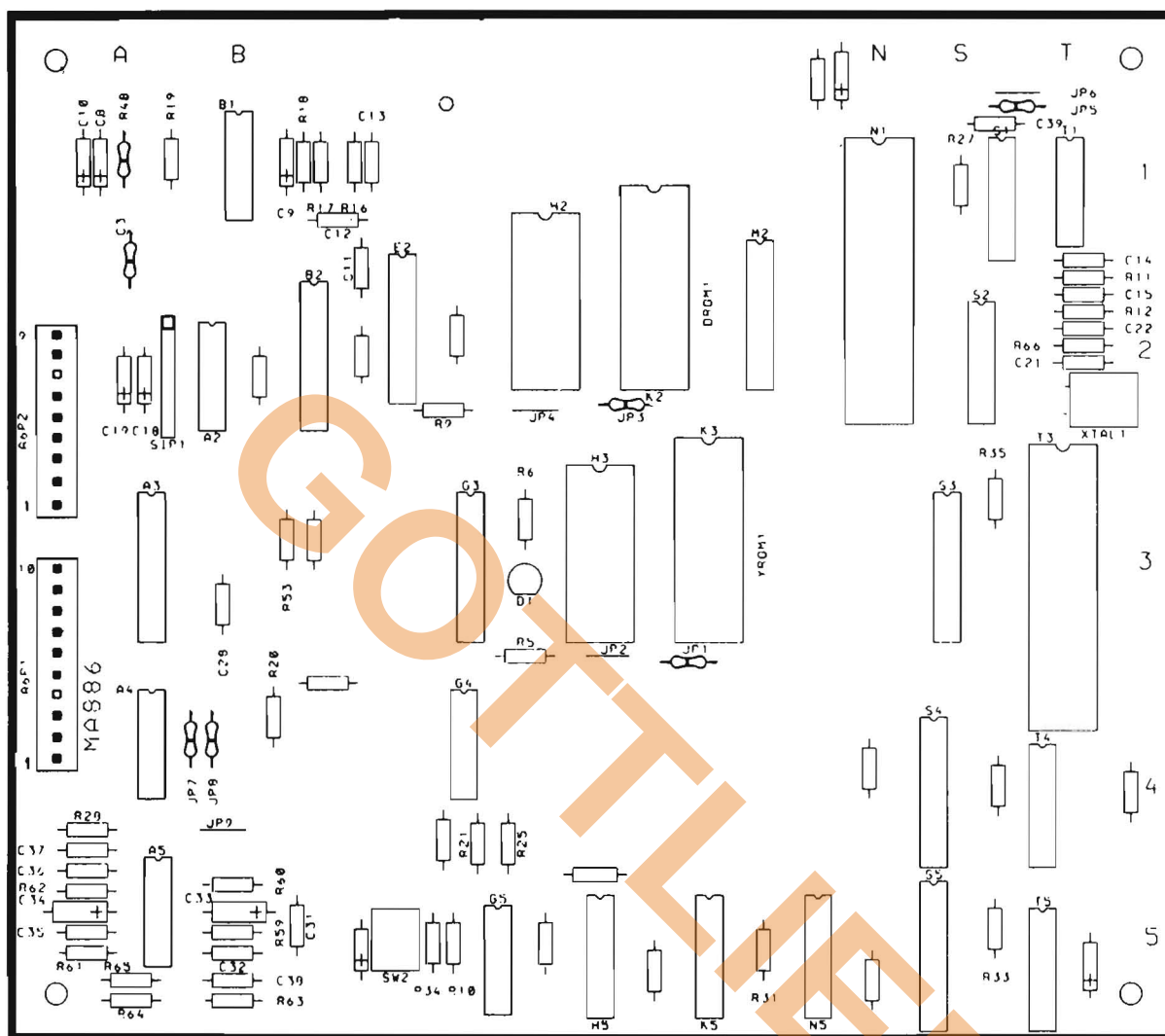
REFERENCE	DESCRIPTION	PART NUMBER
A5	AUXILIARY POWER SUPPLY	MA-1772
C1, C3, C11, C13	CAPACITOR, 4.7UF, 10%, 10V	XO-469A.
C2, C10	CAPACITOR, 0.1UF, 10%, 100V	XO-784
C5, C15	CAPACITOR, 4.7UF, 10%, 10V	XO-226
C6, C16, C25	CAPACITOR, 22UF, +80%-20%, 16V	XO-293
C7, C8, C9, C17, C18, C19, C20, C21	CAPACITOR, 0.1UF, +80%-20%, 50V	XO-230
C23, C24	CAPACITOR, 10,000UF, +80%-20%, 25V	XO-830
D1-D4	DIODE, 1N5401	XO-263
R1, R13, JP1, R16, R17	RESISTOR, 0 OHM, JUMPER	XO-469
R2, R14	RESISTOR, 1 MEGOHM, 5%, 1/4W	XO-604
R3	RESISTOR, 12K OHM, 5%, 1/4W	XO-9
R4	RESISTOR, 43K OHM, 5%, 1/4W	XO-15
R5, R20	RESISTOR, 10K OHM, 5%, 1/4W	XO-18
R7	RESISTOR, 6.8K OHM, 5%, 1/4W	XO-8
R8	RESISTOR, 2.2K OHM, 5%, 1/4W	XO-27
R9, R23	RESISTOR, 22K OHM, 5%, 1/4W	XO-42
R10, R24	RESISTOR, 680 OHM, 5%, 1/4W	XO-139
R11, R25	RESISTOR, 24K OHM, 5%, 1/4W	XO-10
R12, R26	RESISTOR, 4.7 OHM, 5%, 1/4W	XO-800
R15, R18, R21	RESISTOR, 4.7K OHM, 5%, 1/4W	XO-7
U1	IC, QUAD AMP, MC3403P	XO-953
U2, U3	IC, AUDIO AMPLIFIER, TDA2040	XO-1038
VR1	REGULATOR, +12V, LM7812CT	XO-1039
VR2	REGULATOR, -12V, LM7912CT	XO-130
J3	CONNECTOR, RCA	XO-1035
P1	HEADER, 10 POSITION	XO-912
	HEAT SINK	XO-1040



AUXILIARY SOUND BOARD (A20)
PARTS LIST

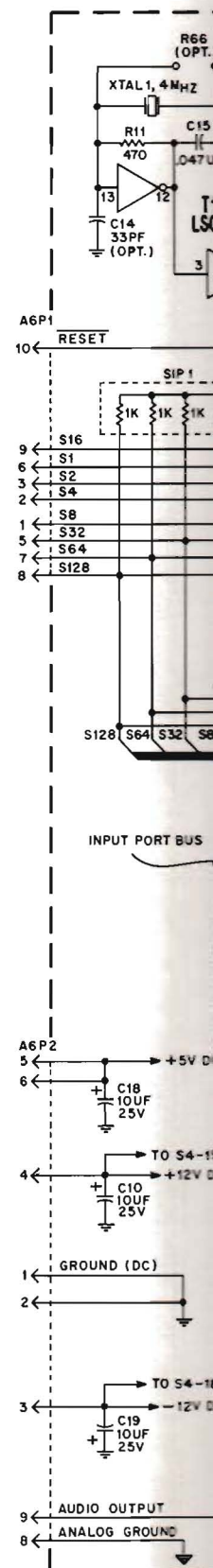
REFERENCE	DESCRIPTION	PART NUMBER
A20	AUXILIARY SOUND BOARD	HA-1770
C1, C2, C3, C15, C16, C25, C26, C36	CAPACITOR, 10UF, +80%-20%, 16V	XO-1030
C4-C6, C9-C13, C15, C16, C25, C26, C36	CAPACITOR, 0.1UF, +80%-20%, 50V	XO-230
C7, C8, C14, C42	CAPACITOR, .01UF, +80%-20%, 50V	XO-229
C21	CAPACITOR, .01UF, 10%, 50V	XO-696
C22	CAPACITOR, 120PF, 10%, 50V	XO-1032
C23, C29	CAPACITOR, 3300PF, 10%, 100V	XO-600
C24	CAPACITOR, 560PF, 10%, 50V	XO-681
C31, C34	CAPACITOR, 330PF, 10%, 50V	XO-1033
C37	CAPACITOR, 4.7UF, 10%, 10V	XO-226
C38	CAPACITOR, 1000PF, 10%, 100V	XO-296
C40	CAPACITOR, 47UF, 10V	XO-227
LED	DIODE, MV5752, RED	XO-270
R7, R17, R18	RESISTOR, 10K OHM, 5%, 1/4W	XO-18
R8, R20	RESISTOR, 3.3K OHM, 5%, 1/4W	XO-38
R6, R9, R10, JP1, JP4, JP5	RESISTOR, 0 OHM, JUMPER	XO-469
R11, R12	RESISTOR, 51K OHM, 5%, 1/4W	XO-44
R13, R14	RESISTOR, 56K OHM, 5%, 1/4W	XO-771
R15	RESISTOR, 330 OHM, 5%, 1/4W	XO-34
R16	RESISTOR, 6.8K OHM, 5%, 1/4W	XO-8
R19	RESISTOR, 2.7K OHM, 5%, 1/4W	XO-6
R21, R25	RESISTOR, 1K OHM, 5%, 1/4W	XO-5
R23	RESISTOR, 1MEG OHM, 5%, 1/4W	XO-604
R28	RESISTOR, 100K OHM, 5%, 1/4W	XO-45
R29	RESISTOR, 22K OHM, 5%, 1/4W	XO-42
U1, U2, U3	IC, MSM6295, SPEECH CHIP	*XO-1023
U4, U5	IC, 27C010 (SPECIFIED PER GAME)	XO-96
U6	IC, 74HCT74, "D" FLIP-FLOP	XO-889
U7, U11	IC, MC3403P, QUAD AMP	XO-953
U8	IC, 74HCT04, HEX INVERTER	XO-1026
U9	IC, YM2151, SOUND CHIP	XO-882
U10	IC, YM3014, SERIAL DAC	XO-883
U13	IC, MC3340P, VCA, AMPLIFIER	XO-1028
J4	SOCKET, 20 PIN	XO-491
J5	JACK, RCA	XO-1035
P1	HEADER, 8 POSITION	XO-911
P3	HEADER, 6 POSITION	XO-910
U4, U5	SOCKET, 32 PIN	XO-1036
U9	SOCKET, 24 PIN	XO-529
VR1	PCB ASSEMBLY, P/O *XO-1023	27922
VR2	IC, LM7809CT, REGULATOR	XO-1037
	IC, 5V REGULATOR	XO-663

SOUND BOARD (A6) COMPONENT LOCATION

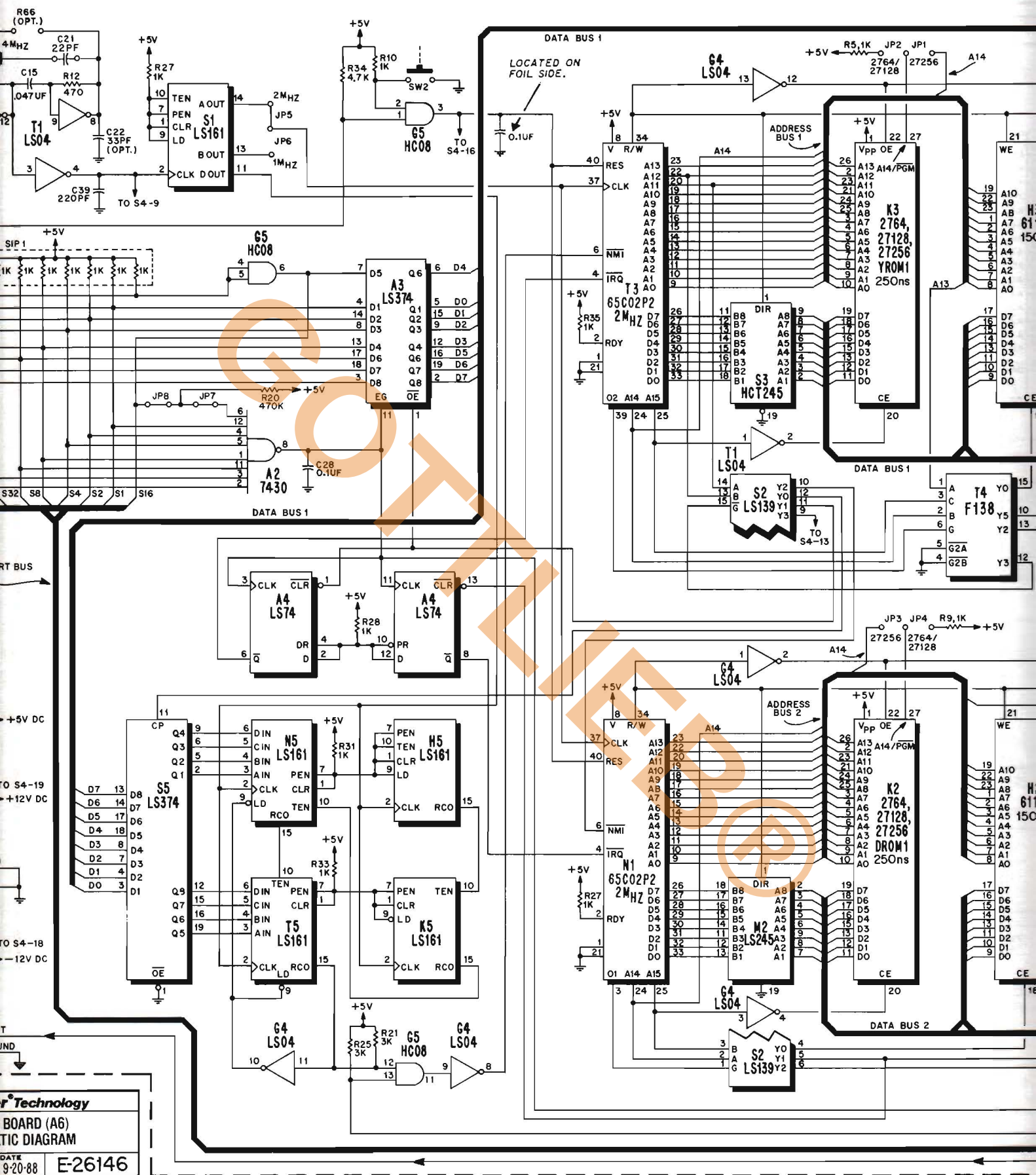


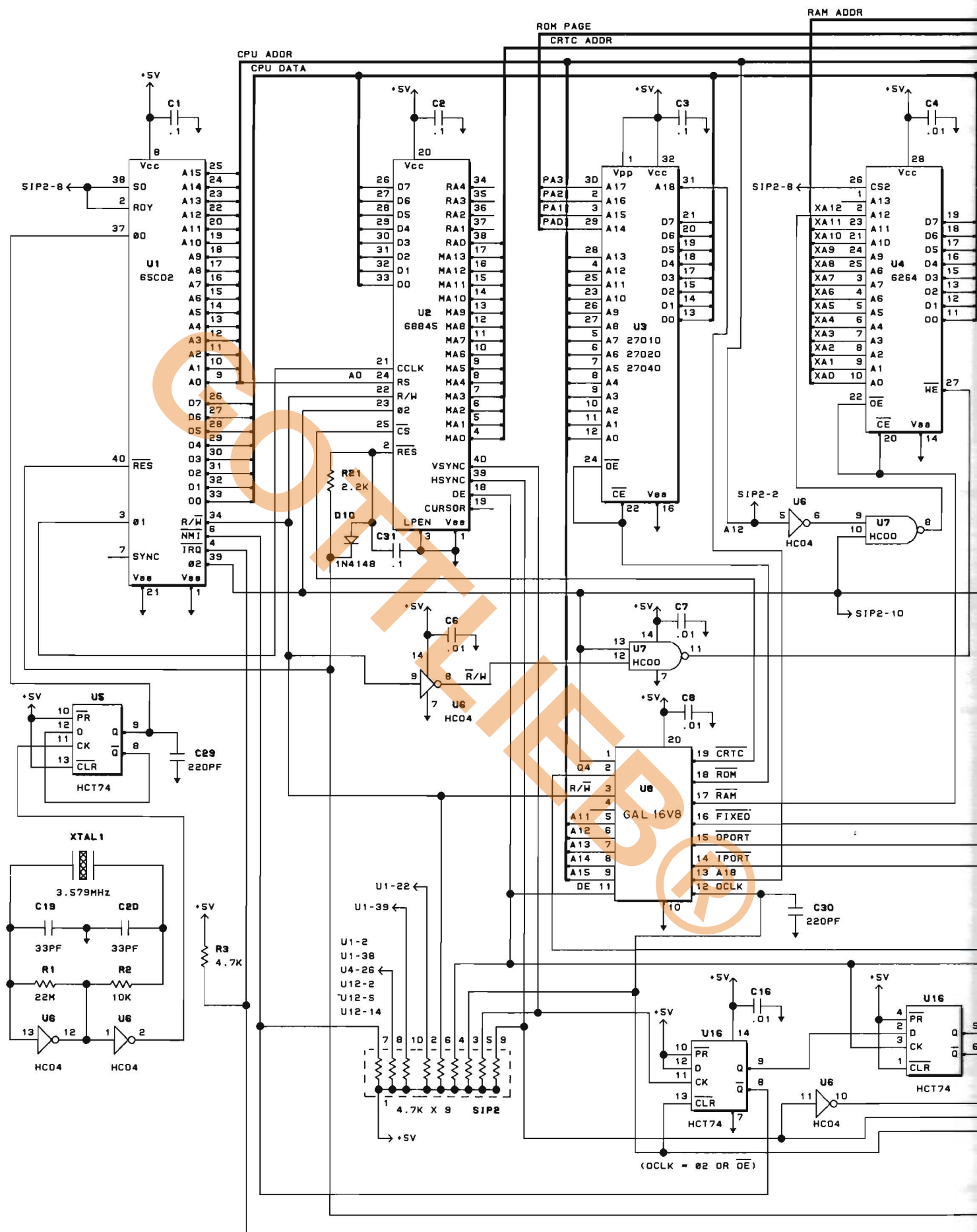
SOUND BOARD (A6) PARTS LIST

REFERENCE	DESCRIPTION	PART NUMBER	REFERENCE	DESCRIPTION	PART NUMBER
C13,C37	Sound Board Assembly (1A6)	MA-1629	R20,R34	Resistor, 4.7K Ohm, 5%, 1/4W	XO-7
C8,C9,C10,	Capacitor, 1UF, 20%, 50V (Non-polar)	XO-746	R61,R64	Resistor, 33K Ohm, 5%, 1/4W	XO-43
C16,C19,	Capacitor, 10UF, 20%, 25V (Tantalum)	XO-127	R59,R60	Resistor, 100K Ohm, 5%, 1/4W	XO-45
C33,C34			R65	Resistor, 27K Ohm, 5%, 1/4W	XO-11
AND THREE			A2	IC, 7430, 8 Input NAND Gate	XO-643
UNMARKED			A3,B2,S5	IC, 74LS374, Octal "D" Flip Flop	XO-96
CAPACITORS			A4	IC, 74LS74, Dual "D" Flip Flop	XO-434
C11,C12	Capacitor, 10PF, +80%-20%, 50V	XO-635	A5	IC, MC3403P, Quad Op-Amp	XO-953
C14,C22	Capacitor, 33PF, 10%, 100V	XO-896	E2	IC, AD7528J, Multiplier DAC	XO-647
C15	Capacitor, .047UF, 20%, 50V	XO-638	G3	IC, 74LS377, Octal "D" Flip Flop	XO-97
C21	Capacitor, 22PF, 10%, 50V	XO-633	G4,T1	IC, 74LS504, Hex Inverter	XO-418
C28 AND	Capacitor, 0.1UF, +80%-20%, 50V	XO-230	G5	IC, 74HC08, Quad 2 Input "AND" Gate	XO-872
FIFTEEN			H2,H3	IC, 6116LB-15, 2K X 8 RAM	XO-928
UNMARKED			H5,K5,N5	IC, 74LS161, Synchronous Presettable Binary Counter	XO-440
CAPACITORS			S1,T5	IC, Specified Per Game	
C31,C32	Capacitor, 0.1UF, 10%, 100V	XO-784	K2,K3	IC, 74LS245, Octal Bus Transceiver	XO-79
C35	Capacitor, 1000PF, 10%, 100V	XO-296	M2	IC, 65C02P2 or 6502A, CPU	XO-927 or XO-893
C36	Capacitor, 2200PF, 10%, 100V	XO-289	N1,T3	IC, 74LS139, Dual 1 of 4 Decoder	XO-419
C38	Capacitor, .0033UF, 10%, 100V	XO-600	S2	IC, 74HC245, Octal Bus Transceiver	XO-891
C39	Capacitor, 220PF, 10%, 100V	XO-694	T4	IC, 74F118, 1 of 8 Decoder	XO-1041
D1	Diode, MV5752, (LED, Red)	XO-270	SIP 1	Resistor Pack 1K Ohm X 8	XO-493
R5,R9,R10,	Resistor, 1K Ohm, 5%, 1/4W	XO-5	SW2	Switch, Pushbutton	XO-897
R27,R28,R31,			XTAL 1	Crystal, 4 MHZ	XO-366
R33,R35			A6P1,A6P2	Connector (2)	XO-879
R6	Resistor, 240 Ohm, 5%, 1/4W	XO-173			
R11,R12	Resistor, 470 Ohm, 5%, 1/4W	XO-35		28 Pin Dip Socket (2)	XO-536
R21, R25	Resistor, 3K Ohm, 5%, 1/4W	XO-23		Jumper, Resistor, 0 OHM (7)	XO-469
R16,R17	Resistor, 10K Ohm, 5%, 1/4W	XO-18		20 Pin Dip Socket	XO-491
R18	Resistor, 6.8K Ohm, 5%, 1/4W	XO-8			

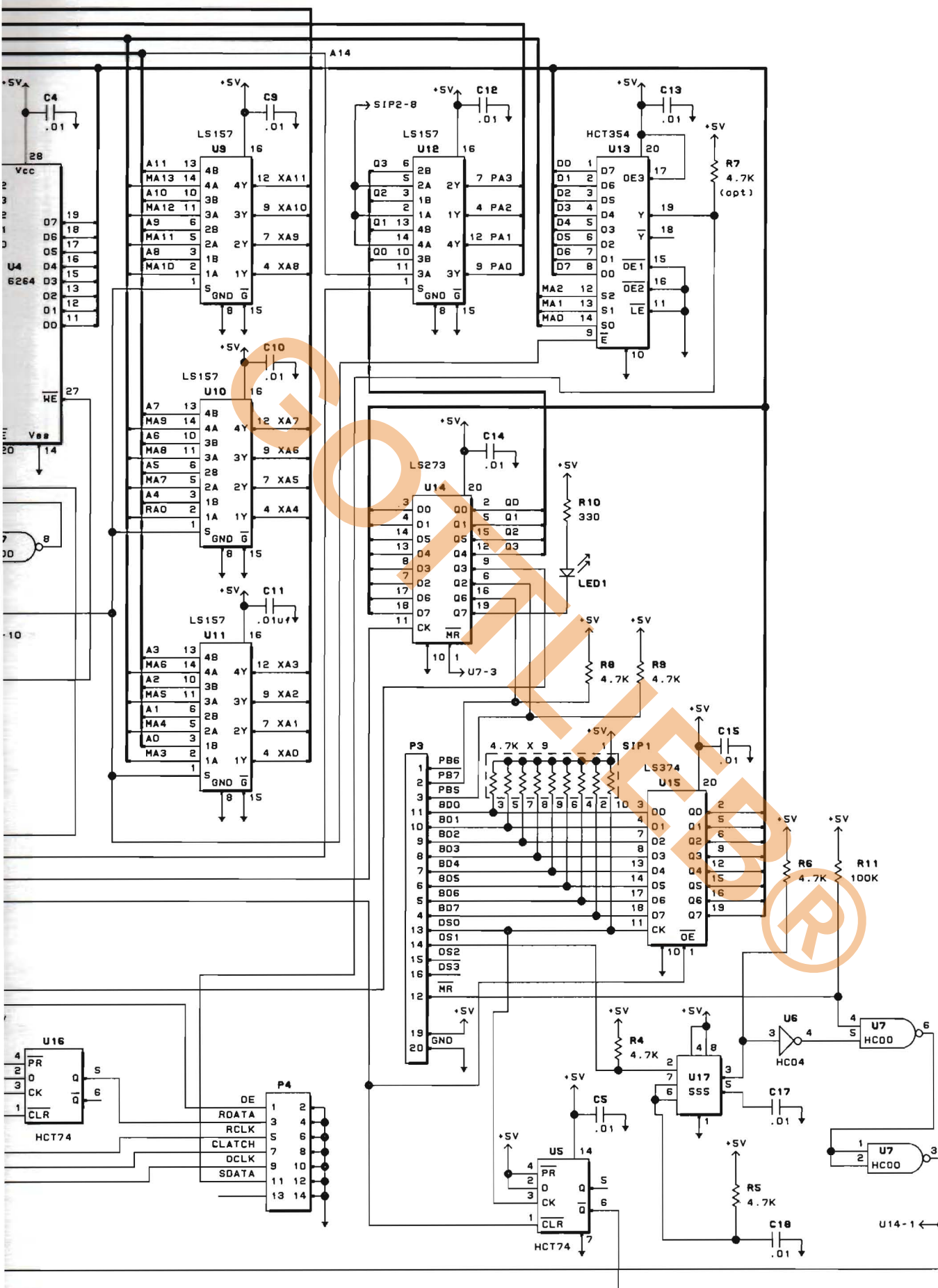


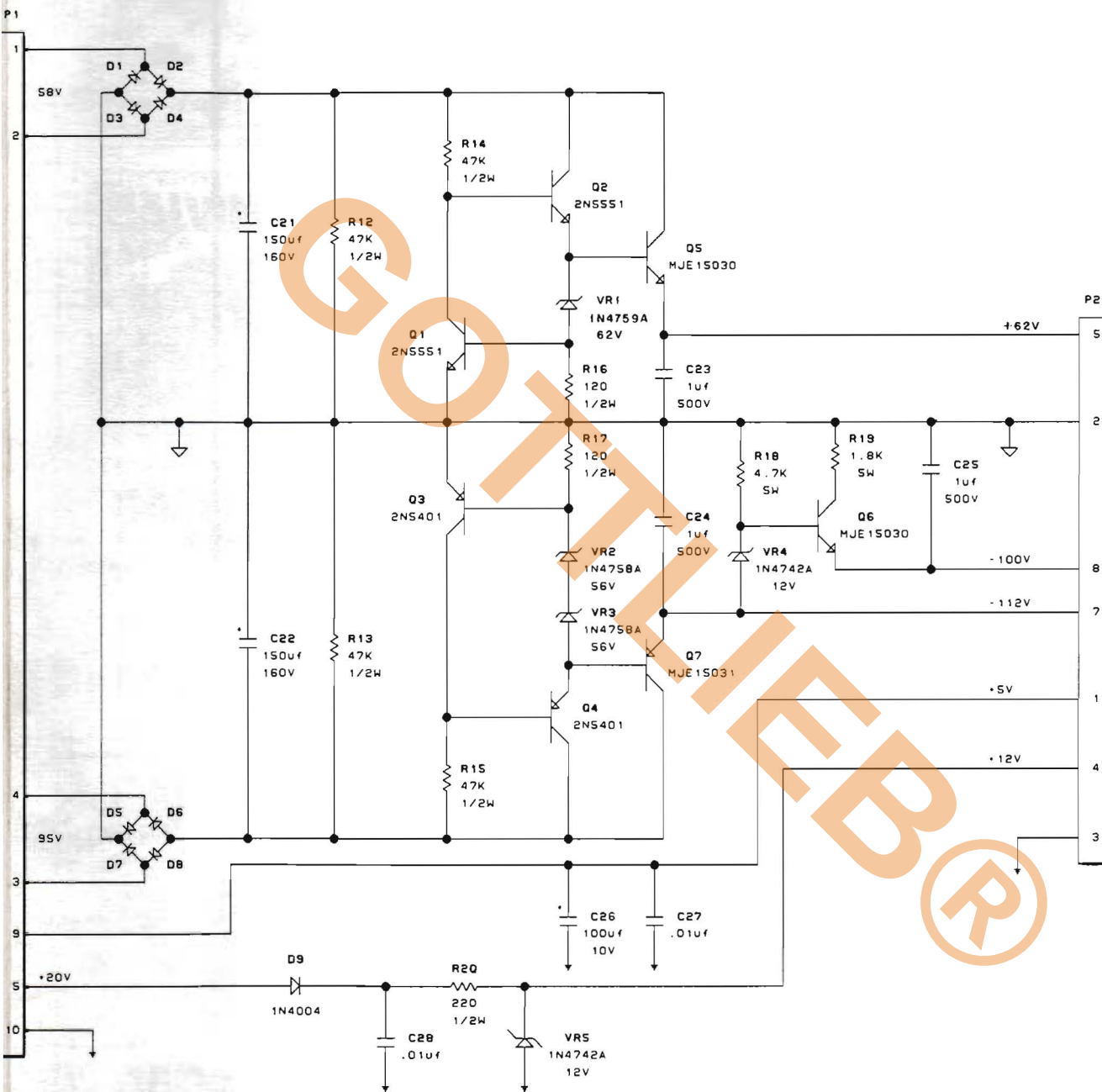
VI. WIRING AND SCHEMATIC





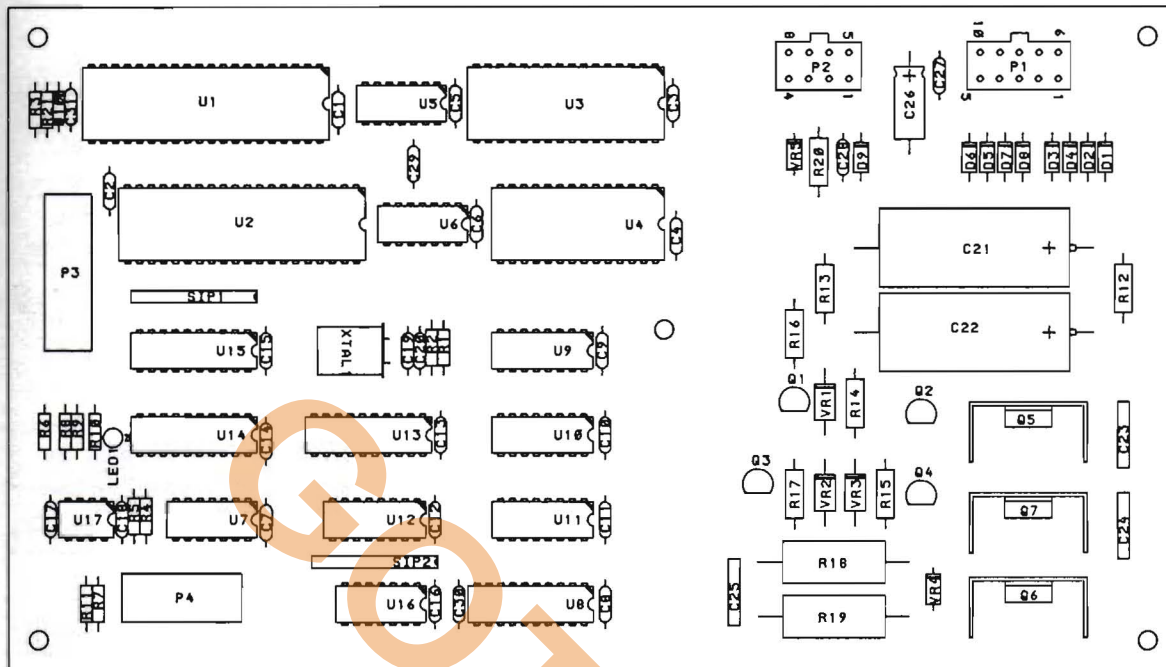
VI. WIRING AND SCHEMATIC DIAGRAMS, PARTS LISTS





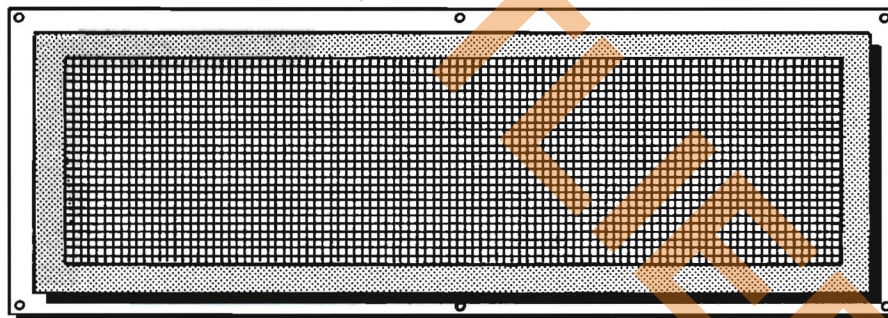
Premier Technology			
TITLE			
DISPLAY CONTROLLER (A8)			
SCHEMATIC DIAGRAM			
DRAWN	APPROVED	DATE	
C.B.	RHM	4-8-92	MA-1739

DISPLAY CONTROLLER [A8] COMPONENT LOCATION

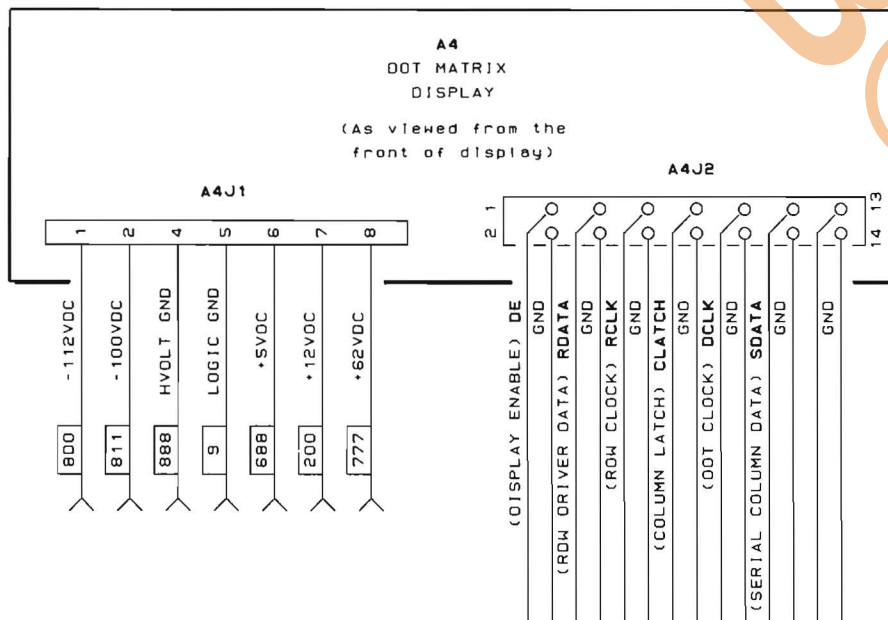


REFERENCE	DESCRIPTION
A8	DISPLAY CONTROLLER
C1-C3	CAPACITOR
C4-C18	CAPACITOR
C27, C28	CAPACITOR
C19, C20	CAPACITOR
C21, C22	CAPACITOR
C23, C25	CAPACITOR
C26	CAPACITOR
C29, C30	CAPACITOR
C31	CAPACITOR
D1-D9	DIODE, 1N
D10	DIODE, 1N
LED 1	DIODE, LE
Q1, Q2	TRANSISTOR
Q3, Q4	TRANSISTOR
Q5, Q6	TRANSISTOR
Q7	TRANSISTOR
R1	RESISTOR, 1K
R2	RESISTOR, 1K
R3-R6, R8, R9	RESISTOR, 1K
R10	RESISTOR, 1K
R11	RESISTOR, 1K
R12-R15	RESISTOR, 1K
R16-R17	RESISTOR, 1K
R18	RESISTOR, 1K
R19	RESISTOR, 1K
R20	RESISTOR, 1K
R21	RESISTOR, 1K
SIP1, SIP2	RESISTOR
U1	IC, 65C02
U2	IC, 68B45
U4	IC, 6264L
U5, U16	IC, 74HCT
U6	IC, 74HCO
U7	IC, 74HCO
U8	IC, GAL16
U9-U12	IC, 74LS1
U13	IC, 74HCT
U14	IC, 74LS2
U15	IC, 74LS3
U17	IC, NE555
VR1	DIODE, ZE
VR2, VR3	DIODE, ZE
VR4, VR5	DIODE, ZE
XTAL1	CRYSTAL
P1	HEADER, 1
P2	HEADER, 8
P3	HEADER, 2
P4	HEADER, 1
	HEATSINK, 1
	SOCKET, 3
	SOCKET, 2

DOT MATRIX DISPLAY [A4]



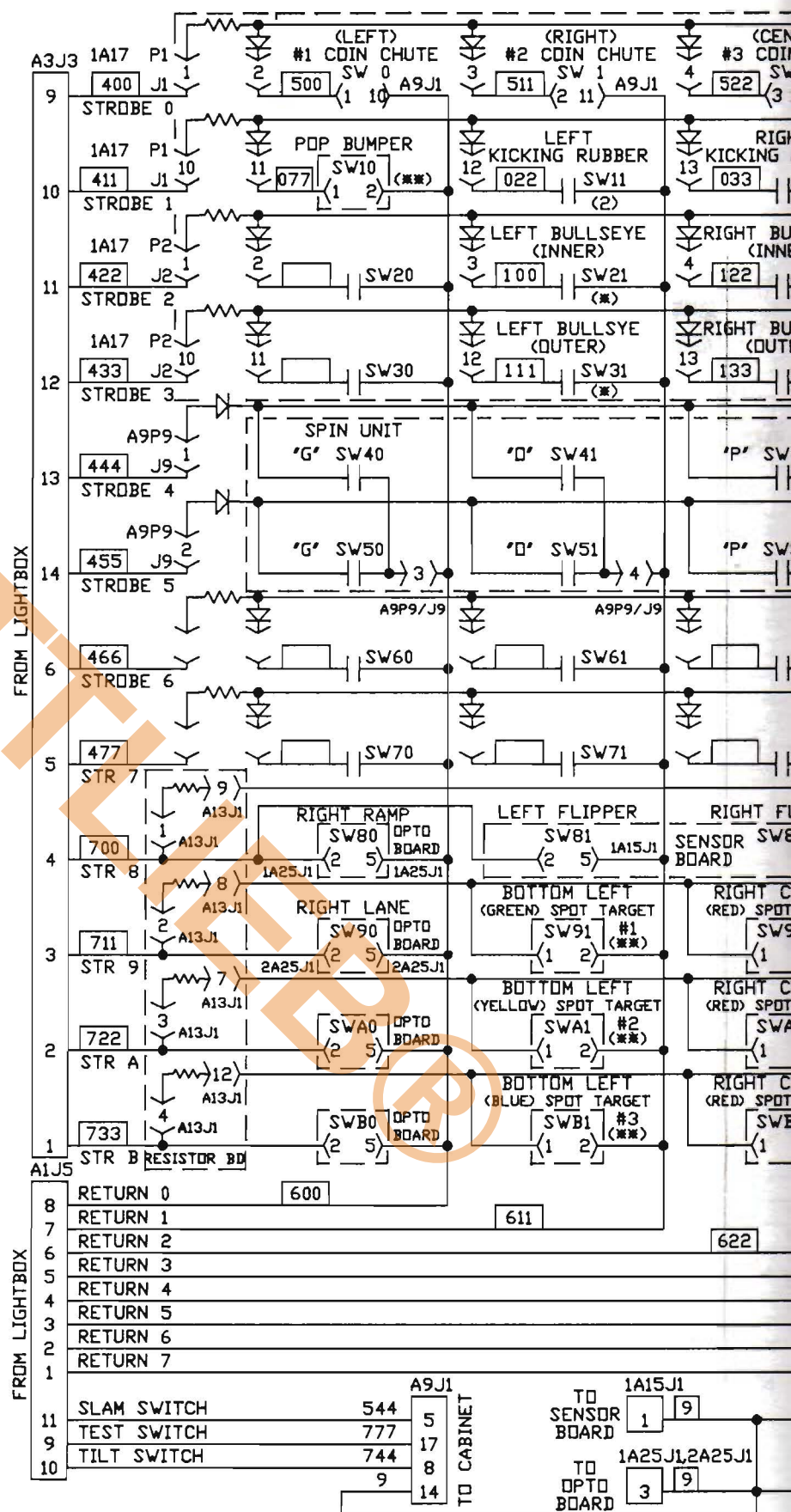
DESCRIPTION	PART NUMBER
DOT MATRIX DISPLAY	29151

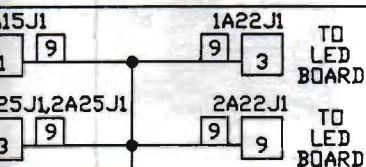
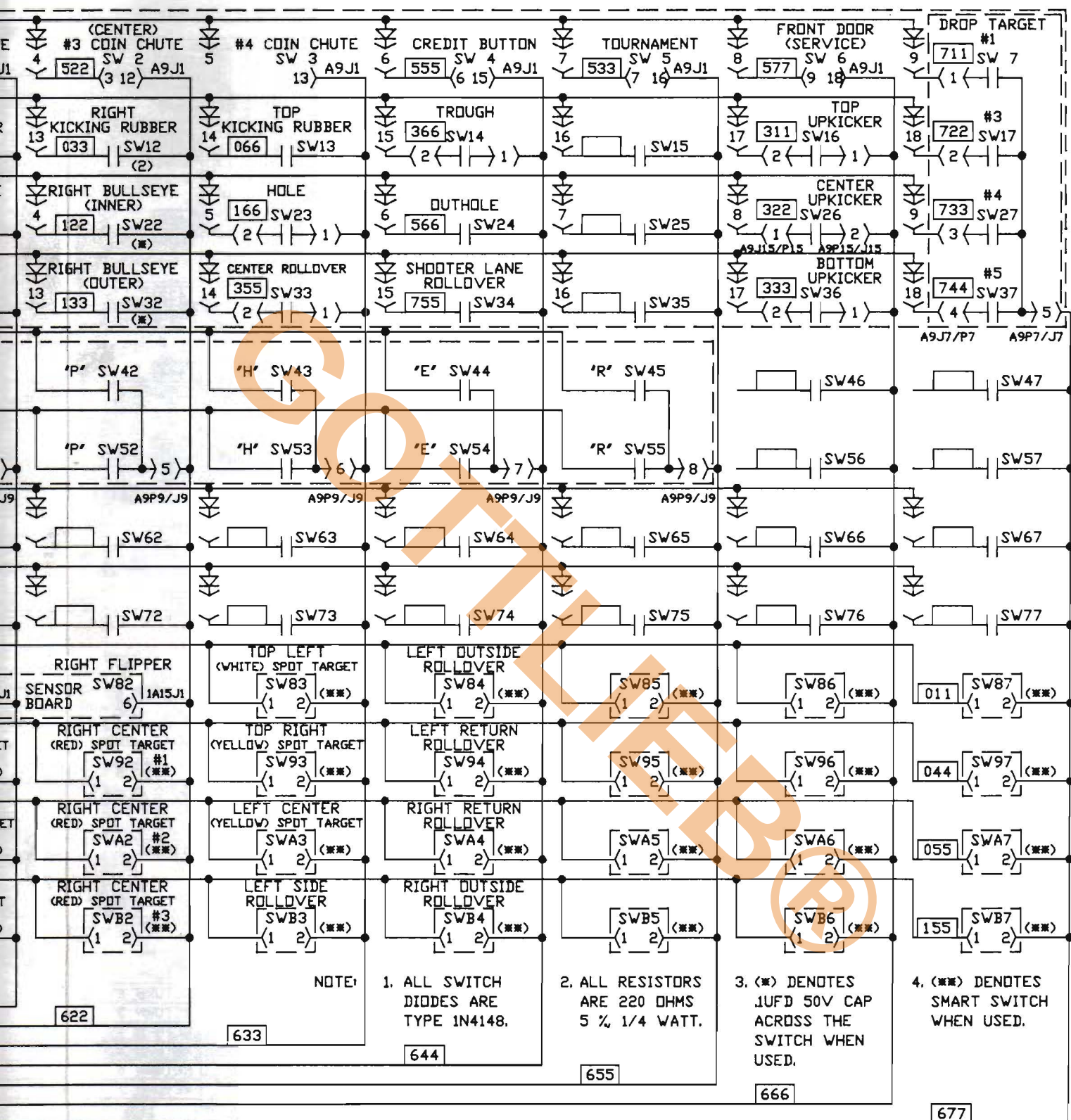


DISPLAY CONTROLLER (A8)

PARTS LIST

DESCRIPTION	PART NUMBER
AY CONTROLLER	MA-1739
ITOR, 0.1UF, +80%-20%	XO-230
ITOR, .01UF, +80%-20%	XO-229
ITOR, 33PF, 10%, 100V	XO-896
ITOR, 150UF, 160V	XO-1133
ITOR, 0.1UF, 500V	XO-886
ITOR, 100UF, 10V	XO-211
ITOR, 220PF, 10%, 100V	XO-694
ITOR, 0.1UF, 100V	XO-784
, 1N4004	XO-254
, 1N4148	XO-261
, LED, RED, MV5752	XO-270
ISTOR, NPN, 2N5551	XO-1141
ISTOR, PNP, 2N5401	XO-1142
ISTOR, NPN, MJE15030	XO-1143
ISTOR, PNP, MJE15031	XO-1144
TOR, 22 MEGOHM, 5%, 1/4W	XO-74
TOR, 10K OHM, 5%, 1/4W	XO-18
TOR, 4.7K OHM, 5%, 1/4W	XO-7
TOR, 330 OHM, 5%, 1/4W	XO-34
TOR, 100K OHM, 5%, 1/4W	XO-45
TOR, 47K OHM, 5%, 1/4W	XO-1135
TOR, 120 OHM, 5%, 1/4W	XO-1136
TOR, 4.7K OHM, 5%, 5W	XO-1137
TOR, 1.8K OHM, 5%, 1/4W	XO-1138
TOR, 220 OHM, 5%, 1/4W	XO-185
TOR, 2.2K OHM, 5%, 1/4W	XO-27
TOR PACK, 4.7 OHM	XO-906
5C02P2, CPU, 2MHZ	XO-927
8B45, CONTROLLER	XO-1139
264LP, RAM STAT 8K X 8	XO-781
4HCT74, DUAL "D" FLIP-FLOP	XO-889
4HC04, INVERTER	XO-888
4HC00, QUAD "NAND" GATES	XO-782
AL16V8-25L	U8-G
4LS157, QUAD 1 OF 2 MULTIPLEXER	XO-390
4HCT354, 1 OF 8 MULTIPLEXER	XO-1140
4LS273, OCTAL DATA LATCH	XO-94
4LS374, OCTAL "D" FLIP-FLOP	XO-96
E555, TIMER	XO-631
, ZENER, 1N4759A, 62V, 5%	XO-267
, ZENER, 1N4758A, 56V, 5%	XO-1164
, ZENER, 1N4742A, 12V, 5%	XO-257
AL, 3.579MHZ	XO-1166
R, 10 POSITION	XO-912
R, 8 POSITION	XO-911
R, 20 POSITION, RIBBON	XO-940
R, 14 POSITION, RIBBON	XO-1134
INK, 6038	XO-472
T, 32 PIN	XO-1036
T, 20 PIN	XO-491

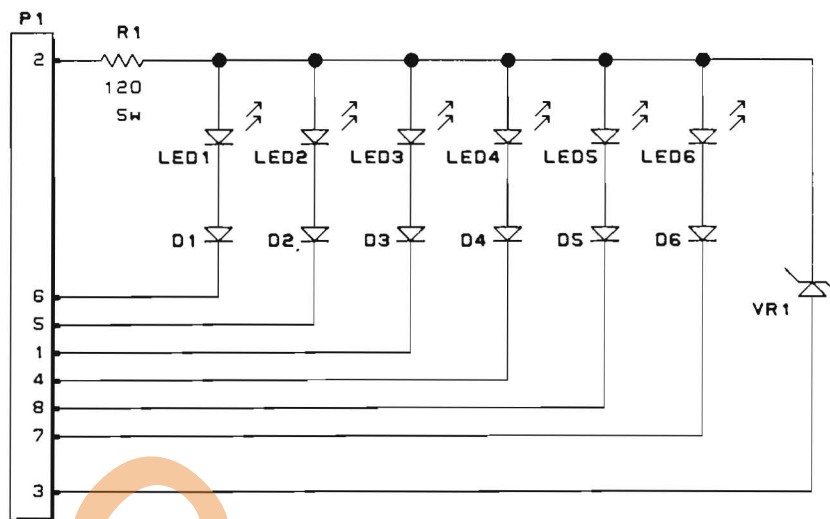




COLOR CODE			
0	BLACK	5	GREEN
1	BROWN	6	BLUE
2	RED	7	VIOLET
3	ORANGE	8	GRAY
4	YELLOW	9	WHITE

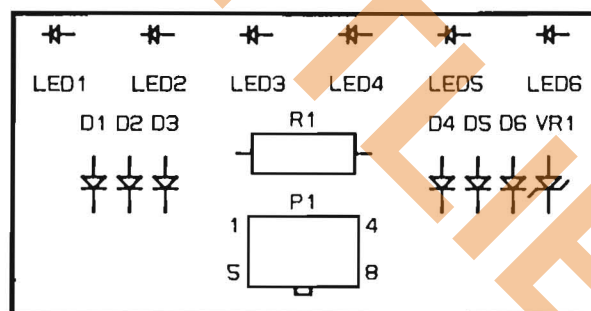
Premier Technology			
TITLE SWITCH MATRIX SCHEMATIC DIAGRAM			
USED ON #736	DRAWN RLM	DATE 03-22-93	29853

VI. WIRING AND SCHEMATIC DIAGRAMS, PARTS LISTS



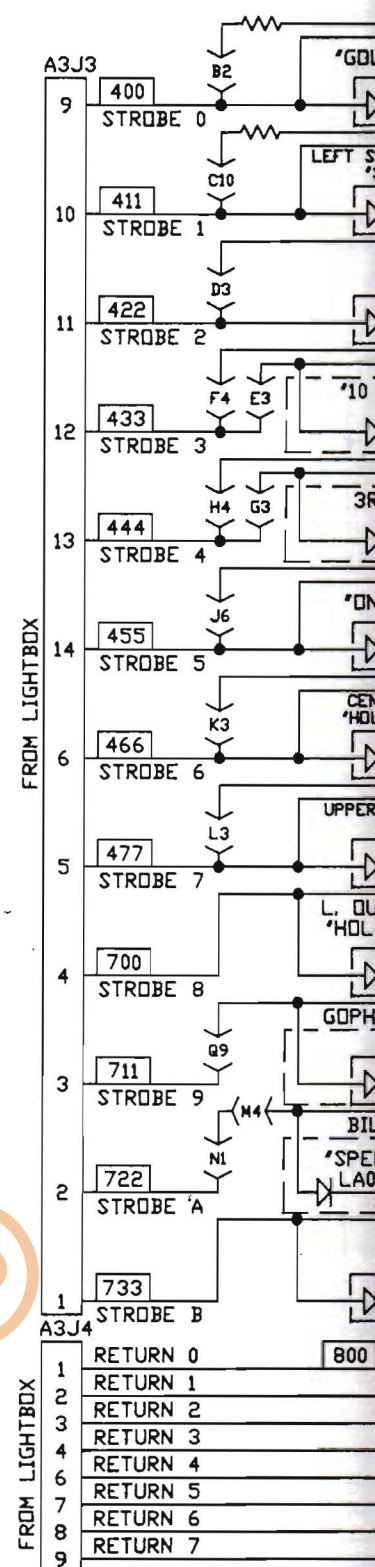
Premier Technology			
TITLE			
LED BOARD (A22)			
SCHEMATIC DIAGRAM			
DRAWN	APPROVED	DATE	MA-1870
R.W.	R.W.	7-15-92	

LED BOARD (2A22) COMPONENT LOCATION

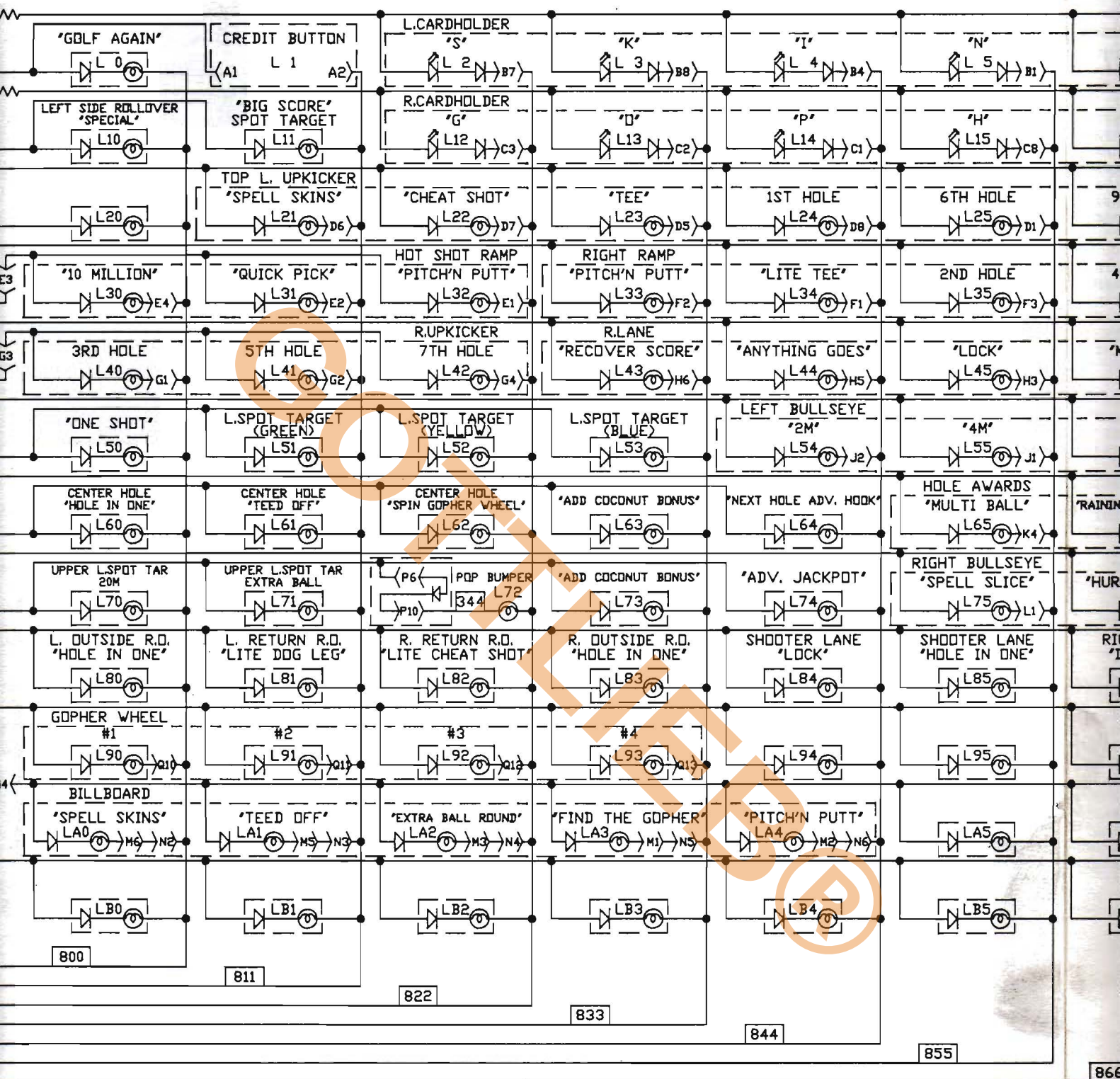


LED BOARD (2A22) PARTS LIST

REFERENCE	DESCRIPTION	PART NUMBER
D1-D6	LED Board Assembly (2A22)	MA-1870
LED 1- LED 6	Diode, 1N4004	XO-254
R1	Diode, LED, Red	XO-865
VR1	Resistor, 120 OHM, 5%, 5W	XO-1042
P1	Diode, Zener, 1N4737A, 7.5V	XO-844
	Header, 10 Position	XO-911



NOTE: 1. ALL
DIODE
TYPE



1. ALL LAMP
DIODES ARE
TYPE 1N4004.

2. ALL LAMPS
ARE TYPE #44.

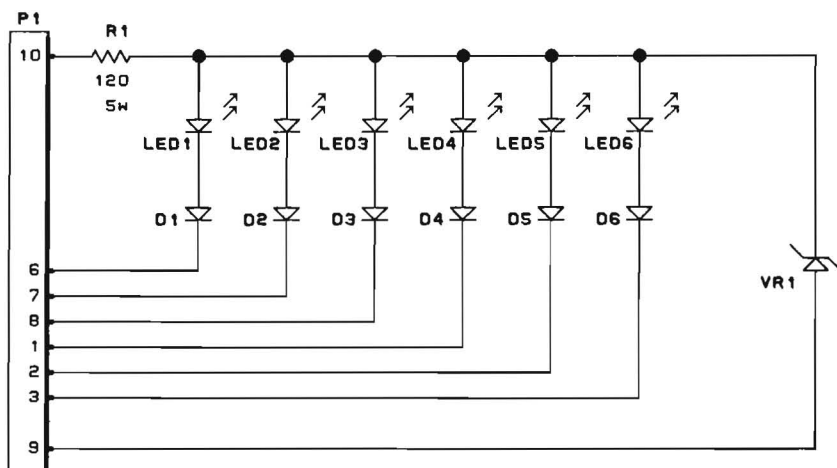
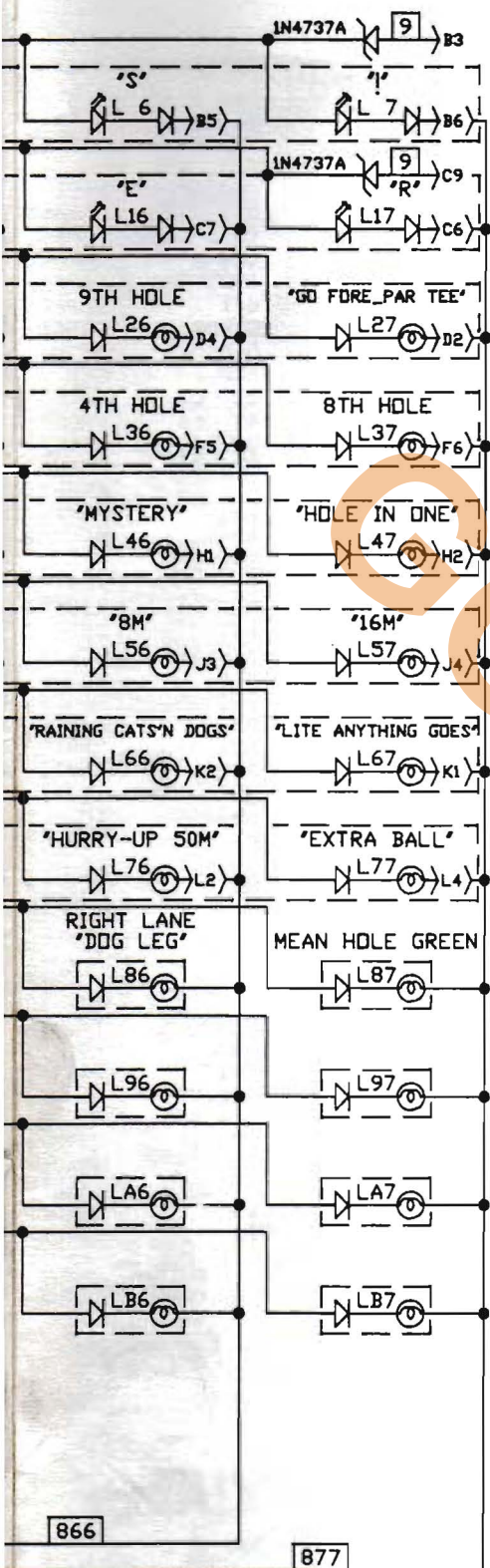
3. A = A9J6
Q = A9J9/P9
N = A9J14/P14
P = A13J1

B = 1A22J1
C = 2A22J1
D = 3A22J1

E = 4A22J1
F = 5A22J1
G = 6A22J1
H = 7A22J1

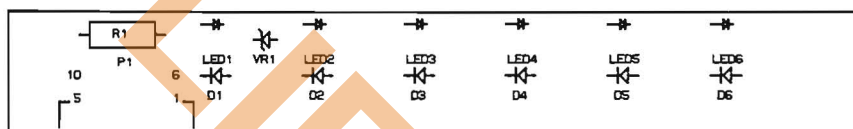
J = 8A22J1
K = 9A22J1
L = 10A22J1
M = 11A22J1

COLOR CODE									
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2	RED	7	VIOLET	30	ORANGE	8	GRAY	35	WHITE
3	ORANGE	8	GRAY	40	YELLOW	9	WHITE	45	
4	YELLOW	9	WHITE	50				55	



Premier Technology			
TITLE			
LED BOARD (A22)			
SCHEMATIC DIAGRAM			
DRAWN	APPROVED	DATE	MA-1843
J.B.	J.B.	7-15-92	

LED BOARD (1A22) COMPONENT LOCATION

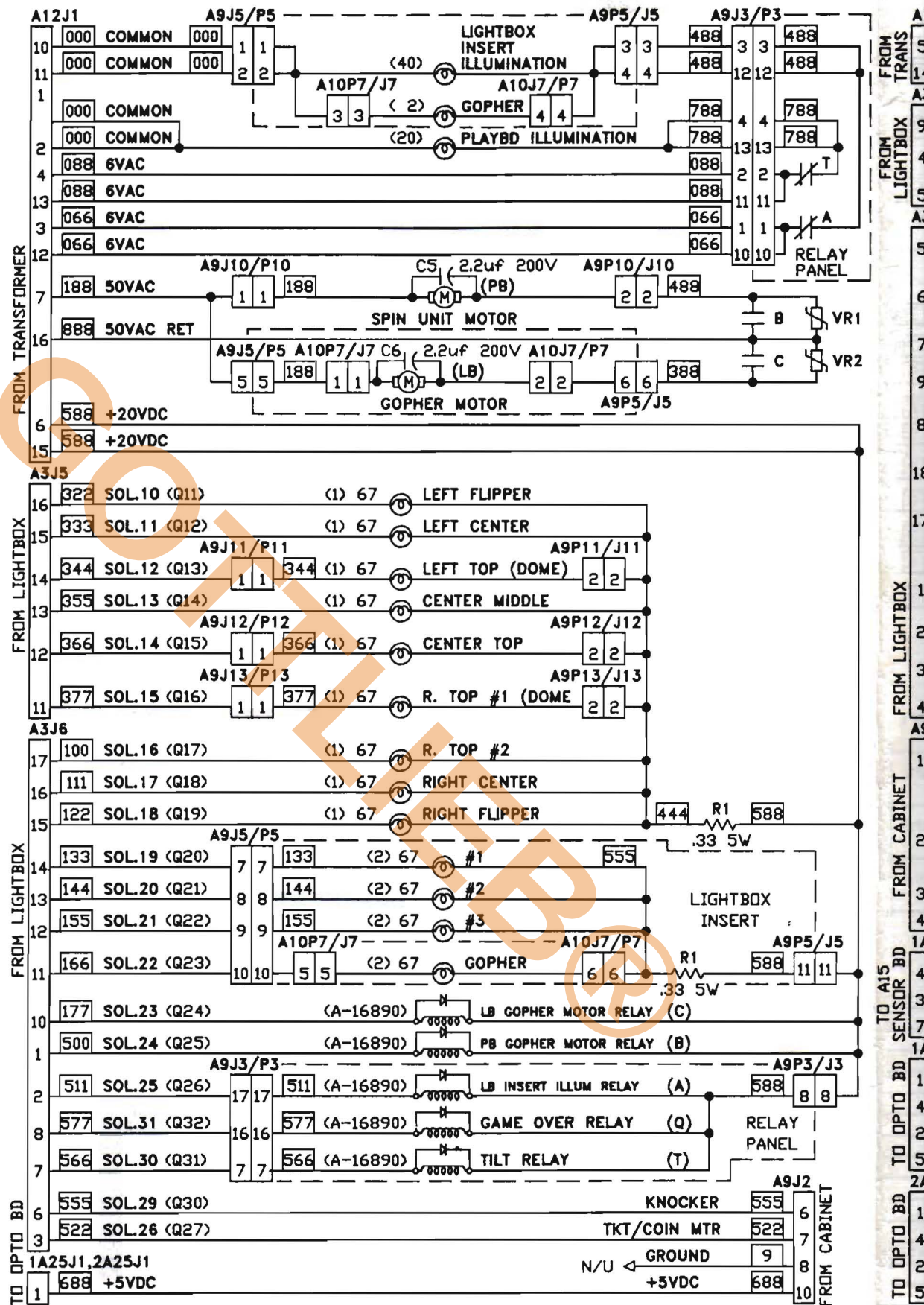


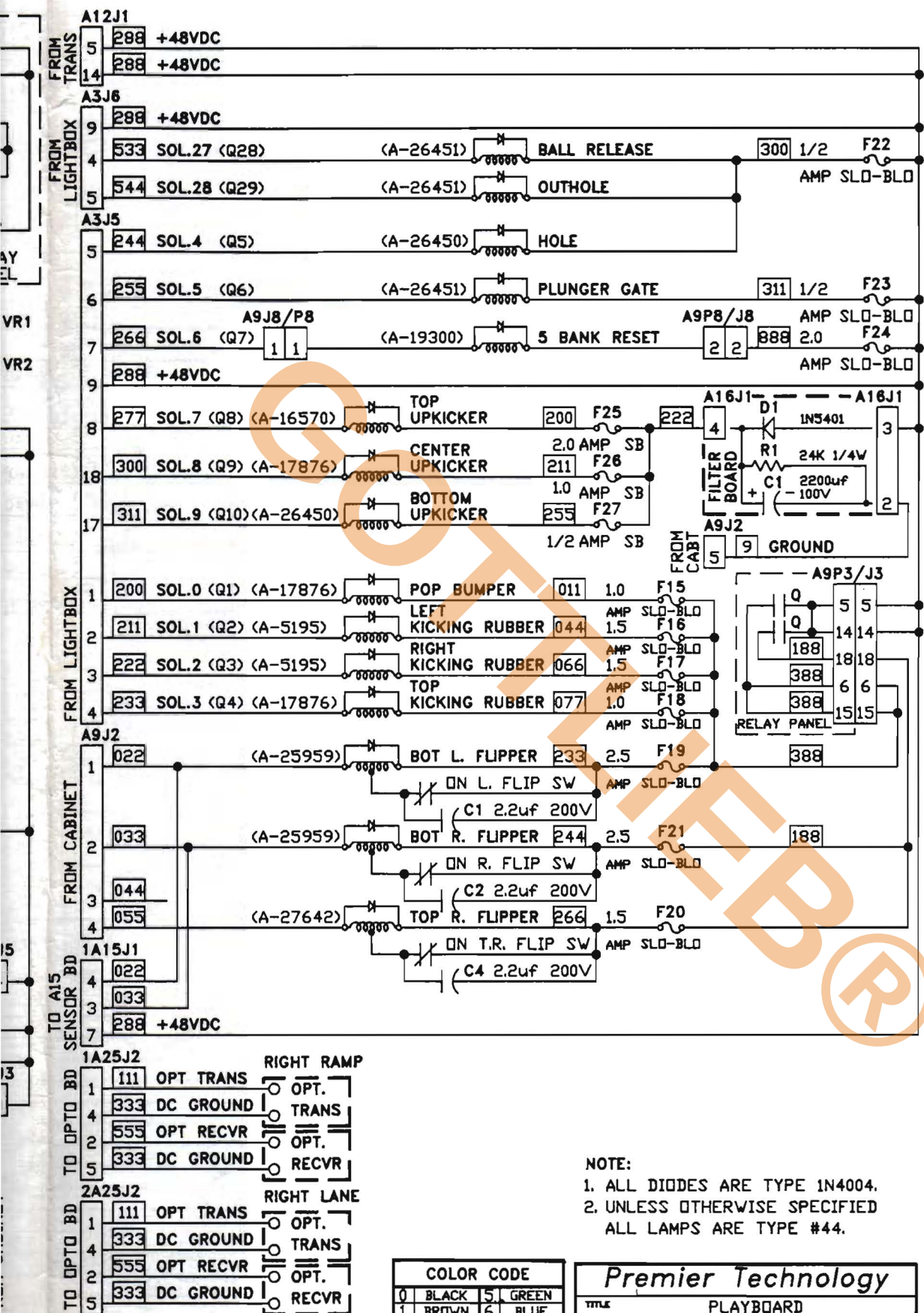
LED BOARD (1A22) PARTS LIST

REFERENCE	DESCRIPTION	PART NUMBER
D1-D6	LED Board Assembly (1A22)	MA-1843
LED 1 - LED 6	Diode, 1N4004	XO-254
	Diode, LED, Green	XO-866
R1	Resistor, 120 OHM, 5%, 5W	XO-1042
VR1	Diode, Zener, 1N4737A, 7.5V	XO-844
P1	Header, 10 Position	XO-998

Premier Technology			
TITLE			
LAMP MATRIX			
SCHEMATIC DIAGRAM			
USED ON	DRAWN	DATE	29854
#736	RLM	03-22-93	

VI. WIRING AND SCHEMATIC



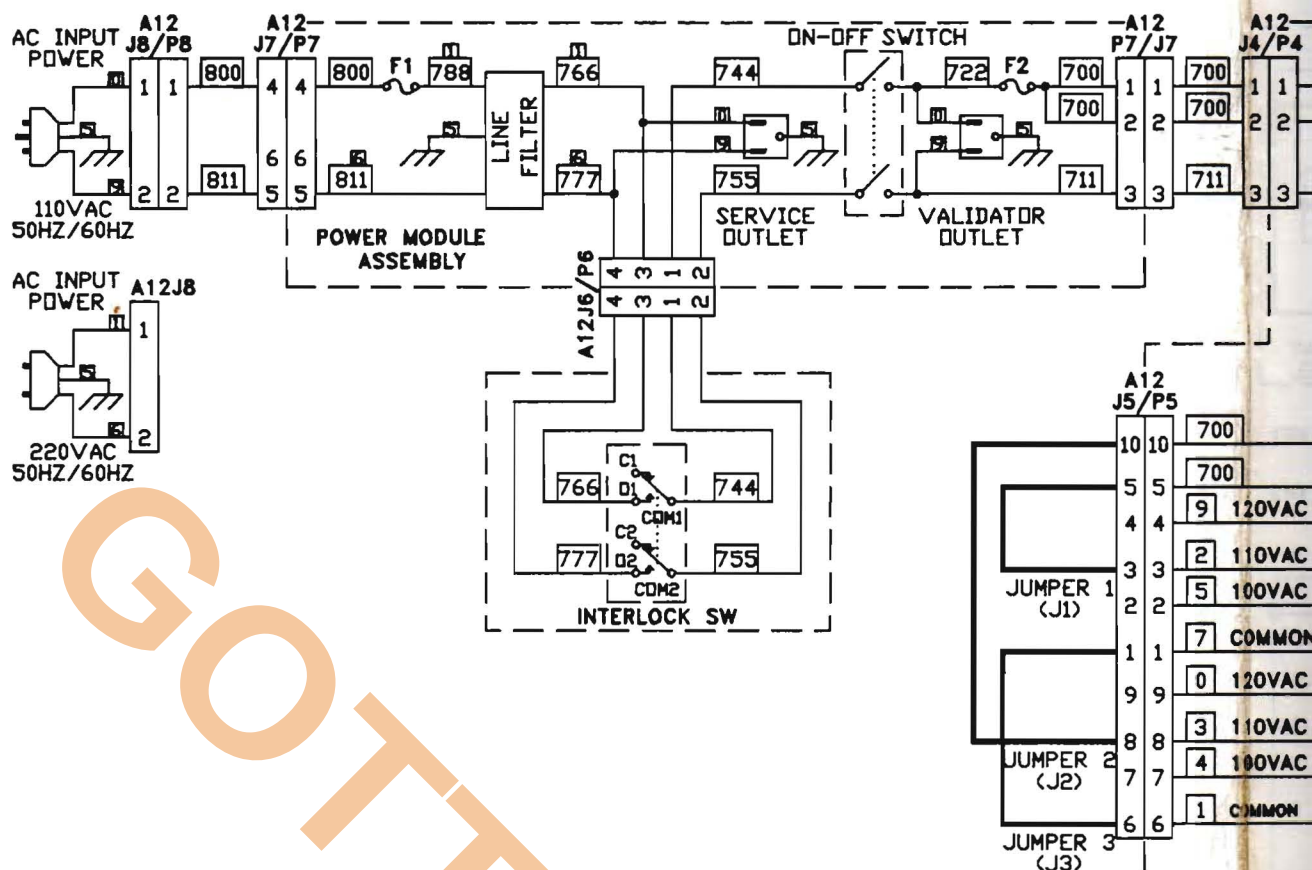


NOTE:

1. ALL DIODES ARE TYPE 1N4004.
2. UNLESS OTHERWISE SPECIFIED ALL LAMPS ARE TYPE #44.

COLOR CODE			
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1	BROWN	6	BLUE
2	RED	7	VIOLET
3	ORANGE	8	GRAY
4	YELLOW	9	WHITE

Premier Technology			
TITLE		PLAYBOARD	
		SCHEMATIC DIAGRAM	
USED ON	DRAWN	DATE	
#736	RLM	03-22-93	29855



A12J5

WIRING VIEW
PIN NUMBERS

10	9	8	7	6
5	4	3	2	1

100VAC INPUT JUMPERS

J2	9	8	J2	J3
J1	4	3	J1	J3

JUMPER
WIRE
COLORS

111

110VAC INPUT JUMPERS

J2	9	J2	7	J3
J1	4	J1	2	J3

JUMPER
WIRE
COLORS

222

120VAC INPUT JUMPERS

J2	J2	8	7	J3
J1	J1	3	2	J3

JUMPER
WIRE
COLORS

333

200VAC INPUT JUMPERS

10	9	8	J2	6
J1	4	3	J1	J2

JUMPER
WIRE
COLORS

444

220VAC INPUT JUMPERS

10	9	J2	7	6
J1	4	J1	2	J2

JUMPER
WIRE
COLORS

555

240VAC INPUT JUMPERS

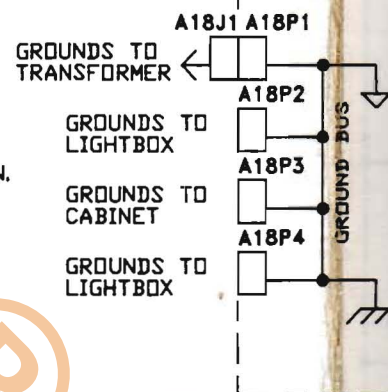
10	J2	8	7	6
J1	J1	3	2	J2

JUMPER
WIRE
COLORS

666

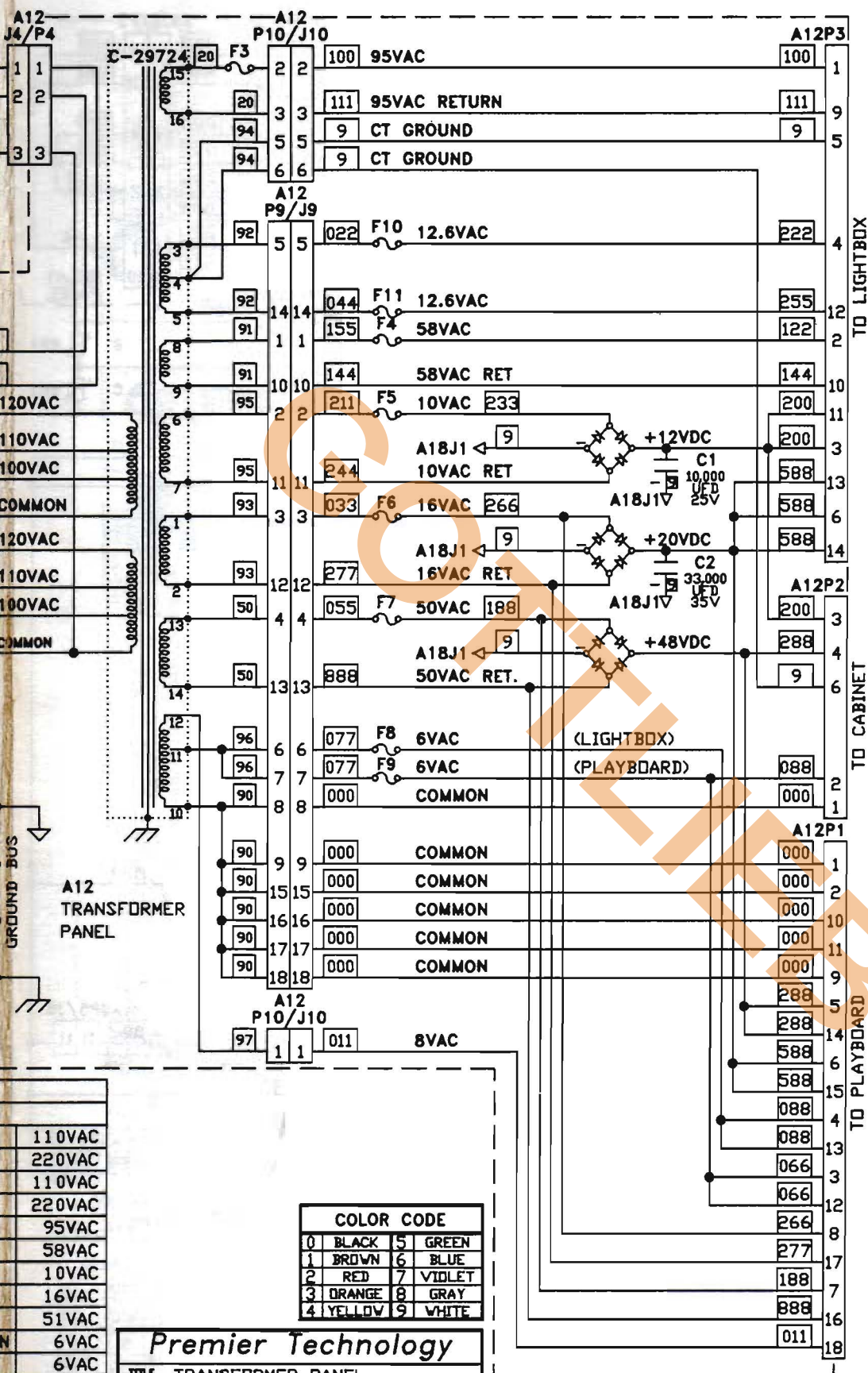
NOTES:

1. XXX INDICATES WIRE COLOR.
2. A12J5 SHOWN IN 110VAC OPERATION.
3.  CIRCUIT GROUND  EARTH GROUND



FUSE DESIGNATIONS TABLE				
FUSE	RATING	PART NO.	USAGE	
F1	8.0A SLO-BLO	EL26	LINE INPUT	110
	4.0A SLO-BLO	EL33	LINE INPUT	220
F2	5.0A SLO-BLO	EL 8	PRIMARY POWER	110
	2.5A SLO-BLO	EL21	PRIMARY POWER	220
F3	3/8A SLO-BLO	EL31	DISPLAY	95
F4	3/8A SLO-BLO	EL31	DISPLAY	58
F5	2.5A SLO-BLO	EL21	POWER SUPPLY	10
F6	10A SLO-BLO	EL36	CONTROLLED LAMPS	16
F7	8.0A SLO-BLO	EL26	SOLENOIDS	51
F8	15A	EL25	LIGHTBOX INSERT ILLUMINATION	6
F9	7.5A	EL22	PLAYBOARD ILLUMINATION	6
F10	3.0A SLO-BLO	EL 9	AUXILLIARY POWER SUPPLY	12.6
F11	3.0A SLO-BLO	EL 9	AUXILLIARY POWER SUPPLY	12.6
F12				

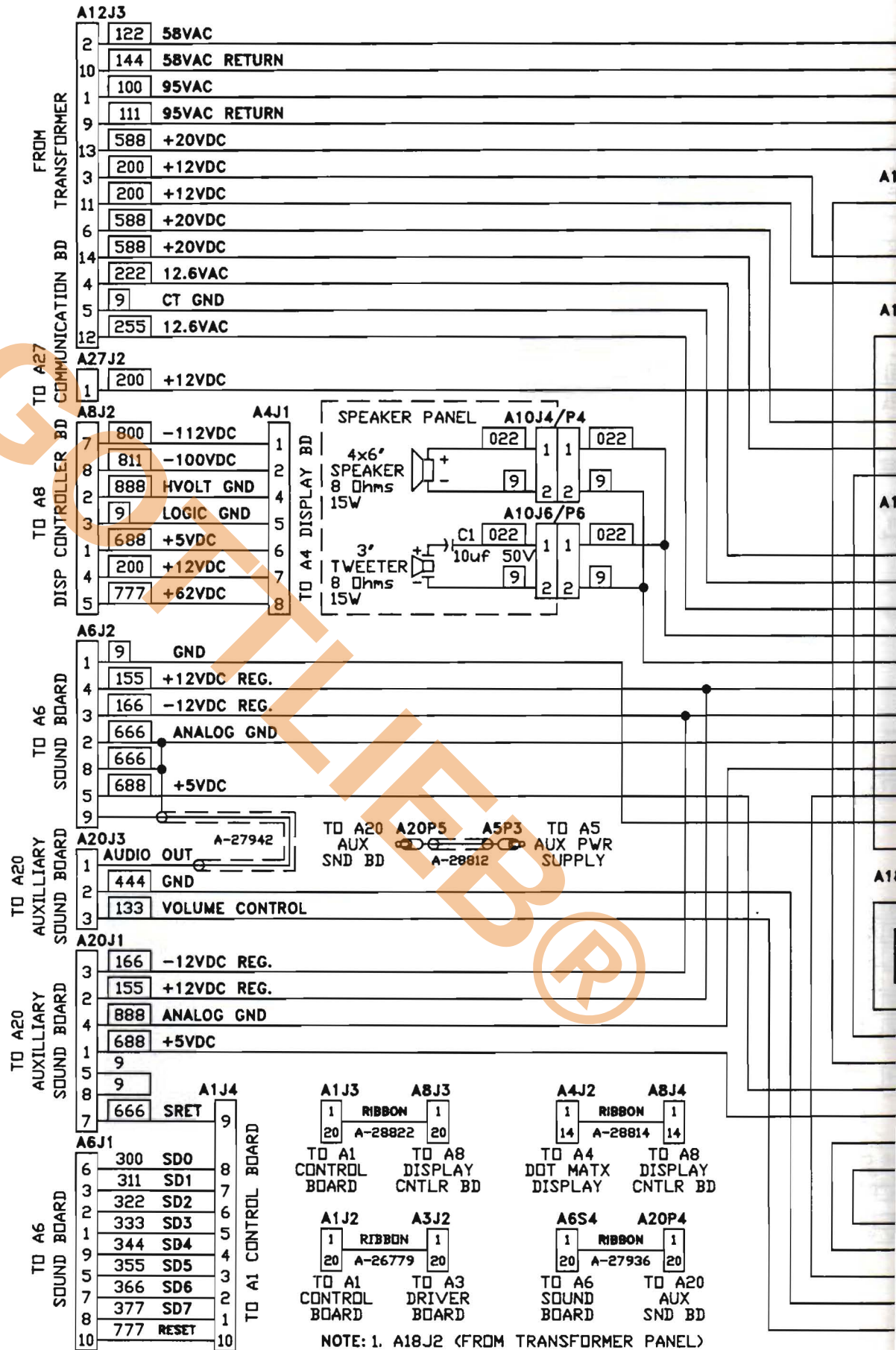
DIAGRAMS, PARTS LISTS



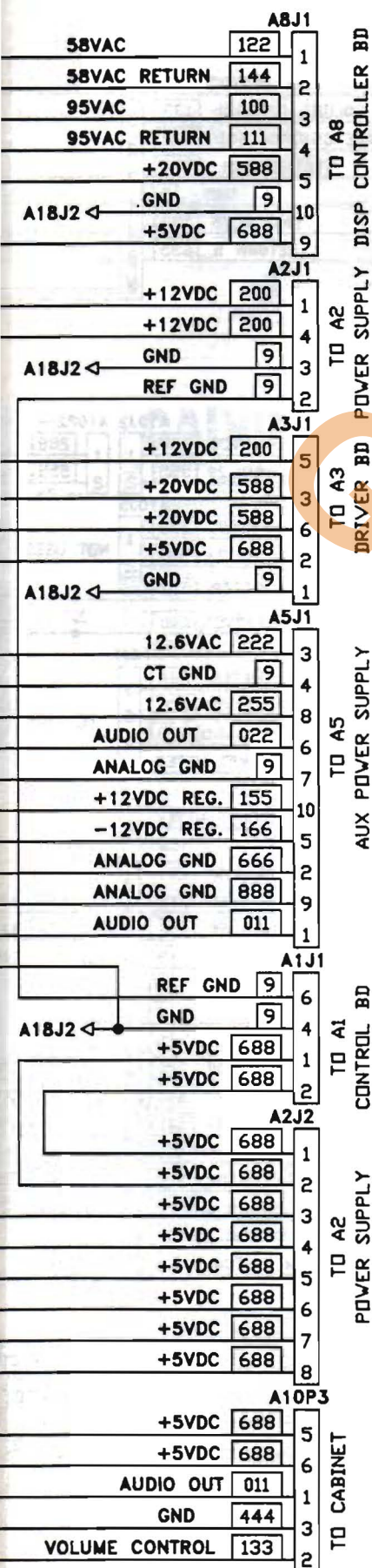
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1	BROWN	6	BLUE
2	RED	7	VIOLET
3	ORANGE	8	GRAY
4	YELLOW	9	WHITE

Premier Technology

TITLE TRANSFORMER PANEL SCHEMATIC DIAGRAM			
USED ON #736	DRAWN RLM	DATE 03-22-93	29856



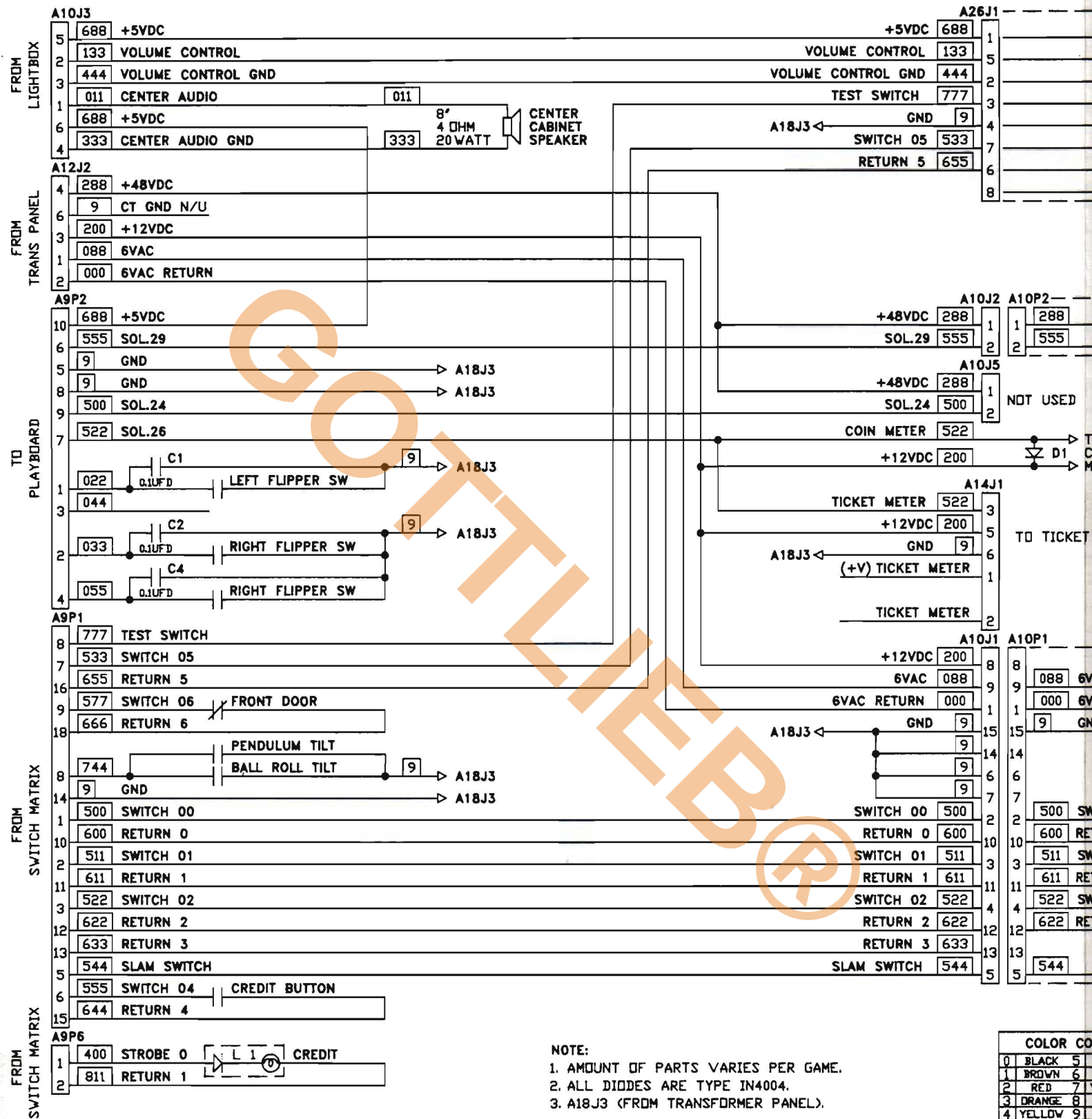
ATIC DIAGRAMS, PARTS LISTS

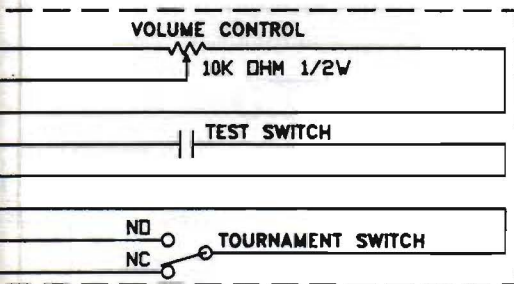


COLOR CODE			
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3	ORANGE	8	GRAY
4	YELLOW	9	WHITE

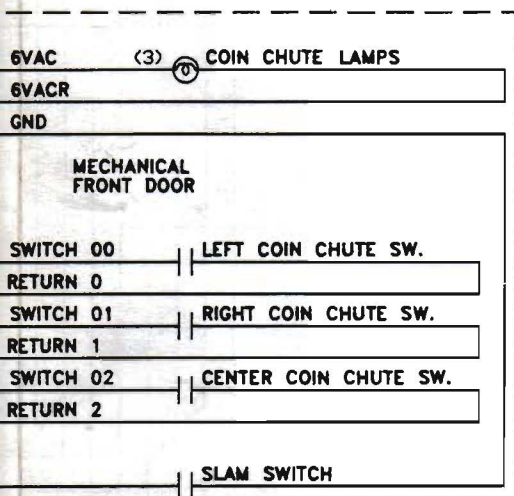
Premier Technology			
TITLE LIGHTBOX SCHEMATIC DIAGRAM			
ISSUED BY #736	DRAWN BY RLM	DATE 03-22-93	29858

VI. WIRING AND SCHEMATIC

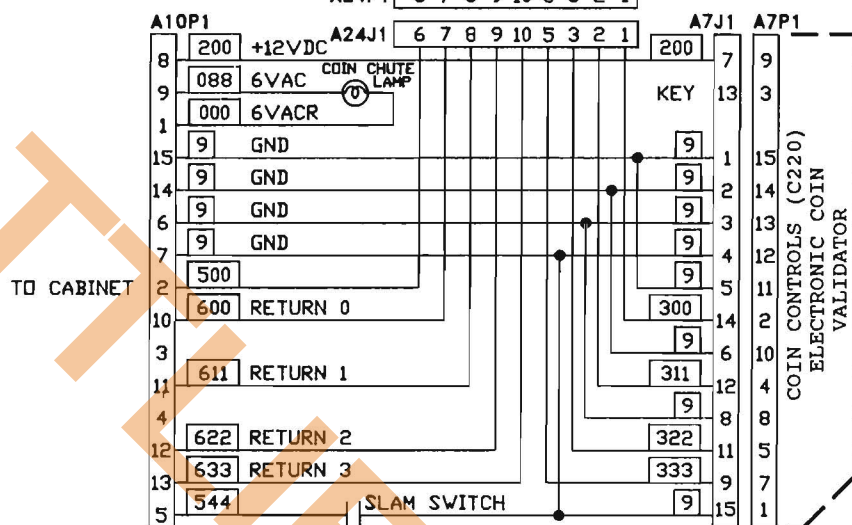
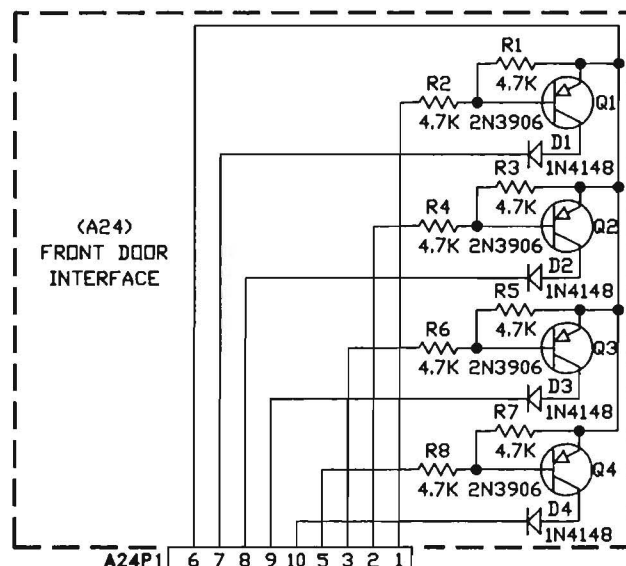




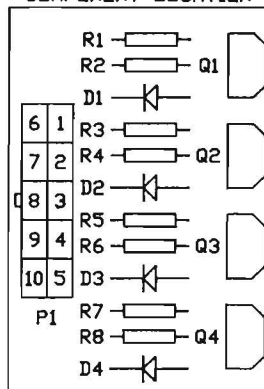
TO COIN
METER
OR
DISPENSER



CODE		Premier Technology		
5 GREEN		TITLE CABINET/FRONT DOOR		
6 BLUE		SCHEMATIC DIAGRAM		
7 VIOLET		USED ON	DATE	29857
8 GRAY		#736	RLM	03-22-93
9 WHITE				



(A24)
FRONT DOOR INTERFACE
COMPONENT LOCATION



(A24)
FRONT DOOR INTERFACE
PARTS LIST

REFERENCE DESCRIPTION	PART NO.
FRONT DOOR INTERFACE ASSEMBLY	MA1645
D1-D4 DIODE, 1N4148	XD-261
Q1-Q4 TRANSISTOR, PNP, 2N3906	XD-588
R1-R8 RESISTOR, 4.7K OHM, 1/4W, 5%	XD-7
A24P1 HEADER, 10 POSITION	XD-912
SPACER (4)	23984

COLOR CODE			
0 BLACK	5 GREEN		
1 BROWN	6 BLUE		
2 RED	7 VIOLET		
3 ORANGE	8 GRAY		
4 YELLOW	9 WHITE		

Premier Technology			
TITLE SCHEMATIC DIAGRAM			
ELECTRONIC FRONT DOOR-4 OUTPUT			
USED ON	DATE		
#736	RLM	09-20-91	28541

VII. PARTS INFORMATION

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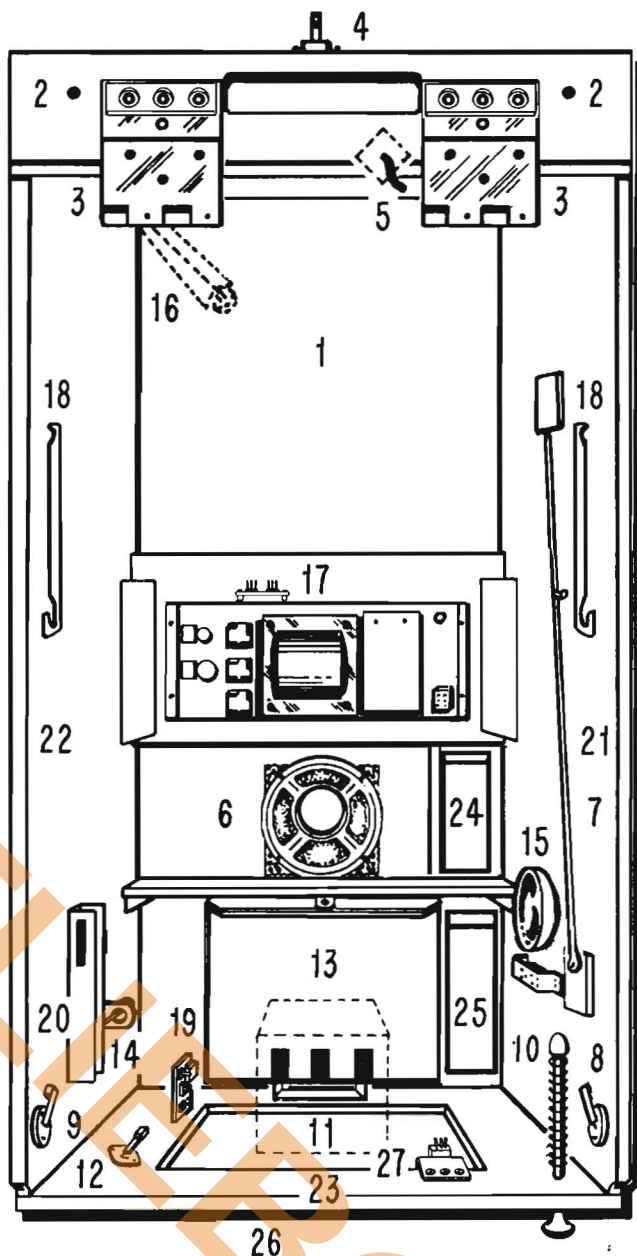
VII. PARTS INFORMATION

CABINET PARTS

ITEM	DESCRIPTION	PART NO.
1	Cabinet	29932-736
2	Lightbox Mounting Thumb Screw (2) (Not Shown for Reference Only, Part of Lightbox Assembly)	FA-162
3	Butt Hinge (2) (Attached to Lightbox)	26449
4	"U" Bolt (P/O Lightbox) Latch Assembly (P/O Cabinet)	24659 21969
5	Line Cord (Domestic) Line Cord Cover Plate	23365 23364
6	Speaker, 4 Ohm, 8" Speaker Grille	28934 28935
7	Prop Stick, Playfield	23940
8	Right Flipper Switch Assembly (Switch with Bracket) (Switch Only)	28693 28668
9	Left Flipper Switch Assembly (Switch with Bracket) (Switch Only)	28691 28690
10	Ball Shooter Assembly	26314
11	Front Door Assembly (Universal) Cable Assembly Slam Switch (N/O) 6V DC Lamp, Wedge Base Lampholder	29106 MA-1938 26130 FD-2 FD-24
12	Replay Switch Assembly	18092
13	Cashbox	28032
14	Plumb Bob Tilt Switch Assembly Strike Plate Carbon, Tilt Bob Rod, Tilt Bracket Clip	*SEE NOTE 358 MH-30 357 22043 14653
15	Knocker Assembly 5" Bell Assembly (When Used)	MA-12 27591
16	Cabinet Leg (4) Leg Bolt (8) 3" Leg Adjuster (4) 3/8-16", Jam Nut (8)	4337 3775 MH-21 FA-665
17	Transformer Panel Assembly Bridge Rectifier (3) Capacitor, (10,000UF), 25V Capacitor, (33,000UF), 35V Fuse Cover Fuse Holder and Cap F3 Fuse Block (8 Pole) F3, 3/8 Amp, SLO-BLO F4, 3/8 Amp, SLO-BLO F5, 2.5 Amp, SLO-BLO F6, 10 Amp, SLO-BLO F7, 8 Amp, SLO-BLO F8, 15 Amp F9, 7-1/2 Amp F10, 3 Amp, SLO-BLO F11, 3 Amp, SLO-BLO Transformer	MA-1945 EL-42 XO-830 XO-957 23805 EL-78 EL-10 EL-31 EL-31 EL-21 EL-36 EL-26 EL-25 EL-22 EL-9 EL-9 29724
18	Cabinet Pivot Bracket (Left) Cabinet Pivot Bracket (Right)	25658 25657
19	Game Controls Board (A26)	MA-1851
20	Ball Roll Tilt Housing and Switching Assembly Switch	24394 24393
21	Right Moulding (Not Shown)	28700
22	Left Moulding (Not Shown)	28701
23	Front Moulding (Not Shown)	16951
24	Relay Strip Assembly "Q" Relay "T" Relay "A" Relay	MA-1872 MA-1172 MA-25 MA-1021
25	Power Module Assembly (Domestic) Convenience Outlet (2) Toggle Switch Plate Double Throw Switch Fuse Holder and Cap (2) Line Filter F1, 8 Amp SLO-BLO, 110V AC 4 Amp SLO-BLO, 220V AC F2, 5 Amp SLO-BLO, 110V AC 2.5 Amp SLO-BLO, 220V AC	MA-1928 18133 18769 23799 EL-78 EL-50 EL-26 EL-33 EL-8 EL-21

DIFFERENCES

Power Module Assembly (Germany)	MA-1928A
Line Filter	EL-51
Capacitor, 0.47UF, 20%, 250V	XO-884
Power Module Assembly (Japan)	MA-1928B
On-Off Switch	25481



ITEM	DESCRIPTION	PART NO.
26	Lock Bar (Not Shown) Lock Bracket (Not Shown) Lock Bar Bracket (Not Shown)	29759 29760 29761
27	Interlock Switch Support Bracket Interlock Switch	29451 29305

*NOTE:
COVER USED WITH ELECTRONIC DOOR
OR 3 CHUTE DOOR, PART NO. 28062

COVER USED WITH 2 CHUTE DOOR WITH
\$1.00 ACCEPTOR SLOT, PART NO. 30002

VII. PARTS INFORMATION

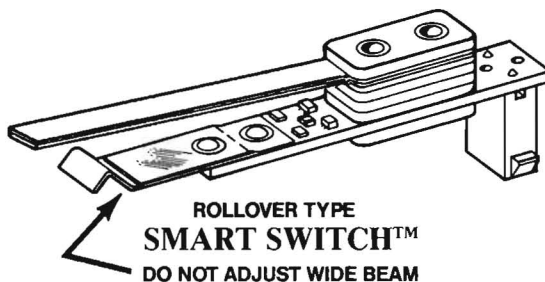
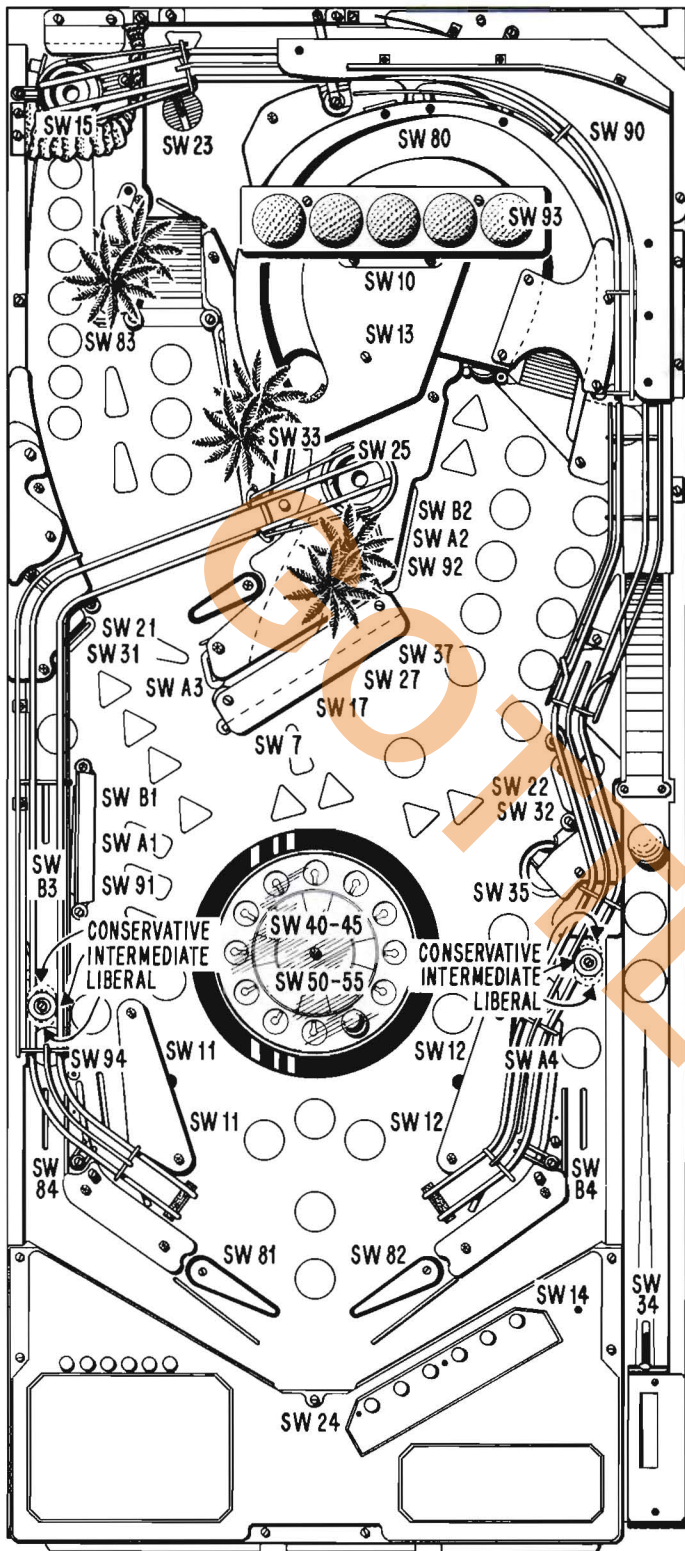
PLAYBOARD SWITCH ASSIGNMENTS

SWITCH MATRIX NUMBER

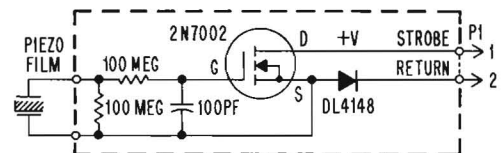
SWITCH ASSIGNMENT

PART NO.

SW 0	LEFT COIN CHUTE (#1)	P/O FRONT DOOR
SW 1	RIGHT COIN CHUTE (#2)	P/O FRONT DOOR
SW 2	CENTER COIN CHUTE (#3)	P/O FRONT DOOR
SW 3	COIN CHUTE (#4)	P/O ELECTRONIC DOOR
SW 4	START (CREDIT) BUTTON	18092
SW 5	TOURNAMENT	XO-1193
SW 6	FRONT DOOR (SERVICE)	29305
SW 7	DROP TARGET #1	25896
* SW 10	POP BUMPER	29819
SW 11	LEFT KICKING RUBBER (2)	27702
SW 12	RIGHT KICKING RUBBER (2)	27702
SW 13	TOP KICKING RUBBER	27702
SW 14	TROUGH	29346
SW 15	(NOT USED)	
SW 16	TOP UPKICKER	27667A
SW 17	DROP TARGET #3	25896
SW 20	(NOT USED)	
SW 21	LEFT BULLSEYE (INNER)	P/O 27544
SW 22	RIGHT BULLSEYE (INNER)	P/O 27544
SW 23	HOLE	28080
SW 24	OUTHOLE	26927
SW 25	(NOT USED)	
SW 26	CENTER UPKICKER	27667A
SW 27	DROP TARGET #4	25897
SW 30	(NOT USED)	
SW 31	LEFT BULLSEYE (OUTER)	P/O 27544
SW 32	RIGHT BULLSEYE (OUTER)	P/O 27544
SW 33	CENTER ROLLOVER	27764
SW 34	SHOOTER LANE ROLLOVER	25824
SW 35	(NOT USED)	
SW 36	BOTTOM UPKICKER	27667A
SW 37	DROP TARGET #5	25895
SW 40	SPIN UNIT "G"	P/O 29871
SW 41	SPIN UNIT "O"	P/O 29871
SW 42	SPIN UNIT "P"	P/O 29871
SW 43	SPIN UNIT "H"	P/O 29871
SW 44	SPIN UNIT "E"	P/O 29871
SW 45	SPIN UNIT "R"	P/O 29871
SW 46	(NOT USED)	
SW 47	(NOT USED)	
SW 50	SPIN UNIT "G"	P/O 29871
SW 51	SPIN UNIT "O"	P/O 29871
SW 52	SPIN UNIT "P"	P/O 29871
SW 53	SPIN UNIT "H"	P/O 29871
SW 54	SPIN UNIT "E"	P/O 29871
SW 55	SPIN UNIT "R"	P/O 29871
SW 56	(NOT USED)	
THRU	(NOT USED)	
SW 77	(NOT USED)	
SW 80	RIGHT RAMP (OPTICAL INTERFACE)	MA-1558
SW 81	LEFT FLIPPER (SENSOR BOARD A15)	P/O MA-1334
SW 82	RIGHT FLIPPER (SENSOR BOARD A15)	P/O MA-1334
* SW 83	TOP LEFT SPOT TARGET, NARROW, WHITE	29104Z
* SW 84	LEFT OUTSIDE ROLLOVER	28625
THRU	(NOT USED)	
SW 87	(NOT USED)	
SW 90	RIGHT LANE (OPTICAL INTERFACE)	MA-1558
* SW 91	BOTTOM LEFT SPOT TARGET #2, GREEN	29099S
* SW 92	RIGHT CENTER SPOT TARGET #1, RED	29099U
* SW 93	TOP RIGHT SPOT TARGET, YELLOW	29099T
* SW 94	LEFT RETURN ROLLOVER	28625
SW 95	(NOT USED)	
THRU	(NOT USED)	
SW A0	(NOT USED)	
SW A1	BOTTOM LEFT SPOT TARGET #2, YELLOW	29099T
SW A2	RIGHT CENTER SPOT TARGET #2, RED	29099U
SW A3	LEFT CENTER SPOT TARGET, YELLOW	29099T
SW A4	RIGHT RETURN ROLLOVER	28625
SW A5	(NOT USED)	
THRU	(NOT USED)	
SW B0	(NOT USED)	
* SW B1	BOTTOM LEFT SPOT TARGET #3, BLUE	29099W
* SW B2	RIGHT CENTER SPOT TARGET #3, RED	29099U
* SW B3	LEFT SIDE ROLLOVER	28625
* SW B4	RIGHT SIDE ROLLOVER	28625
SW B5	(NOT USED)	
THRU	(NOT USED)	
SW B7	(NOT USED)	
* SMART SWITCH™		



SEE PAGE 22



SCHEMATIC REPRESENTATION

VII. PARTS INFORMATION

PLAYBOARD LAMP ASSIGNMENTS

LAMP NUMBER

LAMP ASSIGNMENT

LQ	"GOLF AGAIN"
L1	Credit Button (FRONT OF CABINET)
L2	Left Cardholder "S"
L3	Left Cardholder "K"
L4	Left Cardholder "I"
L5	Left Cardholder "N"
L6	Left Cardholder "S"
L7	Left Cardholder "I"
L10	Left Side Rollover "SPECIAL"
L11	"BIG SCORE" Spot Target
L12	Right Cardholder "G"
L13	Right Cardholder "O"
L14	Right Cardholder "P"
L15	Right Cardholder "H"
L16	Right Cardholder "E"
L17	Right Cardholder "R"
L20	(NOT USED)
L21	Top Left Upkicker "SPELL SKINS"
L22	Top Left Upkicker "CHEAT SHOT"
L23	Top Left Upkicker "TEE"
L24	Top Left Upkicker 1st Hole
L25	Top Left Upkicker 6th Hole
L26	Top Left Upkicker 9th Hole
L27	Top Left Upkicker "GO FORE, PAR TEE"
L30	Hot Shot Ramp "10 MILLION"
L31	Hot Shot Ramp "QUICK PICK"
L32	Hot Shot Ramp "PITCH 'N PUTT"
L33	Right Ramp "PITCH 'N PUTT"
L34	Right Vacuum Form "LITE TEE"
L35	Right Vacuum Form 2nd Hole
L36	Right Vacuum Form 4th Hole
L37	Right Vacuum Form 8th Hole
L40	Right Upkicker 3rd Hole
L41	Right Upkicker 5th Hole
L42	Right Upkicker 7th Hole
L43	Right Lane "RECOVER SCORE"
L44	Right Lane "ANYTHING GOES"
L45	Right Lane "LOCK"
L46	Right Lane "MYSTERY"
L47	Right Lane "HOLE IN ONE"
L50	"ONE SHOT"
L51	Left Spot Target (Green)
L52	Left Spot Target (Yellow)
L53	Left Spot Target (Blue)
L54	Left Bullseye "2M"
L55	Left Bullseye "4M"
L56	Left Bullseye "8M"
L57	Left Bullseye "16M"
L60	Center Hole "HOLE IN ONE"
L61	Center Hole "TEE'D OFF"
L62	Center Hole "SPIN GOPHER WHEEL"
L63	"ADD COCONUT BONUS"
L64	"NEXT HOLE ADV. HOOK"
L65	Hole Awards "MULTI BALL"
L66	Hole Awards "RAINING CATS 'N DOGS"
L67	Hole Awards "LITES ANYTHING GOES"
L70	Upper Left Spot Target 20M
L71	Upper Left Spot Target Extra Ball
L72	Pop Bumper
L73	"ADD COCONUT BONUS"
L74	"ADVANCE JACKPOT"
L75	Right Bullseye "SPELL SLICE"
L76	Right Bullseye "HURRY-UP 50M"
L77	Right Bullseye "EXTRA BALL"
L80	Left Outside Rollover "HOLE IN ONE"
L81	Left Outside Rollover "LITE DOG LEG"
L82	Right Return Rollover "LITE CHEAT SHOT"
L83	Right Outside Rollover "HOLE IN ONE"
L84	Shooter Lane "LOCK"
L85	Shooter Lane "HOLE IN ONE"
L86	Right Lane "DOG LEG"
L87	Mean Hole Green
L90	Gopher Wheel #1
L91	Gopher Wheel #2
L92	Gopher Wheel #3
L93	Gopher Wheel #4
L94	(NOT USED)
L97	(NOT USED)
LA0	Billboard "SPELL SKINS"
LA1	Billboard "TEE'D OFF"
LA2	Billboard "EXTRA BALL ROUND"
LA3	Billboard "FIND THE GOPHER"
LA4	Billboard "PITCH 'N PUTT"
LA5	(NOT USED)
LB7	(NOT USED)

LAMP SOCKETS WITH DIODE BOARD

TYPE	PART NO.
1-1/8" BRACKET	26621
1/2" BRACKET	26622
LAYDOWN	26623

SOLENOID FUNCTIONS/LOCATIONS

SOL. 0	POP BUMPER	SOL. 16	RIGHT TOP #2 #67
SOL. 1	LEFT KICKING RUBBER	SOL. 17	RIGHT CENTER #67
SOL. 2	RIGHT KICKING RUBBER	SOL. 18	RIGHT FLIPPER #67
SOL. 3	TOP KICKING RUBBER	* SOL. 19	LIGHTBOX #1, #67 (2)
SOL. 4	HOLE	* SOL. 20	LIGHTBOX #2, #67 (2)
SOL. 5	PLUNGER GATE	* SOL. 21	LIGHTBOX #3, #67 (2)
SOL. 6	5 BANK RESET	SOL. 22	GOPHER #67 (2)
SOL. 7	TOP UPKICKER	SOL. 23	L.B. GOPHER MOTOR RELAY (C)
SOL. 8	CENTER UPKICKER	SOL. 24	P.B. GOPHER MOTOR RELAY (B)
SOL. 9	BOTTOM UPKICKER	SOL. 25	LIGHTBOX INSERT ILLUM. RELAY (A)
SOL. 10	LEFT FLIPPER	SOL. 26	TICKET COIN/METER ENABLE
SOL. 11	LEFT CENTER	SOL. 27	BALL RELEASE
SOL. 12	LEFT TOP DOME #67	SOL. 28	OUTHOLE
SOL. 13	CENTER MIDDLE #67	SOL. 29	KNOCKER
SOL. 14	CENTER TOP #67	SOL. 30	TILT RELAY (T)
SOL. 15	RIGHT TOP #1 (DOME) #67	SOL. 31	GAME OVER RELAY (Q)

NOTE:
* LAMPS MOUNTED ON LIGHTBOX INSET,
SEE PAGE 74 FOR LOCATION.

VII. PARTS INFORMATION

PLAYBOARD PARTS INFORMATION

PARTS LIST

ITEM	DESCRIPTION	PART NO.
1	BALL SNUBBER	28798
2	PLATE SHIELD	29951
3	PLASTIC SHIELD SET	29916
4	FLAT RAIL	29879
5	METAL SHIELD	17300
6	WIREFORM GATE	21696
7	FLAT RAIL	27888
8	MOLDED VOLCANO COVER	29949
9	UPKICKER ASSEMBLY (SEE EXPLODED VIEW ILLUSTRATION)	MA-1743
10	WIREFORM RAMP	29824
11	BALL HOLE KICKER ASSEMBLY (SEE EXPLODED VIEW ILLUSTRATION)	MA-1932
12	OPTO SWITCH AND SUPPORT BRACKET	MA-1953
13	OPTO SWITCH AND SUPPORT BRACKET	MA-1942
14	LIGHT STRIP ASSEMBLY	MA-1954
15	MOLDED COVER	29950
16	GOLF BALL AND REFLECTOR ASSEMBLY (5)	30021
17	5 POSITION STRIP PCB ASSEMBLY	MA-1957
18	BALL GUIDE RAIL	21961
19	BALL GUIDE RAIL	13833
20	RAMP	24967
21	PLASTIC DOME, CLEAR (2)	25147P
22	MOLDED RAMP ASSEMBLY	29937
23	CELLULAR URETHANE BUMPER	28680
24	FLANGED POP BUMPER BODY, WHITE	26860Z
25	POP BUMPER BRACKET AND COIL ASSEMBLY (SEE EXPLODED VIEW ILLUSTRATION)	MA-1956
26	RAMP FLAP	29929
27	BALL SNUBBER	29973
28	WIREFORM RAMP	29833
29	BALL STOP PLUNGER ASSEMBLY	MA-1812
30	UPKICKER ASSEMBLY (SEE EXPLODED VIEW ILLUSTRATION)	MA-1789
31	KICKER ASSEMBLY	MA-1849
32	FLAT RAIL	29882
33	FLAT RAIL	29883
34	FLIPPER ASSEMBLY (SEE EXPLODED VIEW ILLUSTRATION)	MA-1791B
	FLIPPER COIL	27642
	FLIPPER SWITCH	26438
35	METAL TARGET ASSEMBLY (2)	29714
35A	METAL TARGET DECAL(2)	29945
36	BALL SNUBBER	29894
37	TARGET BANK ASSEMBLY, (5 POSITION, 4 TARGET) (SEE EXPLODED VIEW ILLUSTRATION)	MA-1951
38	ROLLOVER DROP TARGET, YELLOW	20892T
39	TARGET ARM, YELLOW (3)	11905T
39A	DROP TARGET DECAL (4)	29944
40	PLASTIC PALM TREE (3)	28489
41	WIREFORM RAMP	29832
42	BALL DEFLECTOR	26453
43	SPACER, 2", 8-32 STUD AND HOLE	29754
44	METAL RUNWAY RAMP	29903
45	MYLAR OVERLAY	29868
46	BILLBOARD MOUNTING	29930
47	SPIN UNIT ASSEMBLY (SEE EXPLODED VIEW ILLUSTRATION)	MA-1920
48	MYLAR OVERLAY	29957
49	UPKICKER ASSEMBLY (SEE EXPLODED VIEW ILLUSTRATION)	MA-1747
50	BALL SNUBBER	28039
51	CELLULAR URETHANE BUMPER (2)	29974
52	KICKER ASSEMBLY	MA-1373
53	KICKER ASSEMBLY	MA-1083
54	FLIPPER ASSEMBLY (SEE EXPLODED VIEW ILLUSTRATION)	MA-1790
	FLIPPER COIL	25959
	FLIPPER SWITCH	26439
55	FLIPPER ASSEMBLY (SEE EXPLODED VIEW ILLUSTRATION)	MA-1791
	FLIPPER COIL	25959
	FLIPPER SWITCH	26438
56	STEEL BALL, 1-1/16" DIAMETER (5)	21864
57	LED BOARD ASSEMBLY	MA-1870
58	LED BOARD ASSEMBLY	MA-1843
59	BALL SNUBBER (2)	13798
60	CARDHOLDER VACUUM FORM ASSY. WITH P.C.B.'S	29912
61	CARDHOLDER	29316-736

RUBBER RINGS

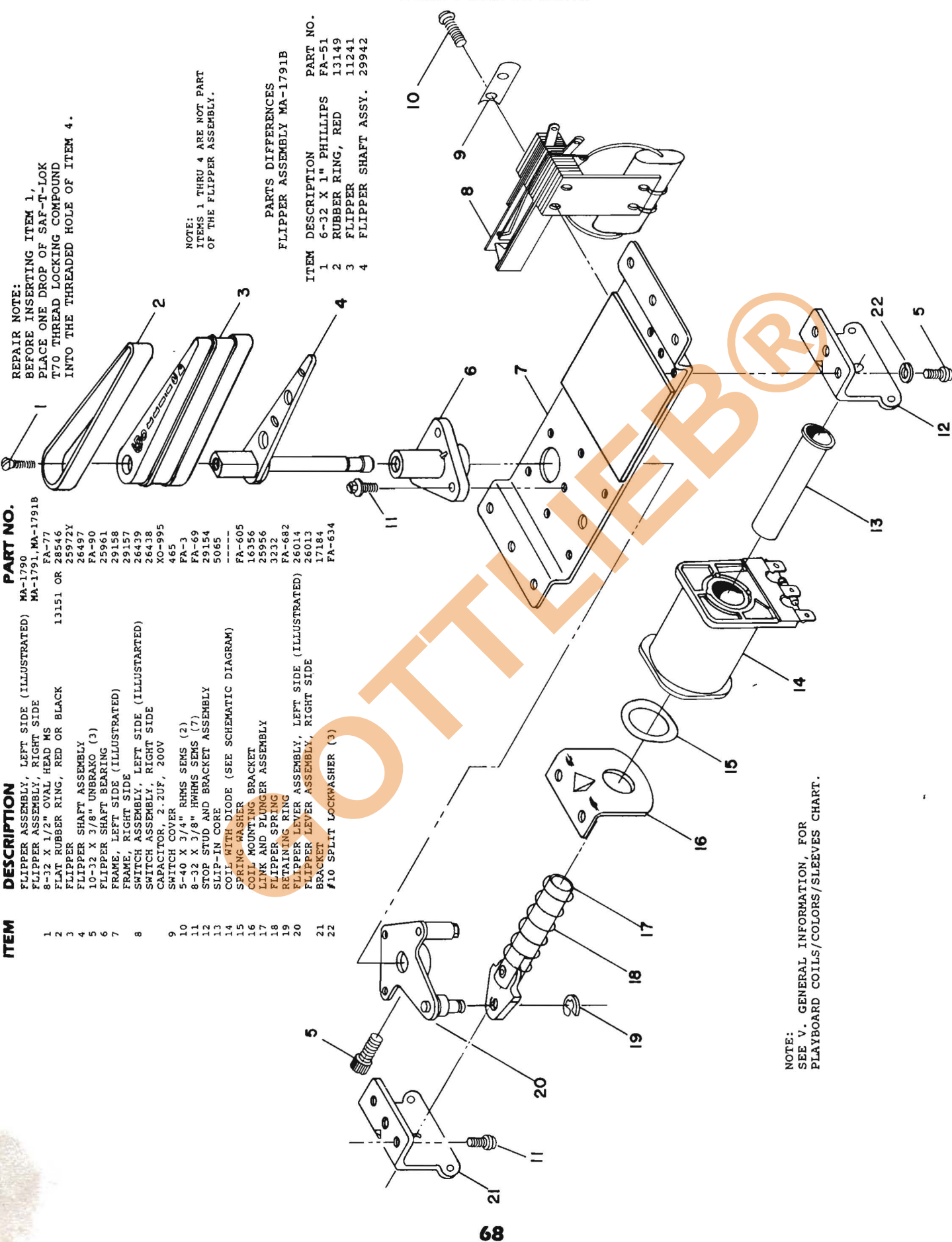
ITEM	DESCRIPTION	PART NO.
A	2" (2)	10221
B	1" (5)	10219
C	2-1/2" (2)	10222
D	3" (2)	10223
E	3/4"	10218
F	1-1/2"	10220
G	MINI-POST (4)	15705
H	5/16" (7)	10217
J	MINI-POST SMALL	14793
K	BUMPER, TAPERED, BLK. (7)	30003Y
L	RUBBER RING, RED	13149
M	FLIPPER, BLACK (2)	28546

MISCELLANEOUS PARTS

DESCRIPTION	PART NO.
PLASTIC RIVET	MP-10
SIAMESE POST	17492
PLASTIC POST, 1", YEL.	11561T
PLASTIC POST, 1-3/16", YEL.	11562T
MINI-POST SCREW	14792
HEX POST WITH GRIP	26531
"B" RELAY	MA-1738
"C" RELAY	MA-1948
POST BASE	14487Z
SPLIT POST CAP	14488Z
SUPPORT POST, CLEAR	20635P

VII. PARTS INFORMATION

FLIPPER PARTS



REPAIR NOTE:
BEFORE INSERTING ITEM 1,
PLACE ONE DROP OF SAF-T-LOK
T70 THREAD LOCKING COMPOUND
INTO THE THREADED HOLE OF ITEM 4.

NOTE:
ITEMS 1 THRU 4 ARE NOT PART
OF THE FLIPPER ASSEMBLY.

PARTS DIFFERENCES FLIPPER ASSEMBLY MA-1791B	
ITEM	DESCRIPTION
1	6-32 X 1" PHILLIPS
2	RUBBER RING, RED
3	FLIPPER SHAFT ASSY.
4	FLIPPER SHAFT ASSY.

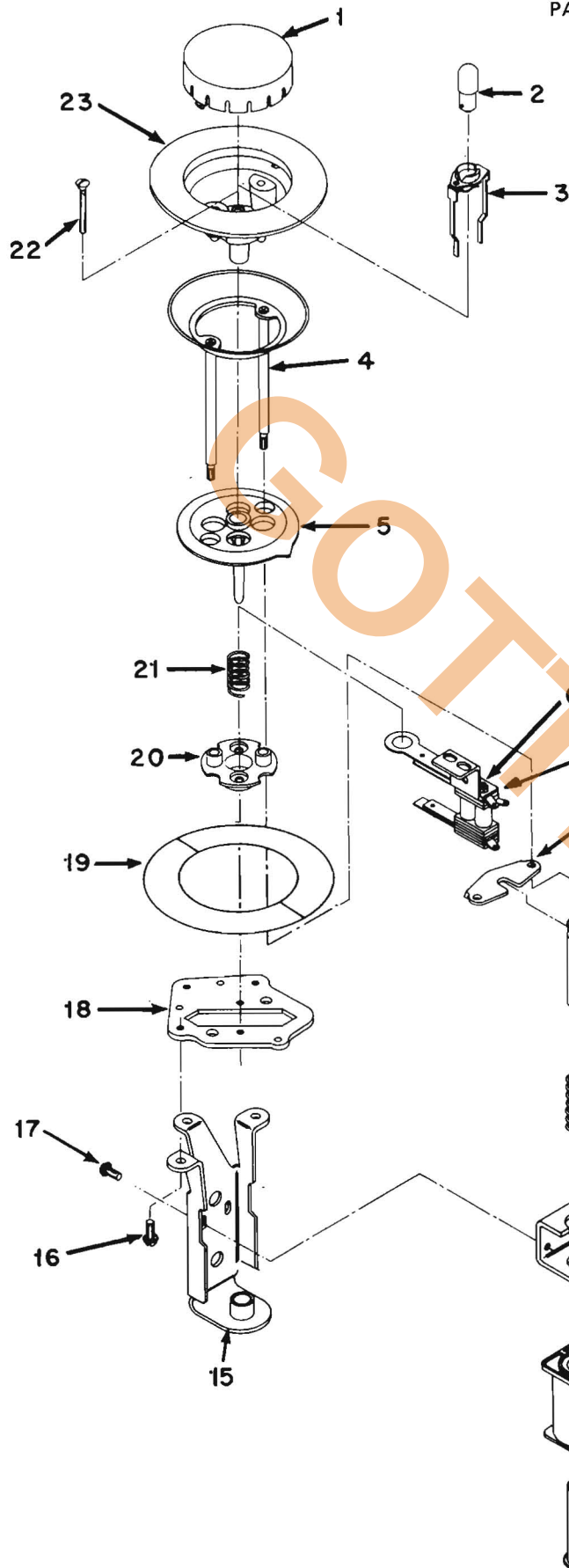
ITEM	DESCRIPTION	PART NO.
1	FLIPPER ASSEMBLY, LEFT SIDE (ILLUSTRATED)	MA-1790
2	FLIPPER ASSEMBLY, RIGHT SIDE	MA-1791, MA-1791B
3	8-32 X 1 1/2" OVAL HEAD MS	FA-77
4	FLIPPER SHAFT ASSSEMBLY	25972Y
5	10-32 X 3/8" UNBRACO (3)	26497
6	FLIPPER SHAFT BEARING	25961
7	FRAME, LEFT SIDE (ILLUSTRATED)	29158
8	FRAME, RIGHT SIDE (ILLUSTRATED)	29157
9	SWITCH ASSEMBLY, LEFT SIDE (ILLUSTRATED)	26439
10	SWITCH ASSEMBLY, RIGHT SIDE	26438
11	CAPACITOR, 2.2UF, 200V	XO-995
12	SWITCH COVER	465
13	5-40 X 3/4" RHMS SEMS (2)	FA-3
14	8-32 X 3/8" HHMS SEMS (7)	FA-69
15	STOP STUD AND BRACKET ASSEMBLY	29154
16	SLIP-IN CORE	5065
17	COIL WITH DIODE (SEE SCHEMATIC DIAGRAM)	-----
18	SPRING WASHER	FA-605
19	COIL MOUNTING BRACKET	16356
20	LINK AND PLUNGER ASSEMBLY	25956
21	FLIPPER SPRING	3232
22	RETAINING RING	FA-682
	FLIPPER LEVER ASSEMBLY, LEFT SIDE (ILLUSTRATED)	26014
	FLIPPER LEVER ASSEMBLY, RIGHT SIDE	26013
	BRACKET	17184
	#10 SPLIT LOCKWASHER (3)	FA-634

NOTE:
SEE V. GENERAL INFORMATION, FOR
PLAYBOARD COILS/COLORS/SLEEVES CHART.

VII. PARTS INFORMATION

POP BUMPER PARTS

PAT. NO. 213,981



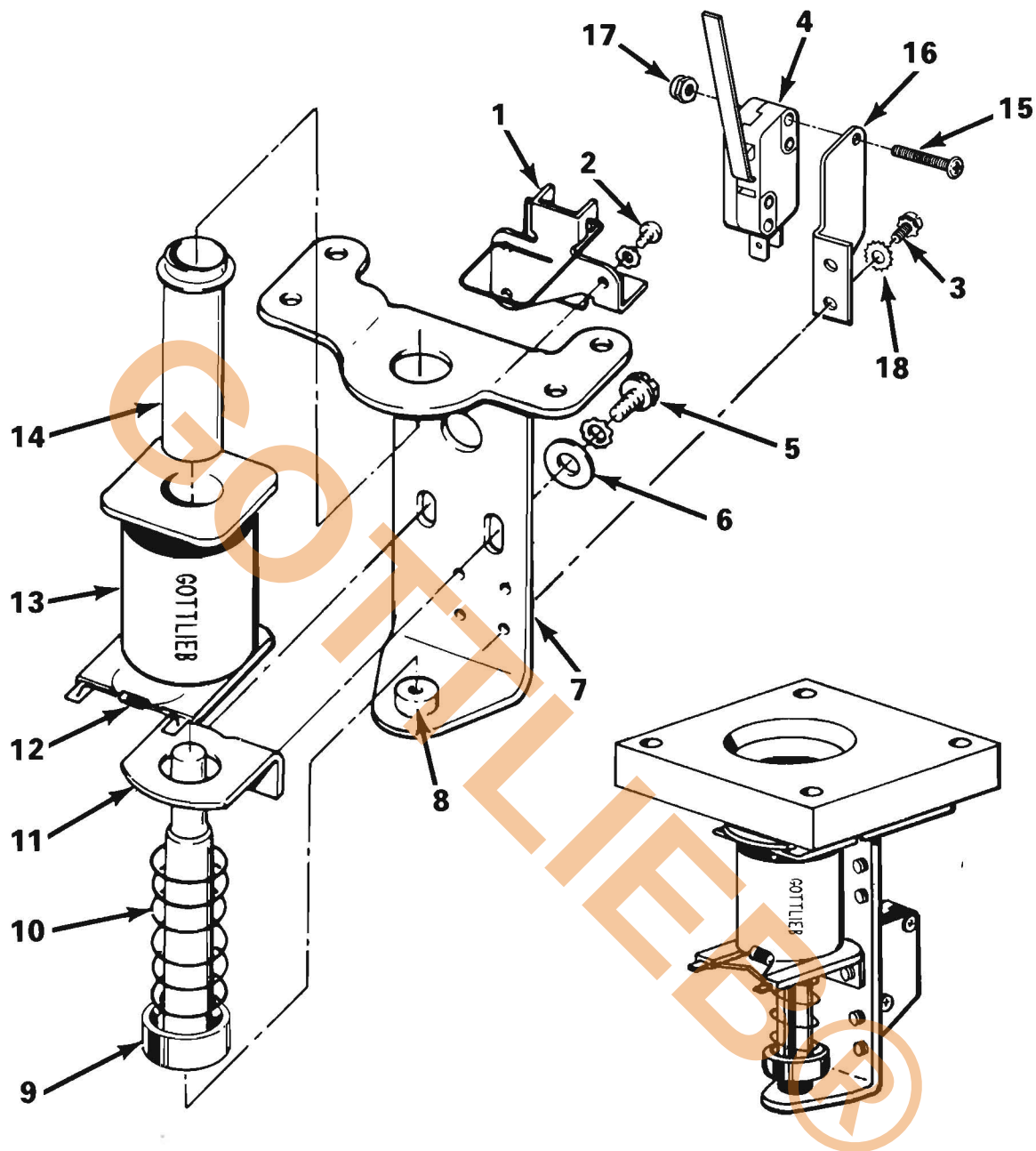
ITEM	DESCRIPTION	PART NO.
1	Pop Bumper Assembly	Specify Game
2	Pop Bumper Cap (Specify Color)	10434
3	Lamp, #44	LA-0
4	Socket	PS-0
5	Tie Rods and Ring	16634
6	Pop Bumper Skirt (Specify Color)	10433
7	Switch Assembly	Specify Game
8	Slotted Yoke	12149
9	Plunger	2663
10	Insulating Yoke	2662
11	Elastic Stop Nut, 6-32	FA-660
12	Kicker Return Spring	21643
13	Stop Bracket	8571
14	Coil	Specify Game
15	Coil Sleeve	5064
16	Coil Mounting Bracket and Stop	17906
17	8-32 x 1/4 HHMS SEMS	FA-64
18	6-32 x 1/4 HHMS SEMS	FA-53
19	Pop Bumper Pad	16632
20	Pop Bumper Trim Platter	25732
21	Pop Bumper Base	10432
22	Pop Bumper Spring	10430
23	6-32 x 1-1/8 Oval HMS	FA-43
24	Pop Bumper Body (Specify Color)	10435
25	Bracket	16647
26	4-40 x 1/2 Pan Head Phillips	FA-108
27	Pop Bumper Cap, Clear, (Specify Color)	26635
	Pop Bumper Body (Specify Color)	26860

NOTE:

ITEMS 23 AND 27 ARE INTERCHANGEABLE.

VII. PARTS INFORMATION

UPKICKER PARTS



ITEM	DESCRIPTION	PART NO.
	UPKICKER ASSEMBLY	MA-1743, MA-1747, MA-1789
1	WIREFORM AND BRACKET	28953
2	RHMS-SEMS 6-32 X 3/16" (3)	FA-30
3	RHMS 5-40 X 1/4" SEMS (2)	FA-10
4	MICROSWITCH WITH ACTUATOR	27667A
5	HWHMS-SEMS 8-32 X 5/16" (2)	FA-67
6	#8 WASHER (2)	FA-617
7	FRAME	21416
8	RUBBER GROMMET	5240
9	PLUNGER AND TIP ASSEMBLY	21412
10	SPRING	26739
11	COIL MOUNTING BRACKET	15409
12	DIODE, 1N4004	XO-254
13	COIL	(SEE SCHEMATIC)
14	SLIP-IN-CORE	21411
15	PAN HEAD 4-40 X 5/8" (2)	FA-107
16	MICROSWITCH MOUNTING BRACKET	27870
17	ELASTIC STOP NUT, 4-40 (2)	FA-648
18	#5 EXTERNAL LOCKWASHER (2)	FA-630

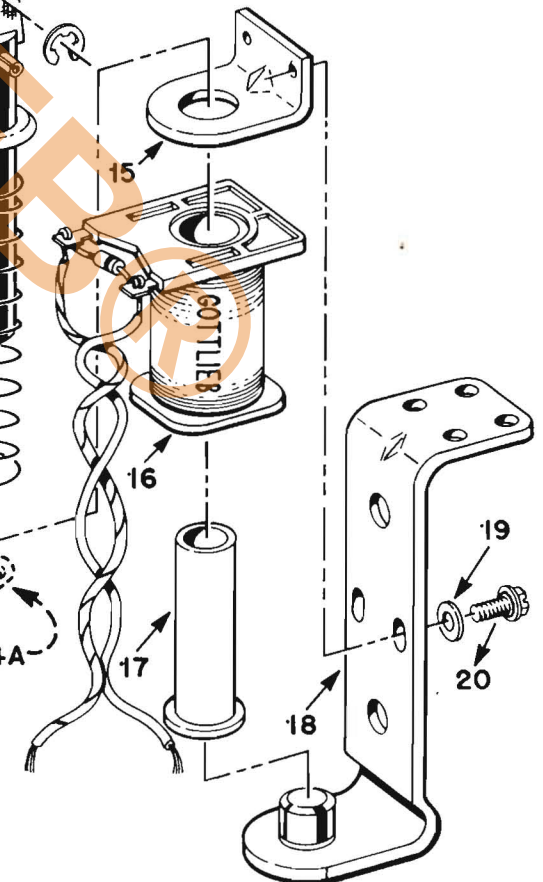
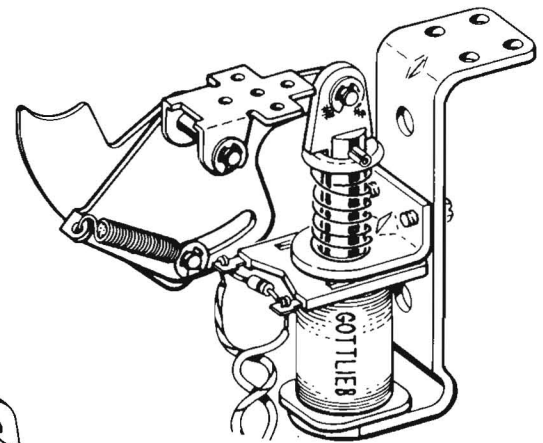
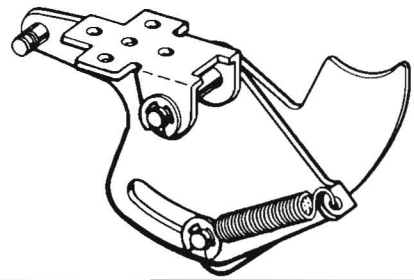
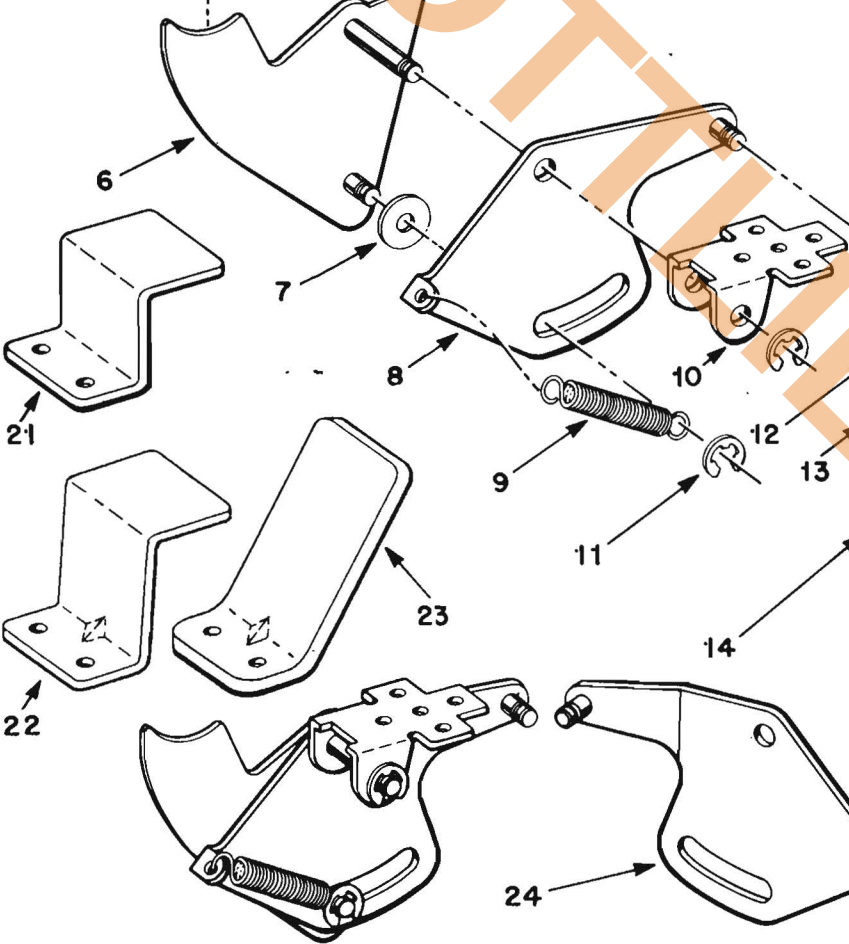
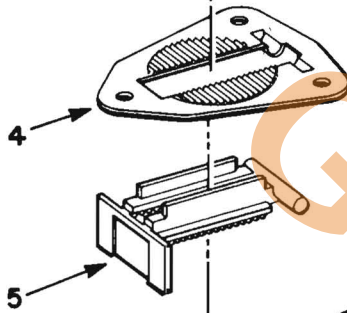
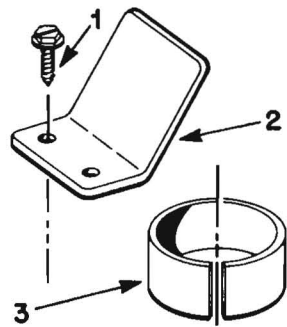
VII. PARTS INFORMATION

BALL HOLE KICKER PARTS

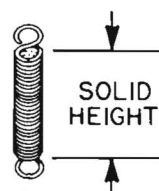
ITEM DESCRIPTION PART NO.

- 1 6 x 1/2" HWHMS (2) FA-270
- 2 Ball Snubber 16038
- 3 Metal Hole Liner 11151
- 4 Hole Base Plate 15707
- 5 Hole Switch Arm (Specify Color) 15708
- 6 Ball Cam (See Tables) 6443
- 7 Nylon Washer
- 8 Spring Cam (See Tables)
- 9 Spring (See Tables)
- 10 Fulcrum 15819
- 11 E-Ring (3) FA-682
- 12 Link and Plunger Assy. 22234
- 13 Spring Retaining Washer 22233
- 14 Spring 1636
- 15 Mounting Bracket 15409
- 16 Coil with Diode (Specify Game)
- 17 Coil Sleeve 5064
- 18 Coil Stop and Mounting Bracket 20597
- 19 #8 Washer (2) FA-617
- 20 8-32 x 5/16" HWHMS SEMS (2) FA-67
- 21 Ball Snubber 21532
- 22 Ball Snubber 29762
- 23 Ball Snubber 29763
- 24 Spring Cam (15° Offset) (See Tables) 18993
- 24A Spring Cam (Dotted Lines) (Opposite Tab) (See Tables) 27865

ASSEMBLY WITH FULCRUM	BALL CAM	SPRING CAM (NO SPRING)	SPRING	SPRING SOLID HEIGHT
A-15827	A-15822	A-15826	A-9758	5/8"
A-15828	A-15822	A-15826	A-15598	11/16"
A-16083	A-15822	A-15826	A-8727	7/8"
A-25842	A-15822	A-18993	A-15598	11/16"

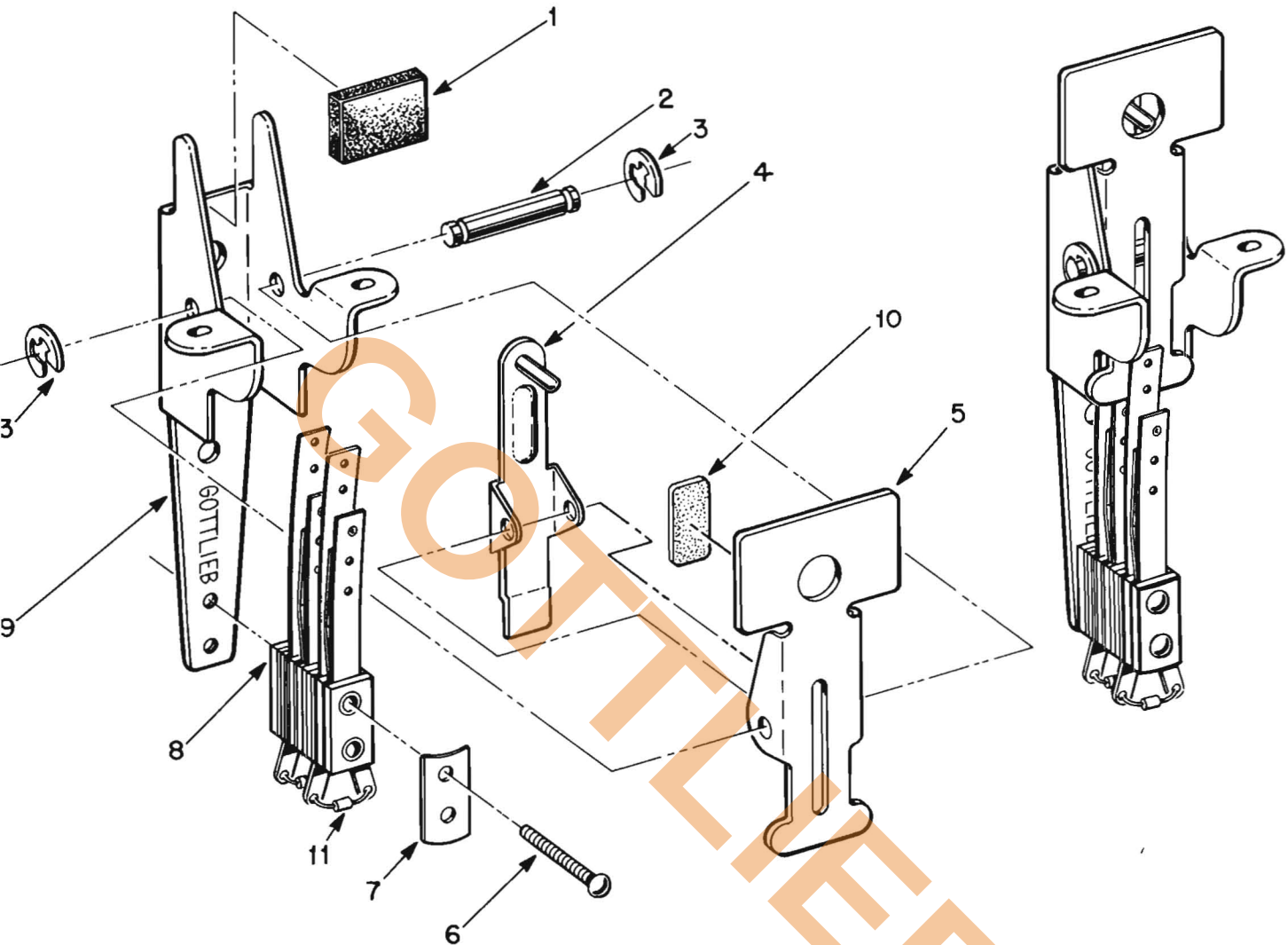


ASSEMBLY WITH FULCRUM	BALL CAM	SPRING CAM (NO SPRING)	SPRING	SPRING SOLID HEIGHT
A-16045	A-16044	A-16043	A-9758	5/8"
A-16085	A-16044	A-16043	A-8727	7/8"
A-16086	A-16044	A-16043	A-15598	11/16"
A-27866	A-15822	A-27865	A-9758	5/8"



VII. PARTS INFORMATION

TARGET ASSEMBLY



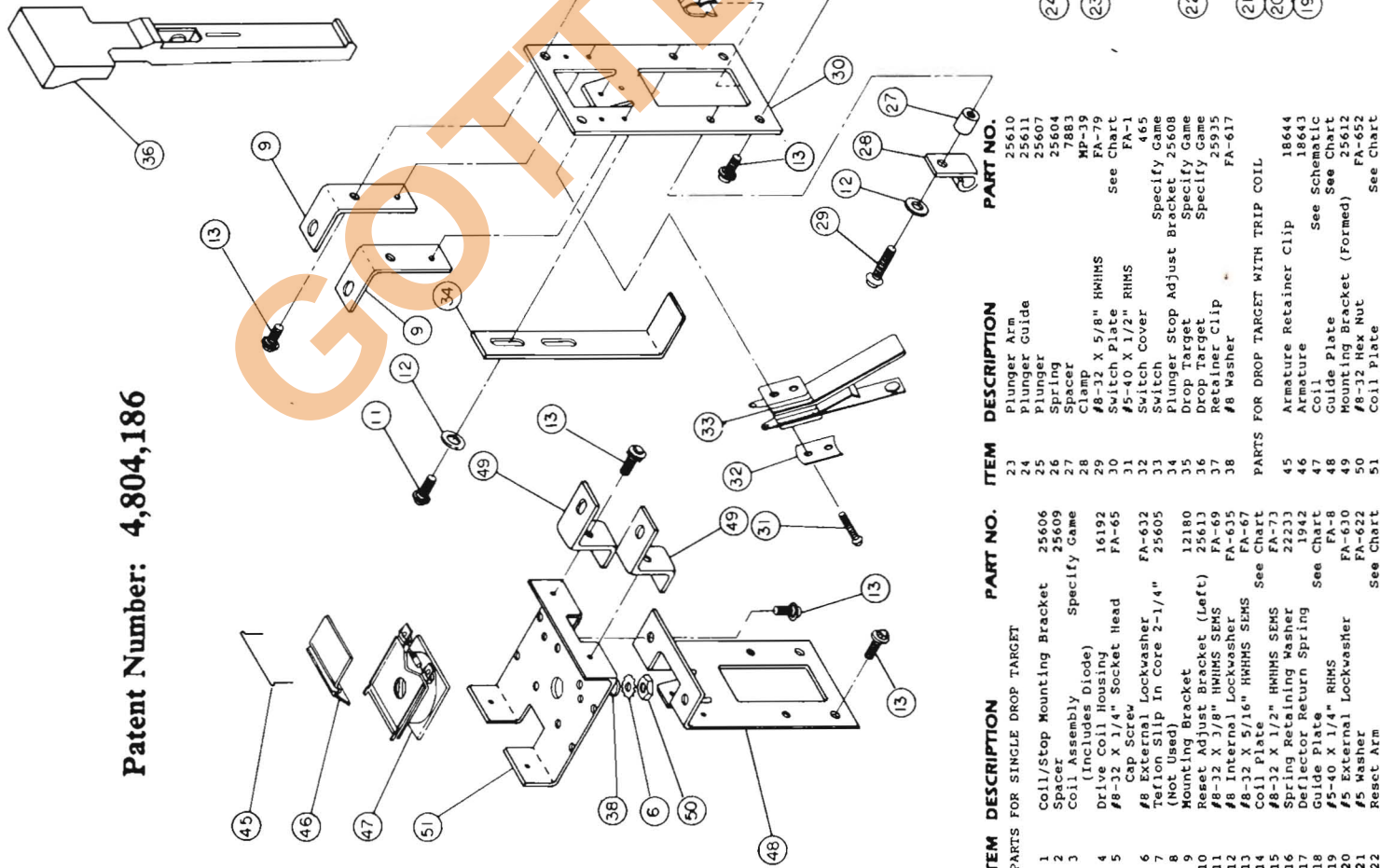
ITEM	DESCRIPTION	PART NO.
1	TARGET ASSEMBLY	29714
2	RUBBER STRIP	24290B
3	TARGET SHAFT	20211
4	E-RING (2)	FA-682
5	TARGET ARM SUB-ASSEMBLY	27443
6	TARGET ARM	27444
7	SCREW, #5-40X 1" RHMS, (2)	FA-4
8	SWITCH COVER	465
9	SWITCH ASSEMBLY	27544
10	TARGET HOUSING	29712
11	URETHANE BUMPER (2)	29758
	CAPACITOR, 0.1UF, +80-20%, 50V, (2)	XO-230
	DECAL (NOT SHOWN)	29945

VII. PARTS INFORMATION

DROP TARGET PARTS

Patent Number: 4,804,186

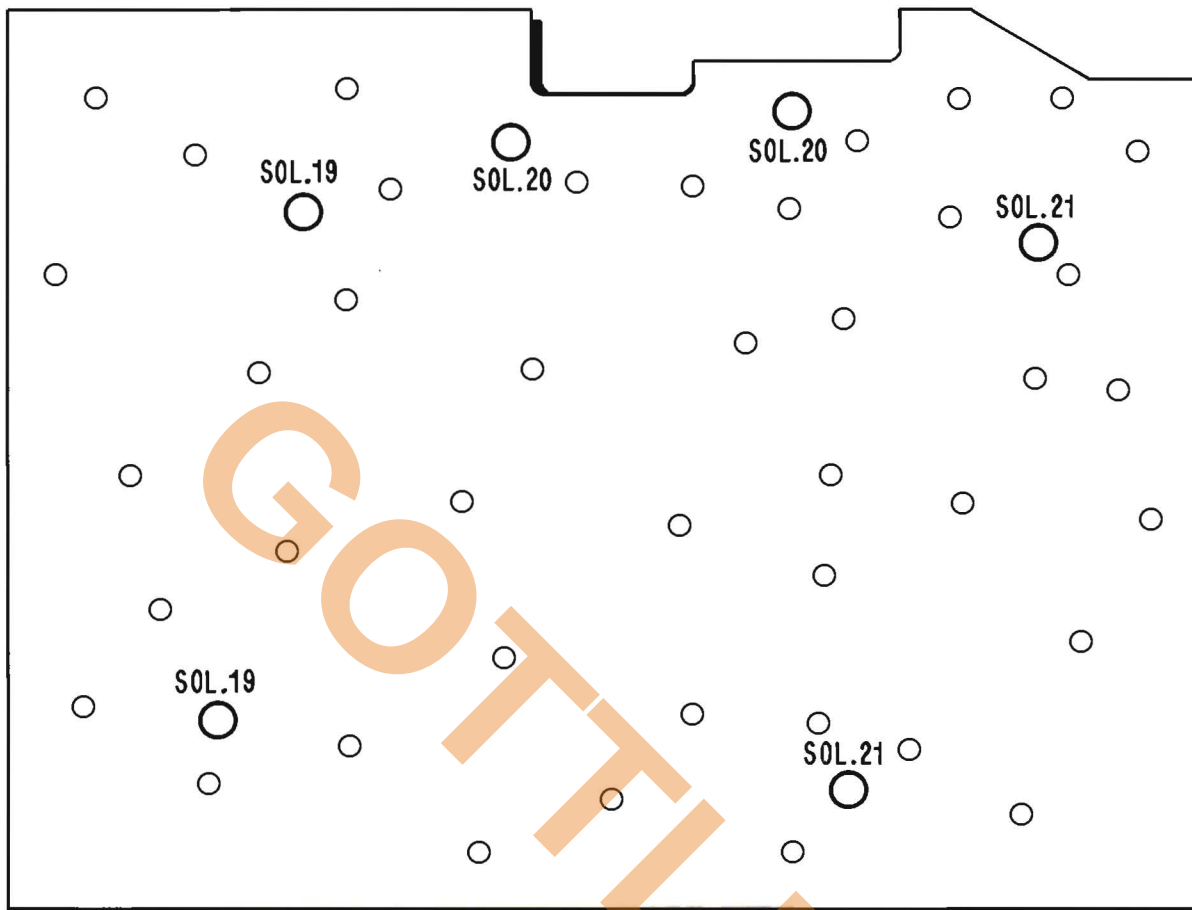
DROP TARGETS	WITHOUT TRIP COIL				WITH TRIP COIL			
	ITEM 14 COIL PLATE	ITEM 18 GUIDE PLATE	ITEM 22 RESET ARM	ITEM 30 SWITCH	ITEM 48 COIL PLATE	ITEM 51 GUIDE PLATE		
1 WITH TRIP COIL	25618-1	25621-1	25615-2	25617-1	25619-1	25623-1		
2 WITH TRIP COIL	25618-2	25621-2	25615-2	25617-2				
3 WITH TRIP COIL	25618-3	25621-3	25615-2	25617-3	25619-2	25623-2		
4 WITH TRIP COIL	25618-4	25621-4	25615-3	25617-4	25619-3	25623-3		
5 WITH TRIP COIL	25618-5	25621-5	25615-4	25617-5	25619-4	25623-4		
6 WITH TRIP COIL	25618-6	25621-6	25615-5	25617-6	25619-5	25623-5		
7 WITH TRIP COIL	25618-7	25621-7	25615-6	25617-7	25619-6	25623-6		
8 WITH TRIP COIL	25618-8	25621-8	25615-7	25617-8	25619-7	25623-7		
			2 USED	25617-8	25619-8	25623-8		



ITEM	DESCRIPTION	PART NO.	ITEM	DESCRIPTION	PART NO.
1	Coil/Stop Mounting Bracket	25606	23	Plunger Arm	25610
2	Spacer	25609	24	Plunger Guide	25611
3	Coil Assembly (Includes Diode)	Specify Game	25	Plunger	25607
4	Drive Coil Housing	16192	26	Spring	25604
5	#8-32 X 1/4" Socket Head	FA-65	27	Spacer	7883
6	Cap Screw	FA-632	28	Clamp	WP-39
7	#8 External Lockwasher	FA-632	29	#8-32 X 5/8" HHMS	FA-79
8	Teflon Slip In Core 2-1/4"	25605	30	Switch Plate	See Chart
9	Mounting Bracket	12180	31	#5-40 X 1/2" RHMS	FA-1
10	Reset Adjust Bracket (Left)	25613	32	Switch Cover	465
11	#8-32 X 3/8" HHMS SEMS	FA-69	33	Plunger Stop Adjust Bracket	25608
12	#8 Internal Lockwasher	FA-635	34	Drop Target	Specify Game
13	Coil Plate	FA-67	35	Drop Target	Specify Game
14	#8-32 X 1/2" HHMS SEMS	See Chart	36	Retainer Clip	25935
15	Spring Retaining Washer	22233	37	#8 Washer	FA-617
16	Deflector Return Spring	1942			
17	Guide Plate	See Chart			
18	#5-40 X 1/4" RHMS	FA-8			
19	#5 External Lockwasher	FA-630			
20	#5 Washer	FA-622			
21	Reset Arm	See Chart			
22					

VII. PARTS INFORMATION

LIGHTBOX INSERT LAMP IDENTIFICATION



SOLENOID FUNCTIONS

SOLENOID 19, BETWEEN HEADS, #67
TV MONITOR, #67

SOLENOID 20, RAINBOW, #67
LOGO, #67

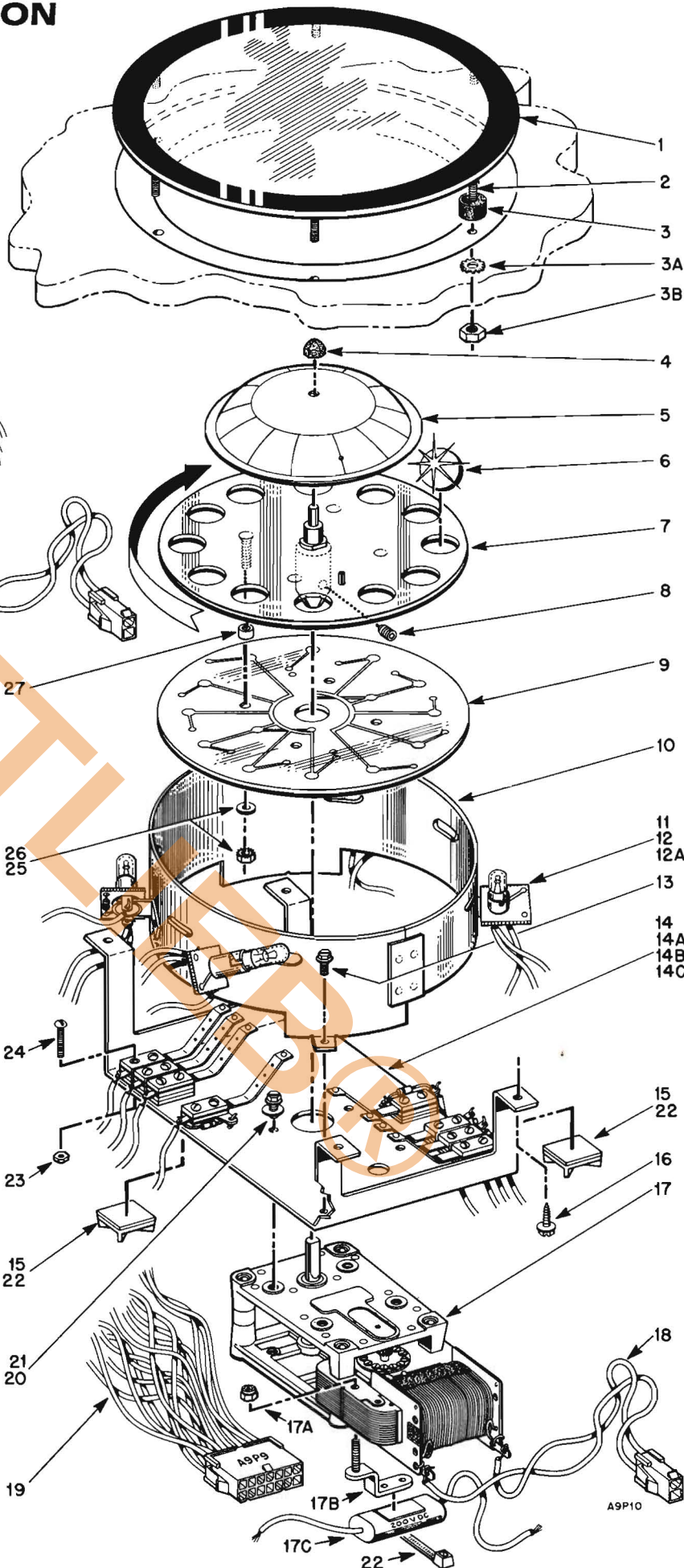
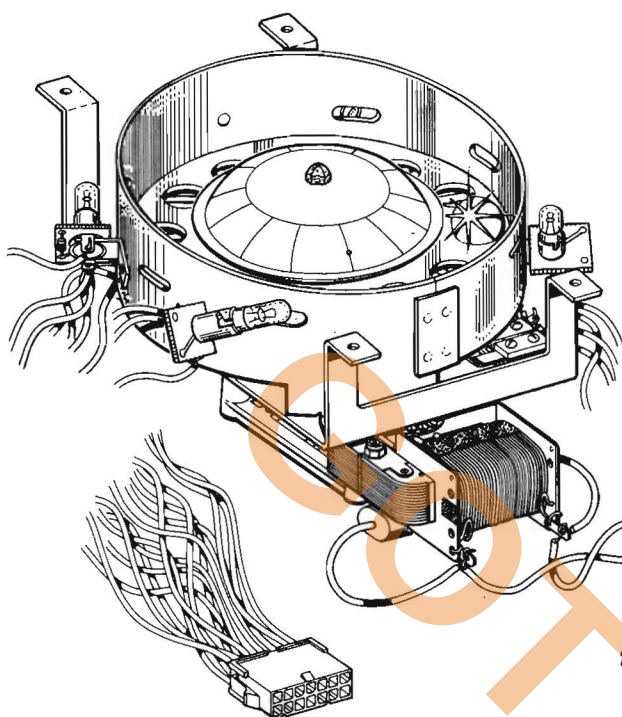
SOLENOID 21, GOLF BALL, #67
GOPHER FACE, #67

NOTE:

1. LAMPS NOT DESIGNATED ARE GENERAL ILLUMINATION, TYPE#44.

VII. PARTS INFORMATION

SPIN UNIT ASSEMBLY



ITEM DESCRIPTION

PART NO.

*1	SPIN UNIT ASSEMBLY	MA-1920
*2	PLAYFIELD WINDOW	29768
*3	10-32 X 3/4" FHMS, NYLON (6)	FA-158
*3A	SPONGE RUBBER WASHER (6)	21219
*3B	#10 EXT. LOCKWASHER (6)	FA-633
4	10-32 HEX NUT, NYLON (6)	FA-657
5	PAL NUT, (BLACK)	FA-666Y
6	PLASTIC DOME INDICATOR	29866
7	STEEL BALL, 3/4"	25210
8	PLATE SUB-ASSEMBLY	25212
9	10-32 X 1/4" SET SCREW	FA-159
10	12 POSITION MEMBRANE SWITCH ASSEMBLY	29871
11	RING FENCE SUB-ASSEMBLY (WITH LAMP ASSEMBLIES ATTACHED)	29867
12	LAMP, #44, (4)	LA-0
12A	DIODE, 1N4004 (4)	XO-254
13	LAMP SOCKET AND DIODE BOARD (4)	26623
14	6-32 X 1/4" ROLOK (2)	FA-44
14A	FRAME SUB-ASSEMBLY (WITH SWITCHES ATTACHED)	29913
14B	SWITCH (RETURNS 0-5) (6)	29873
14C	SWITCH (STROBES 0-1) (2)	29874
15	DIODE, 1N4004 (2)	XO-254
16	CABLE TIE MOUNTING (3)	MP-905
17	8 X 1/2" HWH SMS (4)	FA-299
17A	MOTOR, 254 RPM, CW, 50V AC	29826
17B	ELASTIC STOP NUT, 6-32	FA-660
17C	PEM STUD AND BRACKET ASSEMBLY	27135
18	CAPACITOR, 2.2 UFD, 200V	XO-995
19	CABLE ASSEMBLY (A9P10)	MA-1949F
20	CABLE ASSEMBLY (A9P9)	MA-1949E
21	#8 WASHER (3)	FA-617
22	8-32 X 3/8" HWHMS SEMS (3)	FA-69
23	CABLE TIE, 3.9" (4)	MP-3
24	5-40 HEX STOP NUT (16)	FA-669
25	5-40 X 3/4" RHMS (16)	FA-3
26	#6 WASHER (4)	FA-615
27	6-32 ELASTIC STOP NUT (4)	FA-660
	SPACER (4)	29849

*NOTE:

ITEMS *1 THRU *3B INCLUSIVE, ARE NOT PART OF SPIN UNIT ASSEMBLY MA-1920, AND ARE ILLUSTRATED FOR ASSEMBLY AND REPLACEMENT PART NUMBERS.

VII. PARTS INFORMATION

UNIQUE PARTS

The following denotes new parts and assemblies unique to TEE'D OFF, Game #736. Part number prefixed with an asterisk(*) will be illustrated or can be located on pages 28 thru 75. Numbers in parenthesis () indicates multiple quantities.

PLAYBOARD

<u>ITEM/DESCRIPTION</u>	<u>PART NO.</u>
WIREFORM RAMP.....	*29824
WIREFORM RAMP.....	*29832
WIREFORM RAMP.....	*29833
MYLAR OVERLAY.....	*29868
FLAT RAIL.....	*29879
FLAT RAIL.....	*29882
FLAT RAIL.....	*29883
BALL SNUBBER.....	*29894
METAL RUNWAY RAMP.....	*29903
CARDHOLDER VACUUM FORM ASSEMBLY WITH P.C.B.'S.....	*29912
PLASTIC SHIELD SET.....	*29916
RAMP FLAP.....	*29929
BILLBOARD MOUNTING.....	*29930
MOLDED RAMP ASSEMBLY.....	*29937
MOLDED VOLCANO COVER.....	*29949
MOLDED COVER.....	*29950
PLATE SHIELD.....	*29951
MYLAR OVERLAY, WINDOW.....	*29957
BALL SNUBBER.....	*29973
CELLULAR URETHANE BUMPER (2).....	*29974
TAPERED RUBBER BUMPER (7) BLACK.....	*30003Y
GOLF BALL AND REFLECTOR ASSEMBLY (5).....	*30021
SPIN UNIT ASSEMBLY.....	*MA-1920
OPTO SWITCH AND SUPPORT BRACKET.....	*MA-1942
TARGET BANK ASSEMBLY (5 POSITION, 4 TARGET).....	*MA-1951
OPTO SWITCH AND SUPPORT BRACKET.....	*MA-1953
LIGHT STRIP ASSEMBLY.....	*MA-1954
POP BUMPER BRACKET AND COIL ASSEMBLY.....	*MA-1956
5 POSITION STRIP PCB ASSEMBLY.....	*MA-1957

CABINET

CABINET SCREENED.....	*29932-736
TRANSFORMER PANEL ASSEMBLY.....	*MA-1945

LIGHTBOX

LIGHTBOX SCREENED.....	29935-736
SPEAKER PANEL, PLEXI SCREENED.....	28827-736
STYRENE (BACKGLASS ART).....	28833-736
GOPHER UNIT ASSEMBLY.....	29785

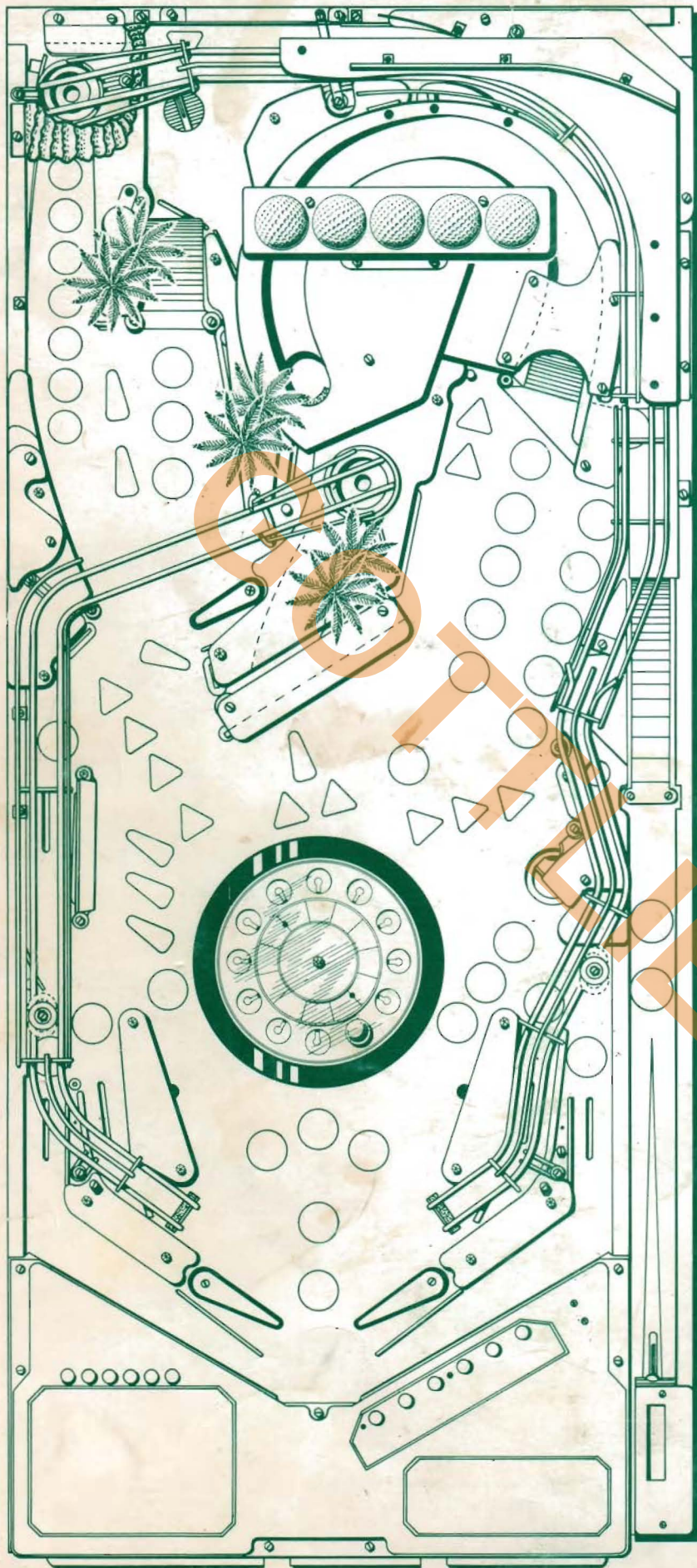
BASIC TROUBLESHOOTING GUIDE

CONDITION	POSSIBLE CAUSE
Game does not power up	* Line fuse (F1) blown * Primary fuse (F2) blown
Game does not power up but general illumination lamps light	* Power supply fuse (F5) blown
SWITCH SHORT message appears in display on power up	* Check for a voltage >0v shorted to switch return number shown in display * Bad Control Board (A1) * Bad Driver Board (A3)
Lightbox illumination lamps do not light	* Fuse (F8) blown
Playfield illumination lamps do not light	* Fuse (F9) blown
All controlled lamps, flash lamps, relays, and switches not working	* Fuse (F6) blown * Bad Driver Board (A3)
All controlled lamps work but some switches do not work	* Bad diode associated with the switch (contact point type switch only)
Some controlled lamps and some switches do not work	* Short circuit on associated strobe line on playfield * Bad Driver Board (A3)
Display not working (blank) but LED on Dot Matrix Controller Board (A8) is flashing	* Display fuse (F3) or (F4) blown * Bad Dot Matrix Display Board (A4) * Bad Display Controller Board (A8)
Display not working and LED on Control Board is flickering rapidly	* Bad Dot Matrix Controller Board (A8) * Bad Control Board (A1)
Display not working and LED on Dot Matrix Controller Board (A8) is glowing bright to dim	* Bad Dot Matrix Controller Board (A8)
A solenoid operated device does not work. (Pop Bumper, Kicker, etc.)	* Associated fuse on playfield is blown * Bad Driver Board (A3)
All flippers and solenoids do not work	* Solenoid fuse (F7) blown
A flipper coil overheats and burns	* End of stroke switch on flipper unit not opening when the flipper button is held in. * Shorted capacitor on flipper unit
Flipper chatters when flipper button is held in	* Open hold winding (small diameter wire) on flipper coil
No sound or speech	* Bad Auxiliary Power Supply fuse (F10 or F11) * Bad Auxiliary Power Supply Board (A5) * Bad Auxiliary Sound Board (A20) * Bad Sound Board (A6)
Some sounds or speech missing	* Bad Auxiliary Sound Board (A20) * Bad Sound Board (A6)
An optical switch does not work or works intermittently	* Misalignment of LED transmitter to receiver * Bad LED transmitter and/or receiver * Bad Optical Interface Board (A25)

IMPORTANT NOTICE

THIS SHIPMENT HAS BEEN CAREFULLY INSPECTED AND PROPERLY PACKED BEFORE LEAVING THE FACTORY.

WE CANNOT ASSUME RESPONSIBILITY FOR BREAKAGE THAT MAY OCCUR IN TRANSPORTATION. IF THIS SHIPMENT IS DAMAGED IN ANY WAY, IMMEDIATELY NOTIFY THE CARRIER AND FILE DAMAGE REPORT SO THAT A SATISFACTORY ADJUSTMENT CAN BE MADE BY THEM.



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