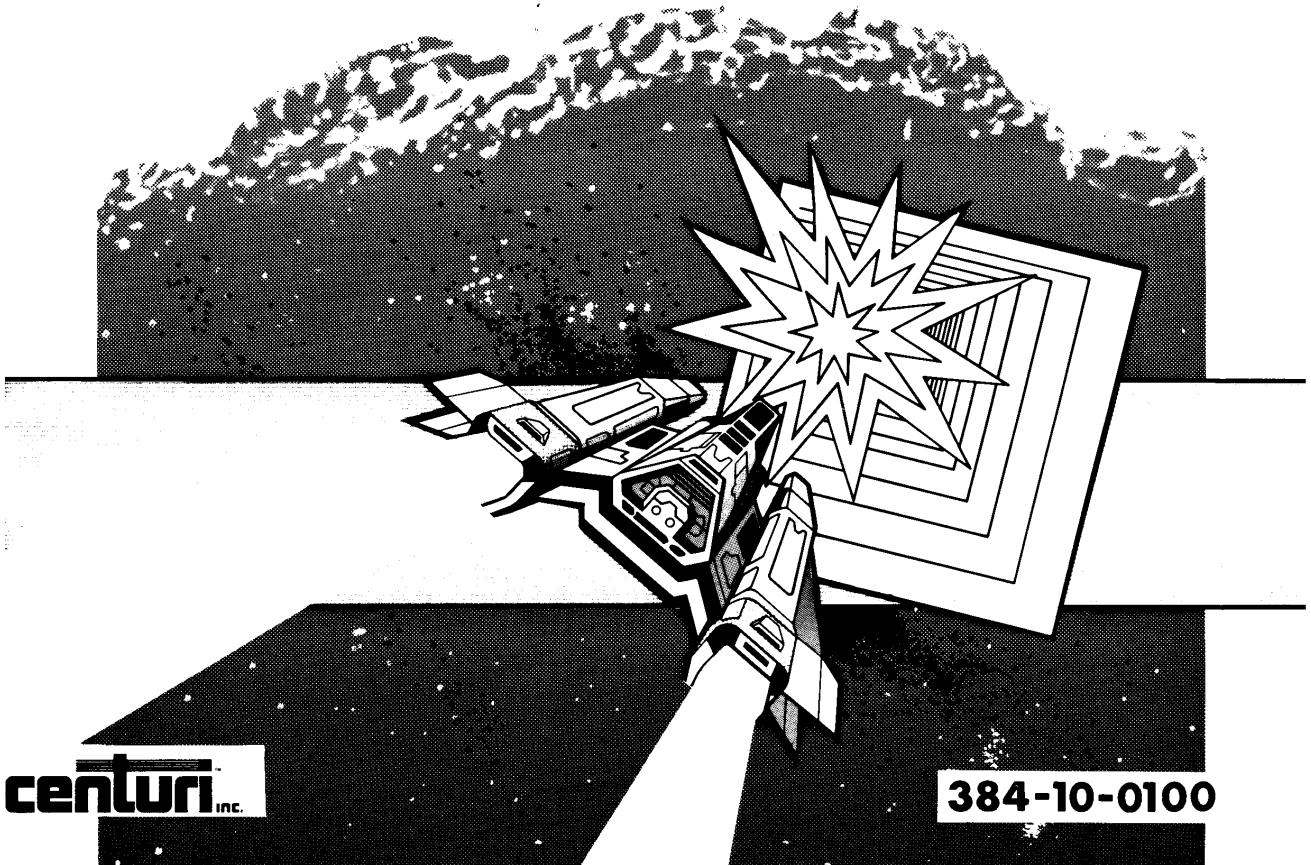


# TUNNEL HUNT<sup>®</sup>

## SERVICE MANUAL



**centuri**<sup>™</sup>  
inc.

**384-10-0100**

# TUNNEL HUNT

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USER INFORMATION - F.C.C.

WARNING

THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY, AND IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE INTERFERENCE TO RADIO COMMUNICATIONS. AS TEMPORARILY PERMITTED BY REGULATION, IT HAS NOT BEEN TESTED FOR COMPLIANCE PURSUANT TO SUBPART J OF PART 15 OF F.C.C. RULES, WHICH ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST SUCH INTERFERENCE. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE INTERFERENCE IN WHICH CASE, THE USER AT HIS OWN EXPENSE WILL BE REQUIRED TO TAKE WATEVER MEASURES MAY BE REQUIRED TO CORRECT THE INTERFERENCE.

## INTRODUCTION

"TUNNEL HUNT" IS A MICROPROCESSOR BASED COIN-OPERATED ELECTRONIC GAME, THAT MAKES EXTENSIVE USE OF DIGITAL INTEGRATED CIRCUITRY AND TELEVISION MONITOR CONCEPTS. THIS MANUAL IS DESIGNED FOR THE USE OF MAINTENANCE TECHNICIANS WHO POSSESS A GENERAL WORKING KNOWLEDGE OF SOLID-STATE CIRCUITRY, AND VIDEO MONITOR THEORY. ANY INDIVIDUAL NOT KNOWLEDGEABLE IN THESE AREAS SHOULD NOT ATTEMPT REPAIR OF THE ELECTRONIC PORTIONS OF THE GAME.

IN ADDITION TO THIS MANUAL AND TRAINING IN ELECTRONICS, TROUBLE-SHOOTING AND REPAIR WILL BE FACILITATED BY ACCESS TO GENERAL-TYPE HANDTOOLS, A MULTIMETER, A 50 OR 100 MHZ OSCILLOSCOPE AND A LOGIC PROBE WOULD BE HELPFUL.

TECHNICAL ASSISTANCE IS AVAILABLE BY CALLING (305) 558-5200. QUESTIONS OR COMMENTS CONCERNING "TUNNEL HUNT" OR ANY OF OUR GAMES ARE WELCOME AND SHOULD BE DIRECTED TO:

CENTURI, INC.

CUSTOMER SERVICE DEPARTMENT  
#800-327-7710 (OUTSIDE THE STATE OF FLA.)  
#305-556-5888 (IN FLORIDA)

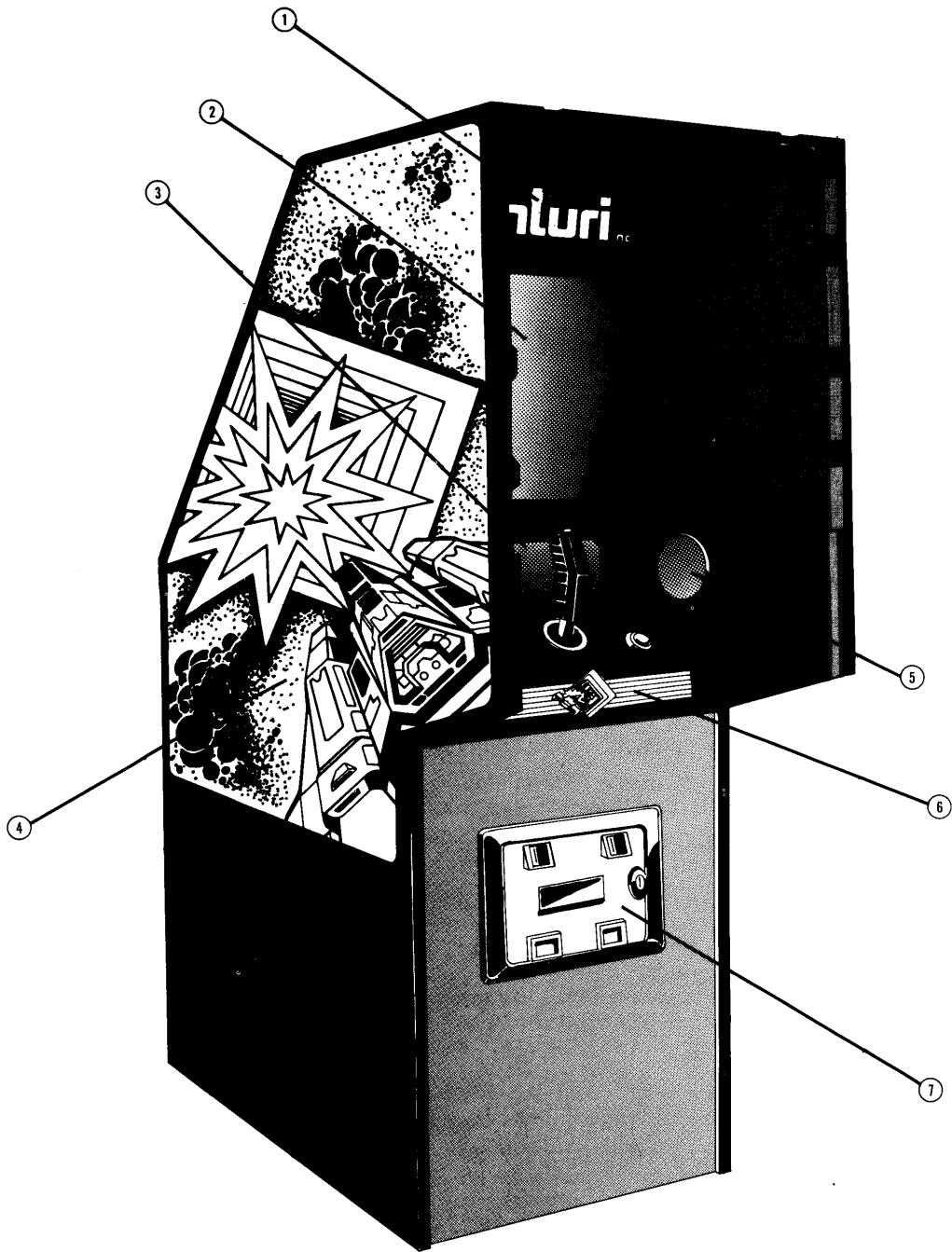
## NOTES

NEVER REPLACE ANY COMPONENTS WITH ANYTHING OTHER THAN EXACT REPLACEMENT PARTS.

NEVER REMOVE CIRCUIT BOARD CONNECTIONS WHILE POWER IS ON.

DO NOT REPLACE THE FUSE WITH ANYTHING OTHER THAN THE PROPER VALUE. A BLOWN FUSE INDICATES AN OVERLOAD CONDITION WITHIN THE GAME. REPLACING THE FUSE WITH A HIGHER VALUE CAN CAUSE SEVERE DAMAGE TO INTERNAL COMPONENTS IF AN OVERLOAD OCCURS.

ALWAYS CONSULT THE MANUAL BEFORE ATTEMPTING REPAIRS.



**FRONT VIEW OF CABINET**

"TUNNEL HUNT" CABINET FRONT VIEW  
PARTS LIST

| <u>ITEM:</u> | <u>CENTURI P/N:</u>        | <u>DESCRIPTION:</u>                 |
|--------------|----------------------------|-------------------------------------|
| 1.           | 384-06-0100                | SILK SCREENED MARQUEE PANEL         |
| 2.           | 384-04-2200                | VIEWING PANEL                       |
| 3.           | 384-06-0200                | SILK SCREENED INSTRUCTION PANEL     |
| 4.           | 384-06-0300<br>384-06-0400 | LEFT SIDE DECAL<br>RIGHT SIDE DECAL |
| 5.           | 384-03-0300                | SPEAKER GUARD SCREEN                |
| 6.           | 384-06-0500                | CONTROL PANEL OVERLAY               |
| 7.           | 360-14-0700                | COINCO COIN DOOR (MODIFIED)         |



## "TUNNEL HUNT"

### GAME PLAY

This Mode is entered when the Flashing Start Button is pushed. The Start LED will stay on, and all sounds will be activated. You will be placed "out in space" and the Tunnel will appear in front of you. The speed will be minimum. Ships will appear from either down the Tunnel or will fly "over head" and past you. Occasionally a ship from behind will shoot a shot past you just before it appears. However, you cannot be shot from behind.

A white cursor will appear in the center of the screen. By maneuvering down the Tunnel, the Ship can be made to align with this cursor. It may be shot down by firing the lasers while holding the Ship in this position. Lasers shots come from the lower left & right hand corners alternately on each push of the Fire Button and travel "down" the Tunnel.

If a Ship is hit (or shot), it will explode into pieces and an explosion sound will start. It's score value will display as described in the scoring section, and the SCORE Display will be updated. 1 hit will be added to the Hits display.

The Game is divided into a number of difficulty levels.

- LEVEL 1. Up t 6 Hits: No ships shoot back. A delay appears between the start of Ships. Easy Tunnel to follow.
- LEVEL 2. Up to 12 Hits: Ships randomly shoot back. The new Ship delay still exists. Tunnel still easy.
- LEVEL 3. Up to 18 Hits: All ships shoot back. The new Ship delay still exists. Tunnel harder again.
- LEVEL 4. Up to 24 Hits: Same as Level 3 but the Tunnel is much harder to follow.
- LEVEL 5. Above 24 Hits: All Ships shoot back. As soon as one ship is shot, another appears with NO delay. Same Tunnel as Level 4.

Each time a Ship is hit, your speed increases a little. If you are shot or crash, your speed is reduced to half of what it was for the next life (or the minimum, whichever is greater).

NOTES ON ABOVE: -If a Ship's Shot is hit, the ship that shot it will immediatly reappear, regardless of the game level.  
-If a Player avoids ships by hitting the side of the Tunnel and allowing them "to go out of range" continuously, ships will shoot back regardless of level.

### LASER

The Laser has a limited amount of continuous fire. Each shot "heats up" the Laser; NOT shotting allows it to cool, but at a slower rate. The temp. of the Laser may be seen on the LASER TEMP: Display near the bottom of the screen. A moving bar show the temp. at any time.

As the Laser gets hotter, the bar grows more to the right. If you OVERHEAT the Laser, it will not shoot until it cools 50%.

The Laser has 4 STATES:

- SAFE: The bar display is green and the words "LASER TEMP" are displayed.
- WARNING 1: The bar turns yellow and a continuous beep is heard. The word "WARNING" alternates with LASER TEMP.
- WARNING 2: Same as Warning 1 but the beep increases in frequency.
- OVERHEAT : The bar turns red. The word "OVERHEAT" alternates with LASER TEMP. The beep again increases in frequency. The Fire Button is disabled until the laser cools.

#### SHIELDS

The Shields may be used to protect you from dying by either enemy shot or crashing. Shields are activated by pressing the shield Button, as long as shield energy exists. Each new life restores shield power to max.

Shield energy is "used up" slowly whenever the Shields are activated. A large amount is used if the Shields are hit by an enemy ship or shell. Shields are displayed as a grip pattern across the entire screen. Normally they are blue, and get darker as the energy is used up. If they are hit, they turn red, then back to blue. Shield energy is displayed on a bar graph similar to the Laser Temp. display. As energy decreases, the bar shrinks to the left.

The Shields have 3 Energy STATES:

- STATE 1. OK. The bar display is green and the words "SHIELD PWR" appear.
- STATE 2. LOW. The bar turns yellow and the word "LOW" alternates with SHIELD PWR.
- STATE 3. OUT. The bar flashes red/green and the word "OUT" alternates with SHIELD PWR. If the Shield Button is pressed during this state, a warning beep is heard.

#### HULL TEMP.

To reduce the amount of time a Player may drag along the wall to slow his speed, a HULL TEMP. feature has been added. As you drag on the wall, your HULL TEMP increases. If it ever reaches maximum (indicated by a marker on the graph display), you die. The current temp. is indicated by a bar graph at the bottom of the screen. As the temp. increases, the bar grows left to right.

There are 3 HULL STATES:

- STATE 1. OK. The bar graph display is green and the words "HULL TEMP." are displayed.
- STATE 2. CRITICAL. The bar graph display flashes RED/GREEN. The word "WARNING" alternates with HULL TEMP and a beep warning sounds.
- STATE 3. DEATH. If the graph reaches the max. mark, you die.

#### HIGH SCORE TABLE - END GAME

If a Player's score is one of the 5 best since power-up, he may enter

his initials into the table.

When the Game ends, his score is checked to see if it qualifies.

If not, the Game goes directly to PHASE 2 of Attract. If it does qualify, then the Game enters initial entry mode.

The message "GREAT SCORE/ENTER YOUR INITIALS" appears and a letter in a white box. By moving the control left & right, the letter in the box will sequence up & down through the alphabet. Pressing SHIELD will enter the initial, indicated by the box about the letter turning orange. Another letter in a white box appears next to the last. 3 letters may be entered this way.

At the entry of the 3rd letter or after approx. 2 minutes of NO letter entry, the Game will return to PHASE 2 of Attract.

NOTE: If credit exists in the Game, and START BUTTON is pressed, ANY selected letters will be entered into the table and ANY unselected ones will be blanked. The Game will go directly to GAME PLAY. Thus, one may abort the initial entry completely if they wish.

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## ATTRACT MODE

There are 2 Phases of Attract Mode:

1. Phase 1 is similar to Game Play. A straight only Tunnel is traveled and Ships continue to fly at you. Some may shoot. The Lasers will fire automatically and hit all Ships that come down the Tunnel. This Phase lasts 30 seconds.

### MESSAGES:

- a) SCORE Message in lower right corner.
- b) BONUS for xxxx will display in lower center of the screen where xxxx = 30, 60, or 90,000. If Bonus is selected else no message will display.
- c) COIN? PLAY(s)? or FREE PLAY displays near the bottom of the screen.
- d) HITS with the number of hits from the last game will display at the bottom of the screen.
- e) © ATARI displays above the score.

Some messages are determined by the CREDIT STATE of the machine in Attract Mode:

### Ø CREDITS:

- a) LIVES with the # of lives per Game display in the lower left corner.
- b) GAME OVER flashes lower center of the screen .

### 1/2 CREDIT:

- a) CREDIT with 1/2 displays where LIVES used to be and the color changes from blue to orange.
- b) INSERT COIN flashed where GAME OVER was and a beep sound starts.

### 1 CREDIT or more:

- a) CREDIT with credit amount under displays in the LIVES location. Color is orange.
- b) PUSH START flashes in the GAME OVER location.

2. The Second Phase is the high score table and title display. At power up, the high score table will be initialized to various initials and scores from 5000 down to 1000. The name "TUNNEL HUNT" will appear onto the screen in large letters and pulsating colors. Phase 2 is approx. 30 seconds. Under the name will be a table of the top 5 scores since last reset or power up.

### MESSAGES:

- a) SCORE - same as PHASE 1
- b) © ATARI - same as PHASE 1
- c) CREDIT/LIVES - same as PHASE 1
- d) GAME OVER/INSERT COIN/PUSH START - same as PHASE 1
- e) ALL other Phase 1 Messages do not show.

## SELF TEST

Self Test is entered by switching the Self-Test switch on the Coin Door. All memory is cleared & the high score table will be RE INITIALIZED.

### Step I. RAM TEST

1. The Games 2 testable 2114's are tested. ANY Ram error will abort the test, thus if the first Ram Tests bad, an error in the second Ram will not show.
2. If the test passes, RAM OK is displayed on screen.
3. If a beep is heard (NOT a steady tone), a Ram error occurred in the chip at F4.
4. If 2 beeps are heard, then the chip at E4 is bad. If this chip is bad, the chip at F4 will not be tested. The 2 beeps will be one high freq., one low.

- NOTES:
1. This Test assumes POKEY sounds to be working.
  2. If the RAM test fails ALL other tests are invalid.
  3. If the RAM test fails, all screen info. is invalid.

### Step II. ROM TEST (PROM TEST)

This Test will check the program memory in 2K intervals:

1. If all ROM/PROM's verify OK, the words ROM OK will appear on the screen next to the words RAM OK.
2. If one or more bad ROM/PROM's are detected, the word ROM followed by ONE or more letters will appear on the screen.

The following table show which chip the error occurred:

| <u>LETTER</u> | <u>IC #</u> | <u>ADDRESS</u> | <u>NOTES</u> |
|---------------|-------------|----------------|--------------|
| A             | L/M 1       | 5000-57FF      | -            |
| B             | K 1         | 5800-5FFF      | 1            |
| C             | J 1         | 6000-67FF      | 2            |
| D             | H/F 1       | 6800-6FFF      | 1            |
| E             | F/E 1       | 7000-77FF      | 3            |
| F             | D 1         | 7800-7FFF      | 1            |

- NOTES:
1. This chip must be good to complete tests.
  2. The tests will run with this chip bad. However, messages "ROM" & "RAM OK" may not appear correctly or may not appear at all.
  3. If this chip is bad, the test is valid only through Step 3 and may not continue.

### Step III. COLOR BARS, CHARACTER PROM, TONE TEST

1. After the ROM test completes, a set of color Bars will display. Just below this will be a 2 line DISPLAY of characters. The Characters will be "HIGHLIGHTED" by bands of color. A Tone will come on and will continue to sound until any switch is pressed.

2. The Color Bars test, the Color Ram and the Square Generator circuit. There should be 7 evenly spaced Bars starting from the top of the screen down to the top of the Character Display lines (about 80% of the screen). They should extend from the left edge of the screen approx. 80% across to the right. To the right of these are 3 more squares in the upper right hand corner. Below these should be a black band. The colors are as follows:

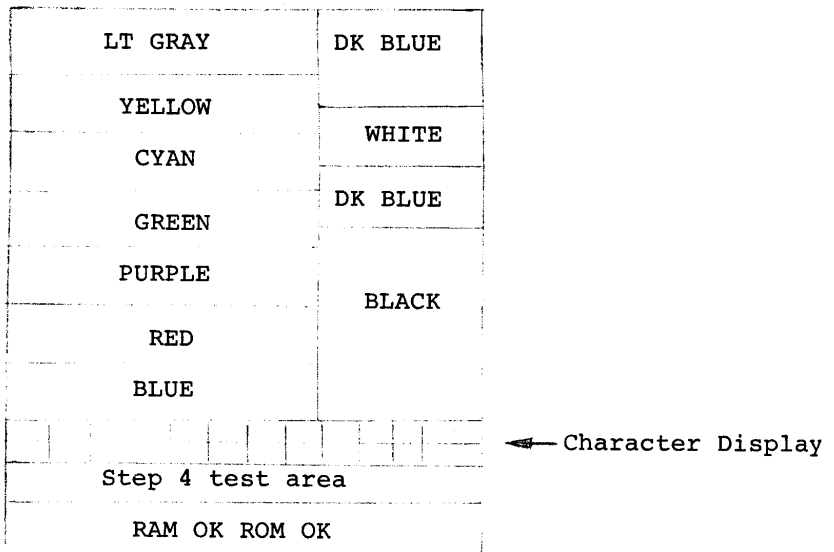


FIG. 1

3. The Character display test allows checking of the contents of ALPHA/NUMERIC Prom and the Character "HILIGHT". The color behind the characters will vary depending on what state the game was in when self test was entered.

| <u>ENTRY TIME</u>         | <u>COLORS</u> (left to right) |
|---------------------------|-------------------------------|
| Phase 1 Attract           | Black,Green,Yellow,Blue       |
| Phase 2 Attract           | Black,Green,Yellow,Green      |
| Entering Initials         | Black,Green,Yellow,Orange     |
| Game Play                 | Black,Green,Yellow,Green      |
| Game Play,Hull,Warning ON | Black,Green,Yellow,Red        |
| Power Up                  | Black,Green,Yellow,Black      |

- NOTES: 1. The last color in each list will also be the hilight color of the ROM OK, RAM OK messages.
2. The Tone Test simply show that the sound output circuit was working. This Tone may be stopped by press any button.

Step IV. SWITCH TEST, POT TEST, COIN-OPTION DISPLAY  
(This Step runs simultaneously with Step 3)

1. The switch test allows each control switch & coin switch to be tested. (If any ONE Switch is "stuck", the tone of Step 3 will not be heard). By pressing and releasing each switch, a beep is heard each time a transition takes place. If no beep is heard, the switch or its associated circuitry is faulty.

2. The Pots on the joystick may now be checked by moving the control and observing the screen. Two pairs of numbers appear just right of center in the band marked Step 4 Test area in Fig. 1. The pair to the left should change when the control is moved left/right. The other should change when the control is moved up/down.
3. Although the right most digit of each pair makes little sense, it should change rapidly when the control is moved. It is also normal for this Digit to "flutter" when no motion is made. The left hand digit should change through at least 4 values as the control is moved from one extreme to the other.
4. If these numbers do NOT change as described, or no Tones are heard, change the 40 Pin chip at location D 3/4.
5. The Option Switch bank located at B4 is displayed as a Group of 1's and 0's. This is the Coin Option Switch Bank. Switch 1 is displayed to the right through switch 8 to the left. This test checks the chip located at 4B 3/4 (40 pin). If changing the state of one of the switches at B4 cause no change with it's corresponding 1 or 0 on the screen, change this chip.

ADDITIONAL FEATURES:

To allow set-up of the color Monitor, 3 Additional STEPS are accessible. To enter the next Step and each Step thereafter, press BOTH START and SHIELD, then release.

STEP A1 through A3:

-Color purity screens. A total color screen will display to allow checking and correction of color purity. Step A1 is all RED, A2 is all GREEN, and A3 is all BLUE.

STEP A4:

-A cross hatch pattern is displayed to check and aid in convergence of the color Monitor.

-Pressing START and SHIELD again will return you to STEP 1 of SELF-TEST.

-Return to PHASE 1 Attract may be accomplished at ANY time from Any test by switching off the SELF-TEST Switch.

### CONTROLS

1. Left/Right, Up/Down Joystick (2 pots)
2. Fire Button (Switch)
3. Shield Button (Switch w/lamp)
4. Start Button
5. Self test Switch
6. Coin Switches (2 switches)

### MONITOR

19" Color Monitor

### SOUNDS

All sounds are generated by 2 POKEYS:

#### Pokey 1

- a) Shot Sound
- b) Explosion Sound
- c) Scrape wall Sound

#### Pokey 2

- a) Hull Temp. warning Beep
- b) Shields out warning Beep
- c) Laser warning Beeps (3 stages)
- d) Bonus Life award Beep
- e) Flight "Hum"
- f) Self Test Tones



### GAME INSTRUCTIONS

1. Insert Coin(s). Push Start Button.
2. Use Joystick to maneuver down tunnel.
3. Acceleration is automatic. Hitting walls slows you down.
4. Shoot down enemy craft and shells to avoid being hit (avoid overheating lasers).
5. Use shields to prevent being hit. (There is a limited amount of shield power per life).
6. Points are based on size of enemy and your speed (times color bonus multiplier). Smaller ships at high speed are worth more.

### GAME POINT SCORING

The score of a hit Ship or Shell is based on 3 factors:

1. Your speed down the Tube.
2. The distance (size) of the enemy ship or shot.
3. How long you "have been alive" this life (know as the color Bonus Multiplier).

The length of life is indicated by the color of the Enemy Ship. If a shot is hit, it takes the multiplier of the last color ship seen.

When a Ship or Shell is hit, the message VALUE: XXXX will display on the top of the Status Indicator for approx. 4 seconds.

| <u>COLOR MULTIPLIER</u> |      |      |       |        |       |       |
|-------------------------|------|------|-------|--------|-------|-------|
| <u>COLOR</u>            | cyan | blue | green | yellow | white | black |
| <u>MULTIPLIER</u>       | 1    | 2    | 3     | 4      | 5     | 6     |

If a Bonus Option is selected and the Bonus Score (or 100K) is reached, 3 Beeps will be heard and the word "BONUS" will appear under the LIVES display for 4 seconds.

OPTIONAL SWITCH SETTING

The following Switches for the Game "TUNNEL HUNT" are found on the C.P.U. BOARD. The settings below are a guide in selecting optional game format.

|                              |     | <u>BANK 1 (B3)</u> |   |     |                     |     |     |          |   |                       |
|------------------------------|-----|--------------------|---|-----|---------------------|-----|-----|----------|---|-----------------------|
|                              |     | 1                  | 2 | 3   | 4                   | 5   | 6   | 7        | 8 | NORM.                 |
| <u># OF STARTING LIVES</u>   |     |                    |   |     | Off                 | Off |     |          |   | 2 Lives               |
|                              |     |                    |   |     | Off                 | On  |     |          | * | 3 Lives               |
|                              |     |                    |   |     | On                  | Off |     |          |   | 4 Lives               |
|                              |     |                    |   |     | On                  | On  |     |          |   | 5 Lives               |
| <u>BONUS LEVEL</u>           | Off | Off                |   |     |                     |     |     |          |   | No Bonus              |
|                              | Off | On                 |   |     |                     |     |     |          |   | Bonus c 30K&100K      |
|                              | On  | Off                |   |     |                     |     |     |          | * | Bonus c 60K&100K      |
|                              | On  | On                 |   |     |                     |     |     |          |   | Bonus c 90K&100K      |
| <u>NOT USED</u>              |     |                    |   |     |                     |     |     | NOT USED |   | SW. 6,7,8, not used   |
| <u>FOREIGN LANGUAGE</u> **   |     |                    |   | Off | (SW. 8, Bank 2 Off) |     |     |          | * | ENGLISH               |
|                              |     |                    |   | Off | (SW. 8, Bank 2 On)  |     |     |          |   | GERMAN                |
|                              |     |                    |   | On  | (SW. 8, Bank 2 Off) |     |     |          |   | FRENCH                |
|                              |     |                    |   | On  | (SW. 8, Bank 2 On)  |     |     |          |   | SPANISH               |
|                              |     | <u>BANK 2 (B4)</u> |   |     |                     |     |     |          |   |                       |
|                              |     | 1                  | 2 | 3   | 4                   | 5   | 6   | 7        | 8 |                       |
| <u>FOREIGN LANGUAGE</u> **   |     |                    |   |     |                     |     |     |          | x | (see above)           |
| <u>COIN MODES</u>            | Off | Off                |   |     |                     |     |     |          |   | Free Play             |
|                              | Off | On                 |   |     |                     |     |     |          | * | 1 Coin, 1 Play        |
|                              | On  | Off                |   |     |                     |     |     |          |   | 1 Coin, 2 Plays       |
|                              | On  | On                 |   |     |                     |     |     |          |   | 2 Coins, 2 Plays      |
| <u>RIGHT-MECH MULTIPLIER</u> |     |                    |   | Off | Off                 |     |     |          |   | * Mech has value 1    |
|                              |     |                    |   | Off | On                  |     |     |          |   | Mech has value 5      |
|                              |     |                    |   | On  | Off                 |     |     |          |   | Mech has value 4      |
|                              |     |                    |   | On  | On                  |     |     |          |   | Mech has value 6      |
| <u>LEFT-MECH MULTIPLIER</u>  |     |                    |   |     |                     | Off |     |          |   | * Mech has value 1    |
|                              |     |                    |   |     |                     | On  |     |          |   | Mech has value 2      |
| <u>BONUS ADDER</u>           |     |                    |   |     |                     |     | Off | Off      |   | * No Bonus Coins      |
|                              |     |                    |   |     |                     |     | Off | On       |   | 4 Coins gives 1 extra |
|                              |     |                    |   |     |                     |     | On  | Off      |   | 2 Coins gives 1 extra |
|                              |     |                    |   |     |                     |     | On  | On       |   | 5 Coins gives 2 extra |

\*SWITCH 3, BANK 1 and SWITCH 8, Bank 2 work together.

\*NORMAL SETTINGS

## INSTALLATION

Your game was shipped from the factory in ready-to-play condition. A brief inspection is suggested before the machine is removed from the carton. If there is damage to the shipping carton, contact the freight carrier for claim purposes. External damage could indicate possible damage to the cabinet and/or electronics components.

After the carton has been satisfactorily inspected, remove the machine from the shipping carton.

Examine the interior of the game for disconnected wires, cables, or harnesses. Make sure the electronic devices are securely mounted in their sockets, etc. Record the game serial number, since it will be required for reference and servicing.

## ELECTRICAL REQUIREMENTS

Unless otherwise specified, this game is set to operate at 110 Volts A.C.

Power supply chassis schematic information and parts list are included in this manual.

## ROUTINE MAINTENANCE & SERVICE

Because of the solid state electronic circuitry, this machine should require very little maintenance, and only occasional adjustments. However, it is necessary to take steps to insure this.

The volume control is located on the front side of the cabinet and is accessible through the coin door.

The video monitor has been properly adjusted before shipping. Occasionally minor adjustments are necessary. Technical information, along with schematics, can be found in this manual. Adjustment controls for the monitor are located on the rear of the monitor.

"DO NOT MAKE ANY ADJUSTMENTS ON THIS MACHINE WHILE THE POWER IS ON"! This machine should only be adjusted by a "qualified" technician.

For Service Information, contact:

CENTURI, INC.

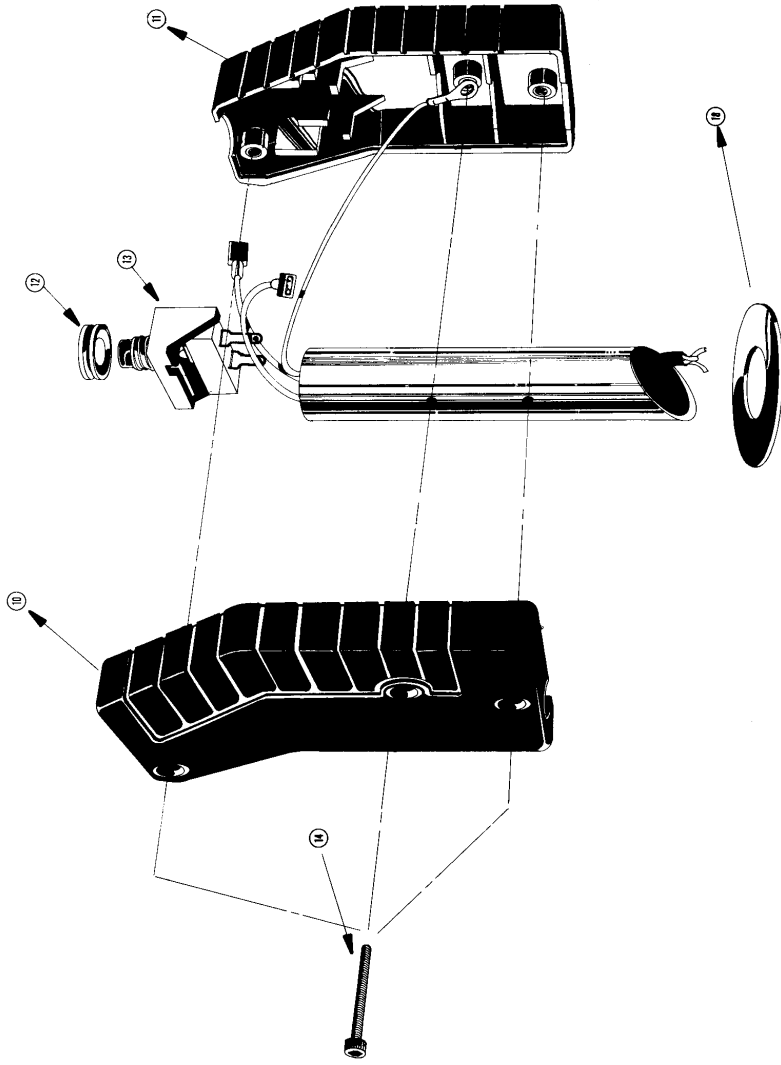
CUSTOMER SERVICE DEPARTMENT

#800-327-7710 (Outside the State of Fla.)

#305-556-5888 (In Florida)

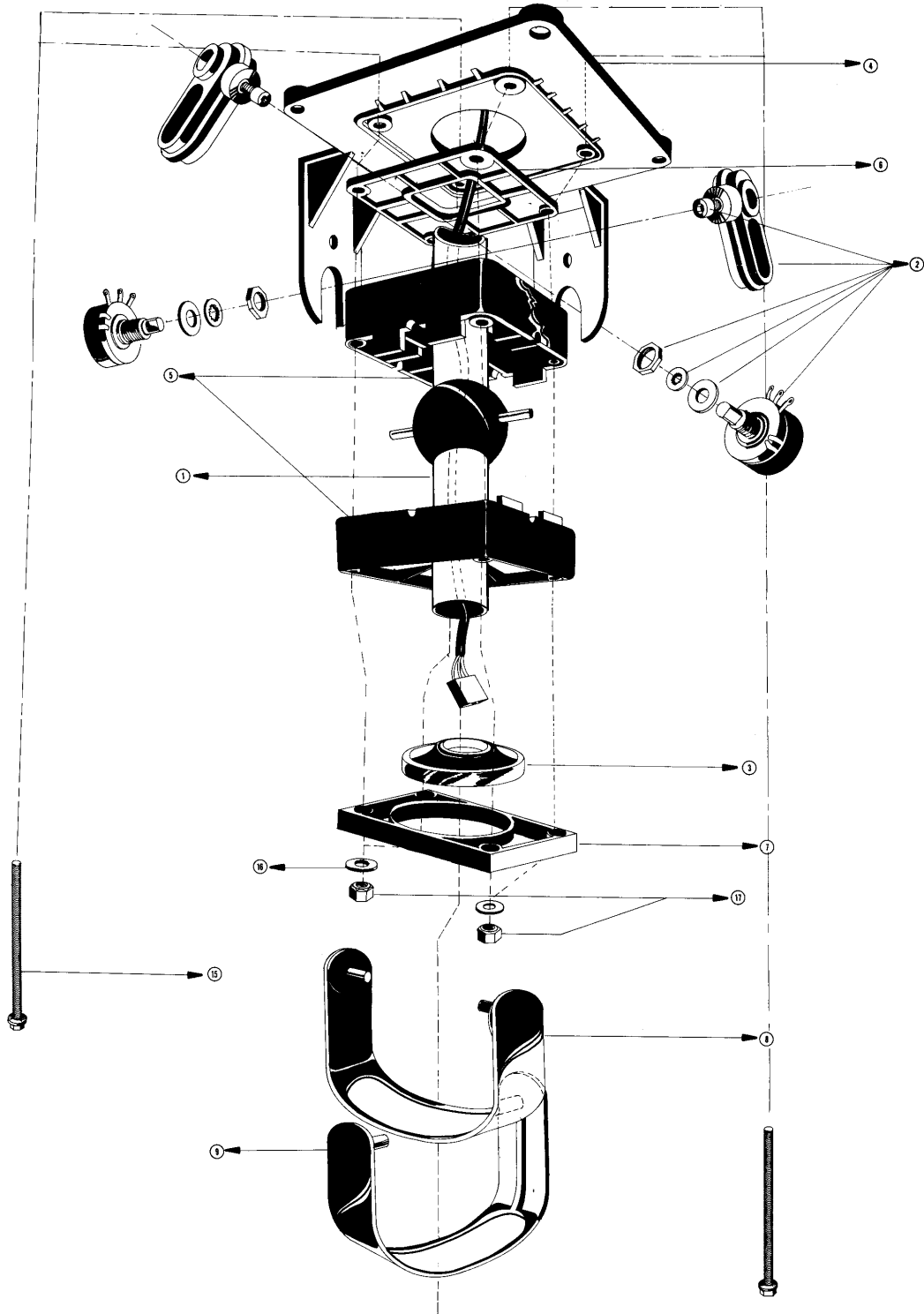
## POWER SUPPLY

The Computer Board in this game operates most efficiently and reliably when the power supply is set so the voltage on the Board is 5.0 Volts,  $\pm 0.1$  Volts. To check this, place a meter across 5 Volts, and ground, at the edge connector. If necessary, adjust the screwdriver control on the power supply, so the meter reads between 4.9 and 5.1 Volts.



## UPPER JOYSTICK ASS'Y.

THE MATERIALS SPECIFICATIONS ARE NOT NECESSARILY  
A PART OF THIS DRAWING AND SHOULD BE REFERENCED WITHOUT THE  
EXPRESSED PERMISSION OF CENTON, INC.



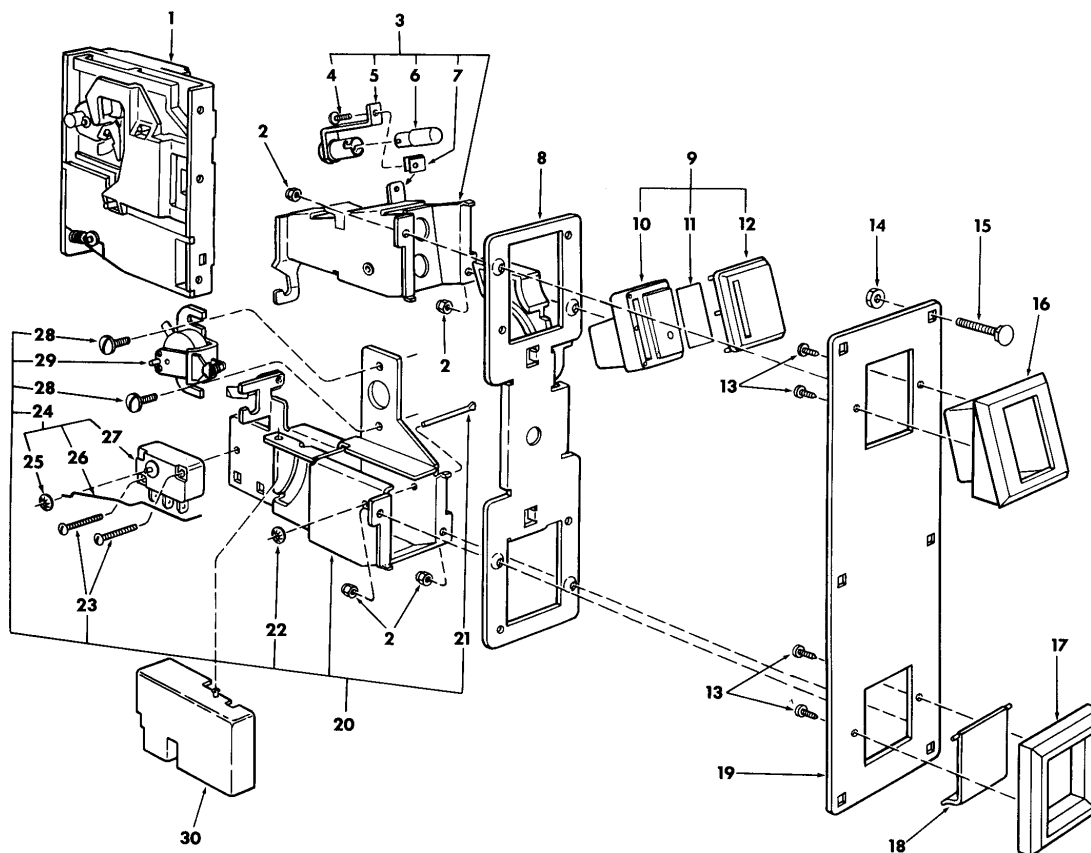
**JOY STICK(UNDERSIDE)ASS'Y.**

50130094

GIMBAL-TYPE JOYSTICK ASS'Y  
PARTS LIST

| <u>ITEM:</u> | <u>CENTURI P/N:</u> | <u>DESCRIPTION:</u>   | <u>QTY:</u> |
|--------------|---------------------|---|-------------|
| 1.           | 50130096            | ASS'y PIVOT-SHAFT & HARNESS   | 1           |
| 2.           | 50130108            | ASS'y, POT & LINKAGE  | 2           |
| 3.           | 50130098            | ASSEMBLY, BELLOW, CENTERING   | 1           |
| 4.           | 50130107            | PLATE, MOUNTING   | 1           |
| 5.           | 50130097            | HOUSING, PIVOT BALL   | 2           |
| 6.           | 50130095            | PLATE, CONTROL PATTERN-SQUARE   | 1           |
| 7.           | 50130099            | CAP, BELLOW   | 1           |
| 8.           | 50130100            | GIMBAL, INNER   | 1           |
| 9.           | 50130101            | GIMBAL, OUTER   | 1           |
| 10.          | 50130104            | HANDLE, CONTROL RIGHT   | 1           |
| 11.          | 50130105            | HANDLE CONTROL, LEFT  | 1           |
| 12.          | 50130102            | BEZEL, HANDLE   | 1           |
| 13.          | 50130103            | SWITCH, CHERRY #P163-AWAA   | 1           |
| 14.          | 10080039            | SCREW, MACH, CAP, HEX SOCKET HD,<br>#6-32 x 7/8" LG, STL                            | 3           |
| 15.          | 10120039            | MACH SCREW, HEX HEAD, #10 - 32x2 <sup>1</sup> / <sub>2</sub> "<br>LG, STL ZINC PLT. | 4           |
| 16.          | 10190009            | WASHER, PLAIN, FLAT, #10, STL, ZINC<br>PLT.   | 4           |
| 17.          | 10140005            | NUT, HEX, SELF-LOCKING, POLYMER,<br>STL #10-32                                      | 4           |
| 18.          | 50130106            | PLATE, SLIDE  | 1           |

**2800-0 FRONT PLATE EXPLODED VIEW  
25¢ COIN**



| Index No. | Part No. | Description   | Index No. | Part No. | Description                          |
|-----------|----------|---|-----------|----------|--------------------------------------|
| 1         | 5301-10  | 25¢ Coin Acceptor                                   | 16        | 904588   | Coin Inlet Housing                   |
| 2         | 400-4    | #4-40 Self Locking Nut                              | 17        | 904590   | Coin Return Cover                    |
| 3         | 404351   | Coin Inlet Chute Assembly                           | 18        | 904599   | Coin Return Door                     |
| 4         | 110-4-6  | 4 x 3/8 Screw                                       | 19        | 404463   | Frontplate Assembly, 3-1/8" x 9-1/4" |
| 5         | 904717   | Lamp Socket   | 20        | 404350   | Coin Return Chute Assembly           |
| 6         | 904716   | #47 Lamp (6.3 Volt)                                 | 21        | 905115   | Bar                                  |
| 7         | 904712   | Fastener  | 22        | 904936   | Keeper                               |
| 8         | 404464   | Inner Panel/Lever Assembly                          | 23        | 100-4-12 | 4-40 x 3/4 Screw                     |
| 9         | 404348   | Coin Return Button Assembly                         | 24        | 404353   | Switch & Wire Assembly               |
| 10        | 904591   | Coin Return Button                                  | 25        | 900651   | Retainer                             |
| 11        | 904703   | 25¢ Price Decal                                     | 26        | 904710-1 | Switch Wire-Silver                   |
| 12        | 904589-2 | Reject Cover Button (25¢)                           | 27        | 904845   | Switch                               |
| 13        | 345-4-5  | #4 x 5/16 Pan Head Screw                            | 28        | 100-6-3  | 6-32 x 3/16 Screw                    |
| 14        | 406-10   | #10-24 Hex Nut<br>(Mounting Hardware)               | 29        | 404354   | 12 Volt Crem Assembly                |
| 15        | 905022   | #10-24 x 1-1/8 Carriage Bolt<br>(Mounting Hardware) | 30        | 904762   | Switch Cover                         |



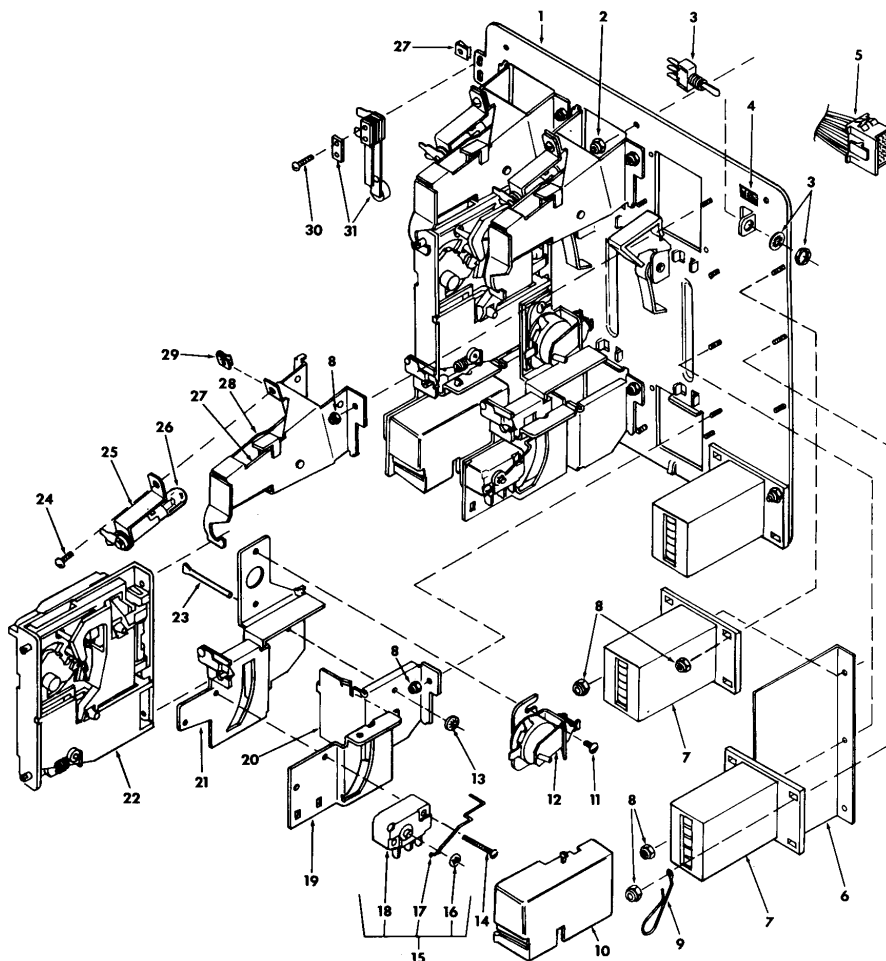
2800-0 FRONT PLATE EXPLODED VIEW

(FIGURE 5)

PARTS LIST

| <u>NO.</u> | <u>CENTURI P/N:</u> | <u>MANUFACTURING P/N:</u> | <u>DESCRIPTION:</u>  |
|------------|---------------------|---------------------------|--|
| 1.         | 50270144            | 5031-10                   | 25¢ COIN ACCEPTOR  |
| 5.         | 50270169            | 904717                    | LAMP SOCKET  |
| 6.         | 50270170            | 904716                    | #47 LAMP (6.3 VOLT)  |
| 8.         | 50270172            | 404464                    | INNER PANEL/LEVER ASS'Y.   |
| 10.        | 50270145            | 904591                    | COIN RETURN BUTTON   |
| 11.        | 50270146            | 904703                    | 25¢ PRICE DECAL  |
| 12.        | 50270147            | 904589-2                  | REJECT COVER BUTTON (25¢)  |
| 16.        | 50270149            | 904588                    | COIN INLET HOUSING   |
| 17.        | 50270157            | 904590                    | COIN RETURN BEZEL  |
| 18.        | 50270150            | 904599                    | COIN RETURN DOOR   |
| 19.        | 50270173            | 404463                    | FRONTPLATE ASS'Y. (3 <sup>1</sup> / <sub>8</sub> "x9 <sup>1</sup> / <sub>4</sub> " ) |
| 21.        | 50270168            | 905115                    | BAR  |
| 25.        | 50270141            | 900651                    | RETAINER   |
| 26.        | 50270142            | 904710-1                  | SWITCH-WIRE, SILVER  |
| 27.        | 50130061            | 904845                    | SWITCH   |
| 29.        | 50270165            | 404354                    | 12 VOLT C.R.E.M. ASS'Y.  |
| 30.        | 50270164            | 904762                    | SWITCH COVER   |

**2800 SERIES COIN DOOR EXPLODED VIEW**  
**25¢ U.S. COIN**



| <b>Index No.</b> | <b>Part No.</b> | <b>Description</b>                     | <b>Index No.</b> | <b>Part No.</b> | <b>Description</b>                        |
|------------------|-----------------|--|------------------|-----------------|---|
| 1                | 404429          | Inner Panel With Levers Sub-Assembly   | 17               | 904710-1        | Silver Switch Wire — for U.S. 25¢ Coin    |
| 2                | 400-8           | Nut                                    | 18               | 904845          | Switch                                    |
| 3                | 904782          | Toggle Switch                          | 19               | 904701          | Coin Chute                                |
| 4                | 904706          | Test Switch Decal                      | 20               | 904598          | Coin Return Box                           |
| 5                |                 | Custom Harness Assembly                | 21               | 404428          | Switch and C.R.E.M. Coil Bracket Assembly |
| 6                | 904822          | Insulation                             | 22               | 5301-10         | 25¢ Acceptor                              |
| 7                | 404352          | Coin Counter Assembly (6 Volt D.C.)    | 23               | 905115          | Bar                                       |
| 8                | 400-4           | Nut                                    | 24               | 110-4-6         | Screw                                     |
| 9                | 904722          | Wire Key Holder                        | 25               | 904717          | Miniature Bayonet-Base Lamp Socket        |
| 10               | 904762          | Switch Cover                           | 26               | 904716          | #47 Lamp (6.3 Volt)                       |
| 11               | 100-6-3         | Screw                                  | 27               | 404418          | Coin Inlet Chute Sub-Assembly             |
| 12               | 404354          | C.R.E.M. Coil Assembly. 12 Volts D.C.  | 28               | 904594          | Right Half of Coin Inlet Chute            |
| 13               | 904936          | Keeper                                 | 29               | 904712          | "U"-Type Fastener                         |
| 14               | 100-4-12        | Screw                                  | 30               | 116-4-8         | Screw                                     |
| 15               | 404353          | Coin Switch Assembly for U.S. 25¢ Coin | 31               | 904704          | Slam Switch Assembly                      |
| 16               | 900651          | Retainer                               |                  |                 |   |

2800 SERIES COIN DOOR EXPLODED VIEW

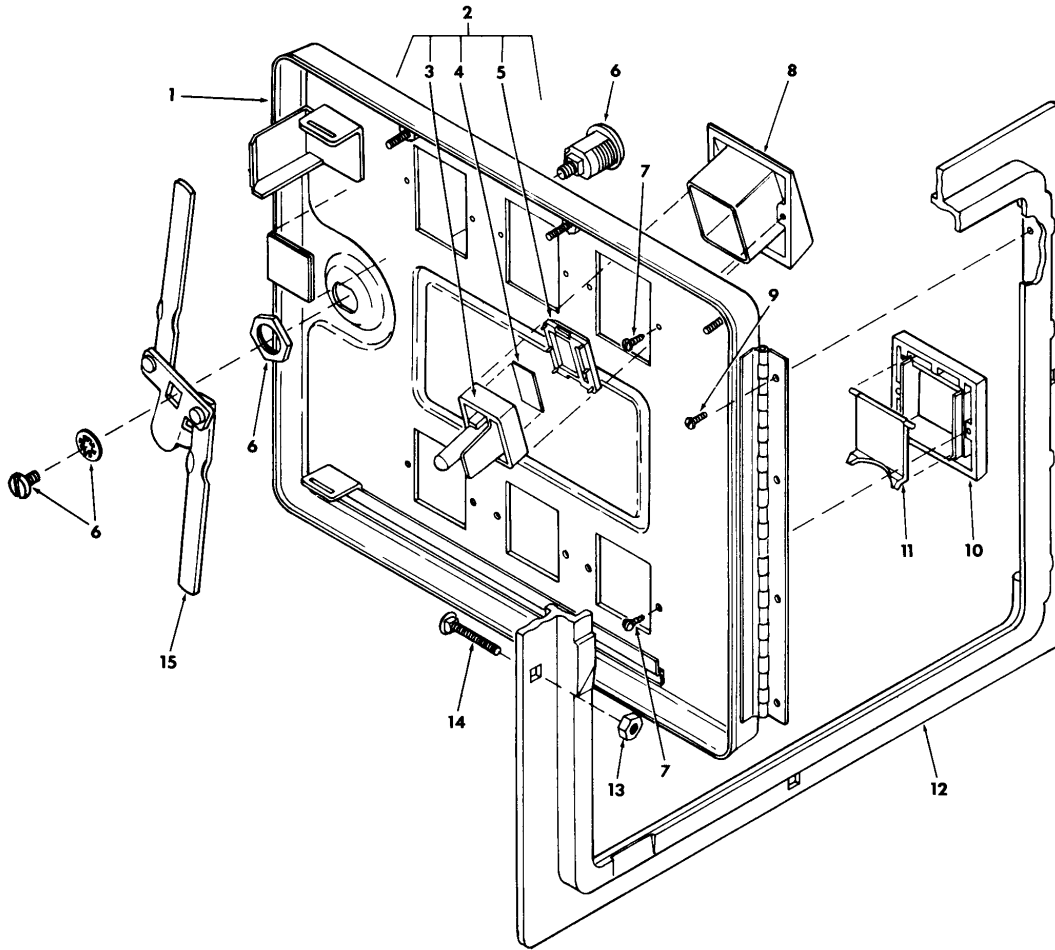
25¢ U.S. COIN

(FIGURE 6)

PARTS LIST

| <u>NO.</u> | <u>CENTURI P/N:</u> | <u>MANUFACTURING P/N:</u> | <u>DESCRIPTION:</u>                      |
|------------|---------------------|---------------------------|--|
| 1.         | 50270160            | 404429                    | INNER PANEL w/LEVERS<br>SUBASS'Y.        |
| 3.         | 50130062            | 904782                    | TOGGLE SWITCH                            |
| 4.         | 50270161            | 904706                    | TEST SWITCH DECAL                        |
| 5.         | 364-62-1000A        | -----                     | CUSTOM HARNESS ASS'Y.                    |
| 6.         | 50270162            | 904822                    | INSULATION                               |
| 7.         | 50270140            | 404352                    | COIN COUNTER ASS'Y.                      |
| 9.         | 50270163            | 904722                    | WIRE KEY HOLDER                          |
| 10.        | 50270164            | 904762                    | SWITCH COVER                             |
| 12.        | 50270165            | 404354                    | C.R.E.M. COIL ASS'Y.<br>(12 VOLT D.C.)   |
| 17.        | 50270142            | 904710-1                  | SILVER SWITCH WIRE- FOR<br>25¢ U.S. COIN |
| 18.        | 50130061            | 904845                    | SWITCH                                   |
| 19.        | 50270143            | 904701                    | COIN CHUTE                               |
| 20.        | 50270166            | 904598                    | COIN RETURN BOX                          |
| 21.        | 50270167            | 404428                    | SWITCH & C.R.E.M. COIL<br>BRACKET ASS'Y. |
| 22.        | 50270144            | 5301-10                   | 25¢ ACCEPTOR                             |
| 23.        | 50270168            | 905115                    | BAR                                      |
| 25.        | 50270169            | 904717                    | MINIATURE BAYONET-BASE<br>LAMP SOCKET    |
| 26.        | 50270170            | 904716                    | #47 LAMP (6.3 VOLTS)                     |
| 27.        | 50270171            | 404418                    | COIN INLET CHUTE-SUBASS'Y.               |
| 31.        | 50130063            | 904707                    | SLAM SWITCH ASSEMBLY                     |

**2800 SERIES COIN DOOR EXPLODED VIEW  
25¢ U.S. COIN**



| <b>Index No.</b> | <b>Part No.</b> | <b>Description</b>                            | <b>Index No.</b> | <b>Part No.</b> | <b>Description</b>  |
|------------------|-----------------|---|------------------|-----------------|---|
| 1                | 404341          | Coin Door Only (2 Coin)                       | 7                | 345-4-5         | Screw   |
|                  | 404341-1        | Coin Door Only (3 Coin)                       | 8                | 904588          | Coin Button Housing   |
| 2                | 404348-1        | Coin Return Button Assembly for U.S. 25¢ Coin | 9                | 325-4-4         | Screw   |
| 3                | 904591          | Coin Return Button                            | 10               | 904590          | Coin Return Bezel   |
| 4                | 904703          | U.S. 25¢ Price Decal                          | 11               | 904599          | Coin Return Cover   |
| 5                | 904589-2        | Coin Return Button Cover for U.S. 25¢ Coin    | 12               | 904581          | Coin Door Frame, 11-5/8" x 13-3/8" Mounts in a 10-3/8" x 12-3/16" Opening |
| 6                | 904707-1        | Lock Assembly                                 | 13               | 406-416         | Hex Nut   |
|                  |                 |   | 14               | 904734          | Carriage Bolt   |
|                  |                 |   | 15               | 404357          | Locking Arm Assembly  |

2800 SERIES COIN DOOR EXPLODED VIEW

25¢ U.S. COIN

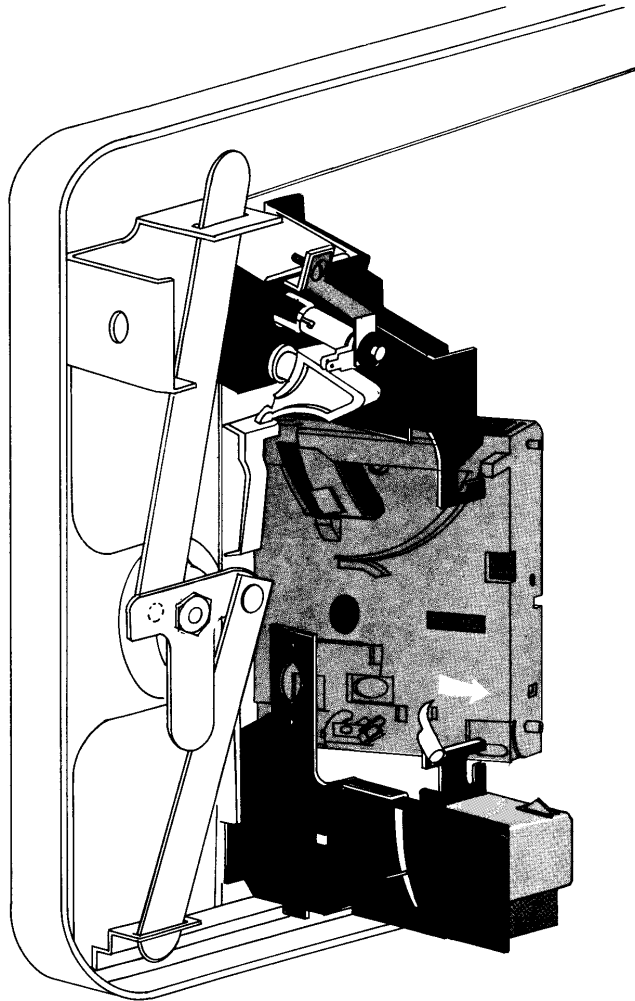
(FIGURE 7)

PARTS LIST

| <u>NO.</u> | <u>CENTURI P/N:</u> | <u>MANUFACTURING P/N:</u> | <u>DESCRIPTION:</u>                          |
|------------|---------------------|---------------------------|--|
| 1.         | 50270152            | 404341                    | COIN DOOR ONLY (2 COIN)                      |
| 2.         | 50270158            | 404348-1                  | COIN DOOR BUTTON ASS'Y.<br>FOR U.S. 25¢ COIN |
| 3.         | 50270145            | 904591                    | COIN RETURN BUTTON                           |
| 4.         | 50270146            | 904703                    | U.S. 25¢ PRICE DECAL                         |
| 5.         | 50270147            | 904589-2                  | COIN RETURN BUTTON COVER                     |
| 6.         | 50270148            | 904707-1                  | LOCK ASSEMBLY w/KEYS                         |
| 8.         | 50270149            | 904588                    | COIN BUTTON HOUSING<br>(INLET HOUSING)       |
| 10.        | 50270157            | 904590                    | COIN RETURN BEZEL                            |
| 11.        | 50270150            | 904599                    | COIN RETURN COVER                            |
| 12.        | 50270151            | 904581                    | COIN DOOR FRAME<br>(11 5/8"x13 3/8")         |
| 15.        | 50270159            | 404357                    | LOCKING ARM ASSEMBLY                         |

COIN SWITCH AND BULB REPLACEMENT  
PARTS LIST

| <u>NO.</u> | <u>CENTURI P/N:</u> | <u>MANUFACTURING P/N:</u> | <u>DESCRIPTION:</u>                     |
|------------|---------------------|---------------------------|---|
| 1.         | 50270167            | 404428                    | SWITCH & C.R.E.M. COIL<br>BRACKET ASS'Y |
| 2.         | 50270143            | 904701                    | COIN CHUTE                              |
| 3.         | 50270166            | 904598                    | COIN RETURN BOX                         |
| 4.         | 50270168            | 905115                    | BAR                                     |
| 5.         | 50130061            | 904845                    | SWITCH                                  |
| 6.         | 50270164            | 904762                    | SWITCH COVER                            |

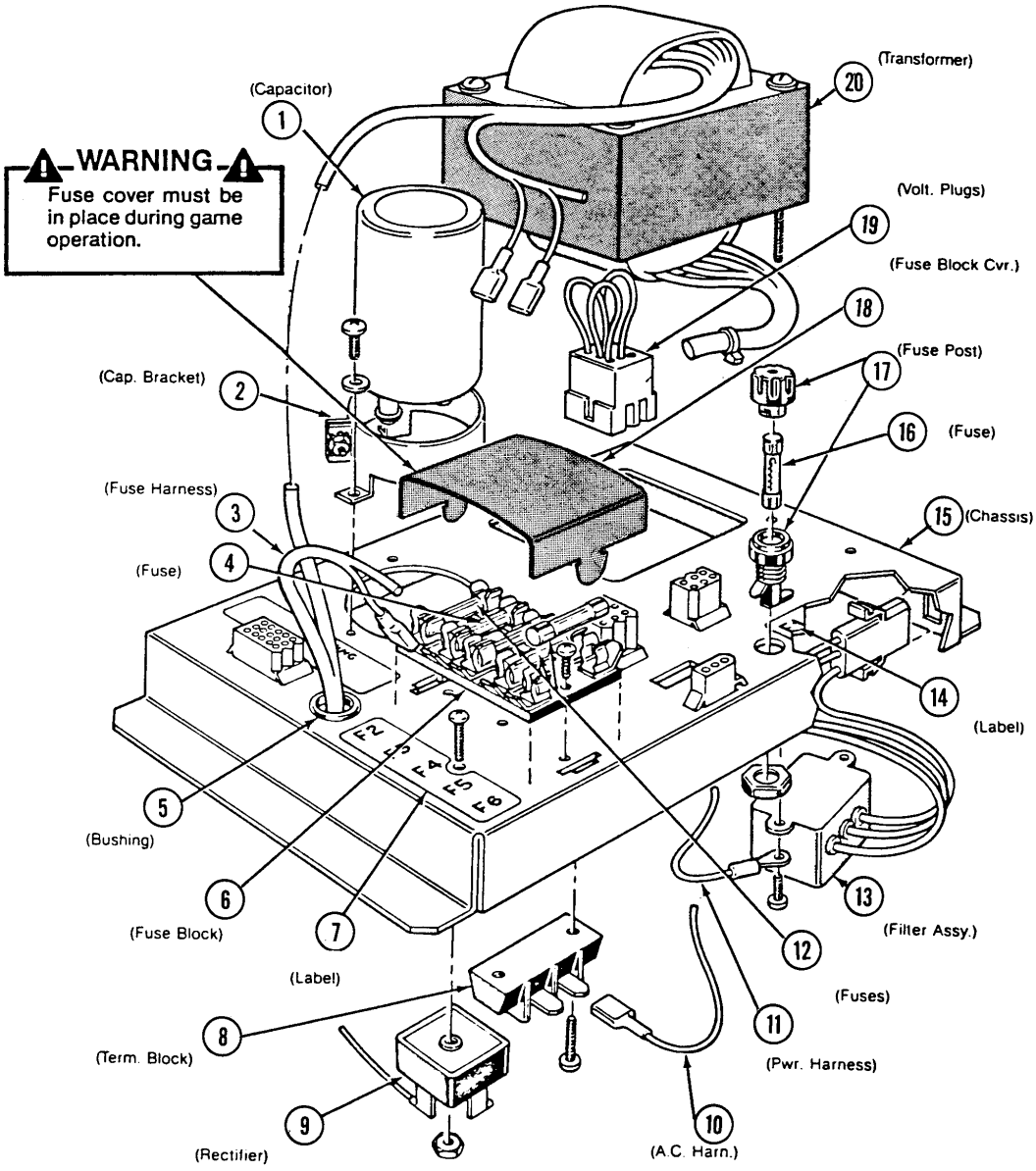


SPRING CLIP, THEN LIFT AND REMOVE

| REV.                       | ECN        | REVISION                | BY           | DATE   | SCALE | PART NO. | REV. |            |            |         |              |                        |  |                            |  |  |  |      |  |           |        |                         |  |        |  |                |        |           |  |             |  |                |        |  |  |  |  |       |        |  |  |  |  |  |        |  |  |  |  |        |        |  |  |  |  |                |      |  |  |  |  |
|----------------------------|------------|-------------------------|--------------|--|-------|----------|------|------------|------------|---------|--------------|------------------------|--|----------------------------|--|--|--|------|--|-----------|--------|-------------------------|--|--------|--|----------------|--------|-----------|--|-------------|--|----------------|--------|--|--|--|--|-------|--------|--|--|--|--|--|--------|--|--|--|--|--------|--------|--|--|--|--|----------------|------|--|--|--|--|
| LET.                       | NO.        |                         |              | 4-16-82  |       | 50270144 |      |            |            |         |              |                        |  |                            |  |  |  |      |  |           |        |                         |  |        |  |                |        |           |  |             |  |                |        |  |  |  |  |       |        |  |  |  |  |  |        |  |  |  |  |        |        |  |  |  |  |                |      |  |  |  |  |
|                            |            |                         |              | <table border="1"> <tr> <td>OC. AP'D</td> <td>PROD. AP'D</td> <td>QTY.</td> <td>ASSEMBLY NO.</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>  |       |          |      | OC. AP'D   | PROD. AP'D | QTY.    | ASSEMBLY NO. |                        |  |                            |  |  |  |      |  |           |        |                         |  |        |  |                |        |           |  |             |  |                |        |  |  |  |  |       |        |  |  |  |  |  |        |  |  |  |  |        |        |  |  |  |  |                |      |  |  |  |  |
| OC. AP'D                   | PROD. AP'D | QTY.                    | ASSEMBLY NO. |  |       |          |      |            |            |         |              |                        |  |                            |  |  |  |      |  |           |        |                         |  |        |  |                |        |           |  |             |  |                |        |  |  |  |  |       |        |  |  |  |  |  |        |  |  |  |  |        |        |  |  |  |  |                |      |  |  |  |  |
|                            |            |                         |              |  |       |          |      |            |            |         |              |                        |  |                            |  |  |  |      |  |           |        |                         |  |        |  |                |        |           |  |             |  |                |        |  |  |  |  |       |        |  |  |  |  |  |        |  |  |  |  |        |        |  |  |  |  |                |      |  |  |  |  |
|                            |            |                         |              | <table border="1"> <tr> <td colspan="2">TOLERANCES</td> <td colspan="2">centun.</td> <td colspan="2">HIALEAH, FLORIDA 33014</td> </tr> <tr> <td colspan="4">Unless Otherwise Specified</td> <td colspan="2">NAME</td> </tr> <tr> <td>FRACTIONS</td> <td>± 1/32</td> <td colspan="2">REMOVING COIN MECHANISM</td> <td colspan="2">FINISH</td> </tr> <tr> <td>DECIMALS 2 PL.</td> <td>± .015</td> <td colspan="2">MATERIALS</td> <td colspan="2">HEAT TREAT.</td> </tr> <tr> <td>DECIMALS 3 PL.</td> <td>± .005</td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td>HOLES</td> <td>+ .003</td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td></td> <td>- .001</td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td>ANGLES</td> <td>± 1/2°</td> <td colspan="2"></td> <td colspan="2"></td> </tr> <tr> <td>SHT. MET BENDS</td> <td>± 2°</td> <td colspan="2"></td> <td colspan="2"></td> </tr> </table> |       |          |      | TOLERANCES |            | centun. |              | HIALEAH, FLORIDA 33014 |  | Unless Otherwise Specified |  |  |  | NAME |  | FRACTIONS | ± 1/32 | REMOVING COIN MECHANISM |  | FINISH |  | DECIMALS 2 PL. | ± .015 | MATERIALS |  | HEAT TREAT. |  | DECIMALS 3 PL. | ± .005 |  |  |  |  | HOLES | + .003 |  |  |  |  |  | - .001 |  |  |  |  | ANGLES | ± 1/2° |  |  |  |  | SHT. MET BENDS | ± 2° |  |  |  |  |
| TOLERANCES                 |            | centun.                 |              | HIALEAH, FLORIDA 33014   |       |          |      |            |            |         |              |                        |  |                            |  |  |  |      |  |           |        |                         |  |        |  |                |        |           |  |             |  |                |        |  |  |  |  |       |        |  |  |  |  |  |        |  |  |  |  |        |        |  |  |  |  |                |      |  |  |  |  |
| Unless Otherwise Specified |            |                         |              | NAME   |       |          |      |            |            |         |              |                        |  |                            |  |  |  |      |  |           |        |                         |  |        |  |                |        |           |  |             |  |                |        |  |  |  |  |       |        |  |  |  |  |  |        |  |  |  |  |        |        |  |  |  |  |                |      |  |  |  |  |
| FRACTIONS                  | ± 1/32     | REMOVING COIN MECHANISM |              | FINISH   |       |          |      |            |            |         |              |                        |  |                            |  |  |  |      |  |           |        |                         |  |        |  |                |        |           |  |             |  |                |        |  |  |  |  |       |        |  |  |  |  |  |        |  |  |  |  |        |        |  |  |  |  |                |      |  |  |  |  |
| DECIMALS 2 PL.             | ± .015     | MATERIALS               |              | HEAT TREAT.  |       |          |      |            |            |         |              |                        |  |                            |  |  |  |      |  |           |        |                         |  |        |  |                |        |           |  |             |  |                |        |  |  |  |  |       |        |  |  |  |  |  |        |  |  |  |  |        |        |  |  |  |  |                |      |  |  |  |  |
| DECIMALS 3 PL.             | ± .005     |                         |              |  |       |          |      |            |            |         |              |                        |  |                            |  |  |  |      |  |           |        |                         |  |        |  |                |        |           |  |             |  |                |        |  |  |  |  |       |        |  |  |  |  |  |        |  |  |  |  |        |        |  |  |  |  |                |      |  |  |  |  |
| HOLES                      | + .003     |                         |              |  |       |          |      |            |            |         |              |                        |  |                            |  |  |  |      |  |           |        |                         |  |        |  |                |        |           |  |             |  |                |        |  |  |  |  |       |        |  |  |  |  |  |        |  |  |  |  |        |        |  |  |  |  |                |      |  |  |  |  |
|                            | - .001     |                         |              |  |       |          |      |            |            |         |              |                        |  |                            |  |  |  |      |  |           |        |                         |  |        |  |                |        |           |  |             |  |                |        |  |  |  |  |       |        |  |  |  |  |  |        |  |  |  |  |        |        |  |  |  |  |                |      |  |  |  |  |
| ANGLES                     | ± 1/2°     |                         |              |  |       |          |      |            |            |         |              |                        |  |                            |  |  |  |      |  |           |        |                         |  |        |  |                |        |           |  |             |  |                |        |  |  |  |  |       |        |  |  |  |  |  |        |  |  |  |  |        |        |  |  |  |  |                |      |  |  |  |  |
| SHT. MET BENDS             | ± 2°       |                         |              |  |       |          |      |            |            |         |              |                        |  |                            |  |  |  |      |  |           |        |                         |  |        |  |                |        |           |  |             |  |                |        |  |  |  |  |       |        |  |  |  |  |  |        |  |  |  |  |        |        |  |  |  |  |                |      |  |  |  |  |



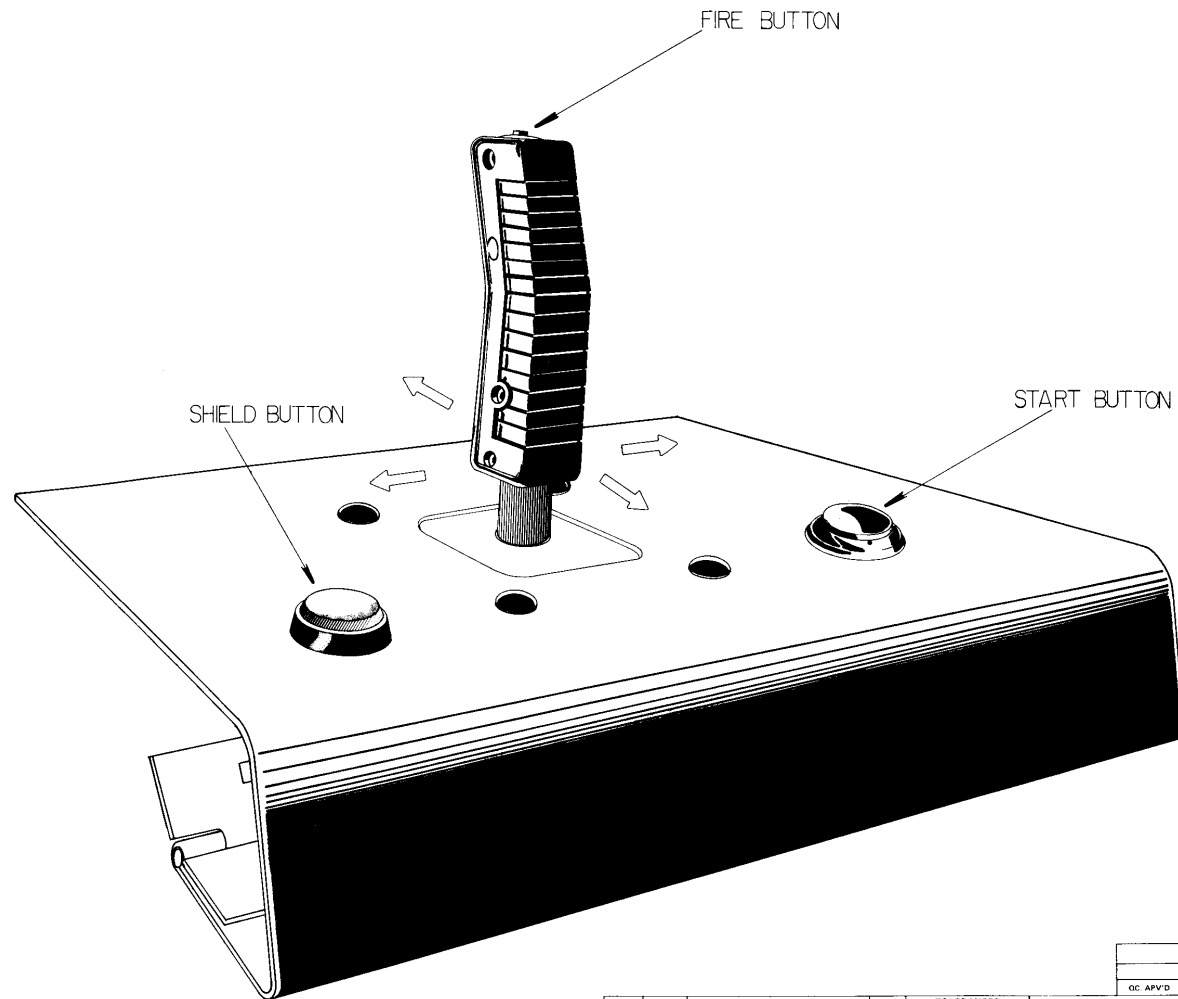




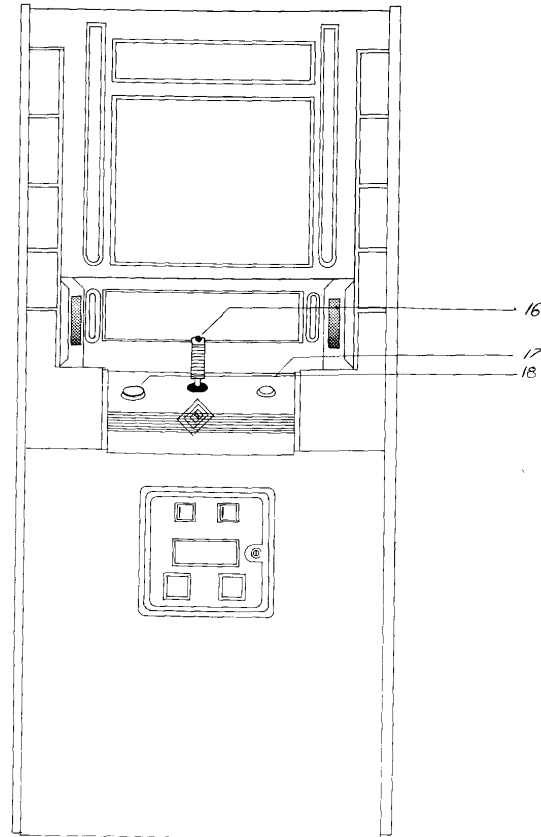
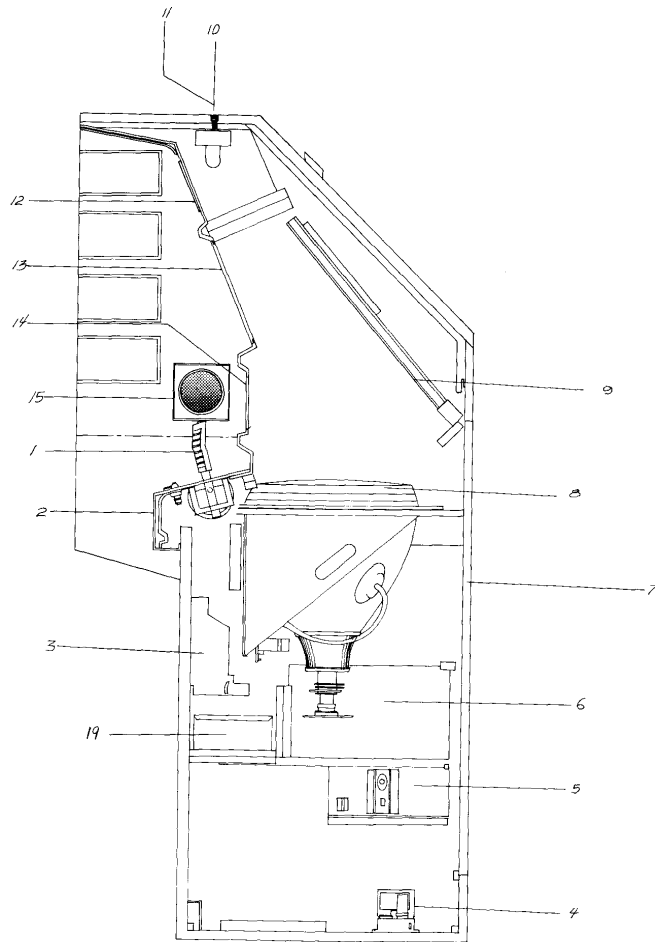
**Power Supply Assembly**

POWER SUPPLY ASS'Y (EXPLODED VIEW)  
PARTS LIST

| <u>ITEM:</u> | <u>CENTURI P/N:</u> | <u>DESCRIPTION:</u> |
|--------------|---------------------|---------------------|
| 1.           | 50060225            | CAPACITOR           |
| 2.           | 50270210            | CAP. BRACKET        |
| 3.           | 50270211            | FUSE HARNESS        |
| 4.           | 50230020            | FUSE                |
| 5.           | 50270216            | BUSHING             |
| 6.           | 50230060            | FUSE BLOCK          |
| 7.           | 50270217            | LABEL               |
| 8.           | 50270215            | TERM. BLOCK         |
| 9.           | 50290021            | RECTIFIER           |
| 10.          | 50270214            | A.C. HARNESS        |
| 11.          | 50270213            | PWR. HARNESS        |
| 12.          | 50230058            | FUSES               |
| 13.          | 50270212            | FILTER ASS'Y        |
| 14.          | 50270218            | LABEL               |
| 15.          | 50270208            | CHASSIS             |
| 16.          | 50230059            | FUSE                |
| 17.          | 50230061            | FUSE POST           |
| 18.          | 50270209            | FUSE BLOCK CVR.     |
| 19.          | 384-12-0700         | VOLT. PLUGS 120V    |
|              | 384-12-0800         | VOLT. PLUGS 100V    |
|              | 384-12-0900         | VOLT. PLUGS 200V    |
|              | 384-12-1000         | VOLT. PLUGS 220V    |
|              | 384-12-1100         | VOLT. PLUGS 240V    |
| 20.          | 50280089            | TRANSFORMER         |



| REV. LET. | ECN NO. | REVISION | BY | ANGLES | SHT. MET. BENDS | TOLERANCES<br><small>Unless Otherwise Specified</small>   | QC. APV'D     | PROD. APV'D   | QTY.                   | ASSEMBLY NO. |      |
|-----------|---------|----------|----|--------|-----------------|---|---------------|---------------|------------------------|--------------|------|
|           |         |          |    |        |                 | FRACTIONS = 1/32<br>DECIMALS 2 PL = .015<br>DECIMALS 3 PL = .005<br>HOLES = .001<br>ANGLES = 1/2<br>SHT. MET. BENDS = 2 | <b>centon</b> |               | HIALEAH, FLORIDA 33014 |              |      |
|           |         |          |    |        |                 | NAME  | CONTROL PANEL |               |                        |              |      |
|           |         |          |    |        |                 | MAT'L'S   | HEAT TREAT.   | FINISH        |                        |              |      |
|           |         |          |    |        |                 | DWN: A.G  | APP'D         | DATE: 4-28-82 | SCALE                  | PART NO.     | REV. |



| REV. LET. | ECN NO. | REVISION | BY | DATE   | SCALE | FART NO. | REV. |
|-----------|---------|----------|----|--------|-------|----------|------|
|           |         |          |    | 5-6-82 |       |          |      |

| TOLERANCES                 |        | NAME                    |                    |
|----------------------------|--------|-------------------------|--------------------|
| Unless Otherwise Specified |        | centon                  |                    |
| FRACTIONS                  | ± .125 | HIALEAH, FLORIDA 33014  |                    |
| DECIMALS 2 PL              | ± .015 | COMPLETE GAME LESS PKG. |                    |
| DECIMALS 3 PL              | ± .005 | MAT'L.S.                | HEAT TREAT. FINISH |
| HOLEES                     | ± .002 | DWN.                    | APP'D.             |
| ANGLES                     | ± .1/2 | DATE 5-6-82             |                    |
| SHY. MET BENDS             | ± .2   | SCALE                   |                    |

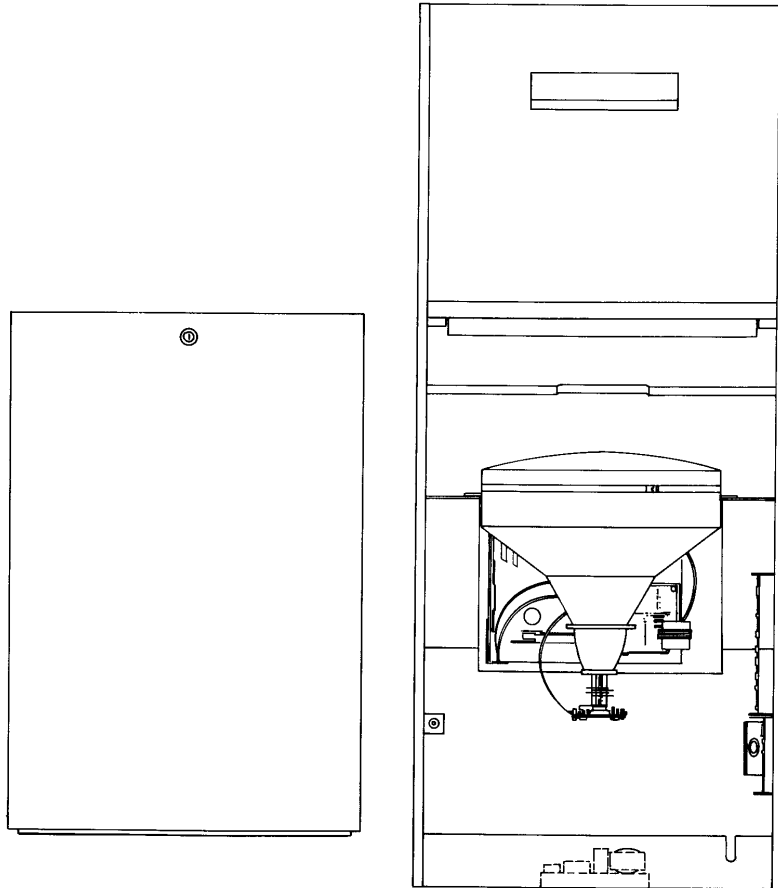
  

| QC. AP'VD | PROD. AP'VD | QTY. | ASSEMBLY NO. |
|-----------|-------------|------|--------------|
|           |             |      |              |

384-01-0200

COMPLETE GAME LESS/PKG.  
PARTS LIST

| <u>ITEM:</u> | <u>CENTURI P/N:</u>     | <u>DESCRIPTION:</u>              |
|--------------|-------------------------|----------------------------------|
| 1.           | 50130094                | JOYSTICK ASS'Y                   |
| 2.           | 384-01-1600             | CONTROL PANEL ASS'Y              |
| 3.           | 360-14-0700             | COINCO COIN DOOR ASS'Y           |
| 4.           | 50350007                | POWER SUPPLY ASS'Y               |
| 5.           | 384-13-0100             | REG/AUDIO P.C.B. ASS'Y           |
| 6.           | 384-13-0200             | C.P.U. BOARD ASS'Y               |
| 7.           | 384-01-0900             | BACK DOOR ASS'Y                  |
| 8.           | 50250024 or<br>50250026 | MONITOR COLOR 19"                |
| 9.           | 384-08-1300             | MIRROR                           |
| 10,11.       | 361-14-0300A            | FLUORESCENT LAMP/SW. WIRED ASS'Y |
| 12.          | 384-06-0200             | SCREEND MARGUEE                  |
| 13.          | 384-04-2200             | VIEWING PANEL (PLEX.)            |
| 14.          | 384-06-0200             | INSTRUCTION PANEL                |
| 15.          | 50200011                | SPEAKER                          |
| 16.          | 50130049                | START BUTTON                     |
| 17.          | 50130105                | FIRE                             |
| 18.          | 50130093                | SHIELD BUTTON                    |
| 19.          | 375-01-1700A            | CASH BOX WELD/ASS'y              |



CABINET REAR VIEW

| QC. APV'D                            | PROD. APV'D | QTY.               | ASSEMBLY NO.        |
|--------------------------------------|-------------|--------------------|---------------------|
|                                      |             |                    |                     |
| <b>TOLERANCES</b>                    |             |                    |                     |
| <i>Unless Otherwise Specified</i>    |             |                    |                     |
| FRACTIONS                            | ±           | 1/32               |                     |
| DECIMALS 2 PL.                       | ±           | .015               |                     |
| DECIMALS 3 PL.                       | ±           | .006               |                     |
| HOLES                                | +           | .003               |                     |
|                                      | -           | .001               |                     |
| ANGLES                               | ±           | 1/2°               |                     |
| SHT. MET BENDS                       | ±           | 2°                 |                     |
| <b>centum</b> HIALEAH, FLORIDA 33014 |             |                    |                     |
| <b>NAME CABINET REAR VIEW</b>        |             |                    |                     |
| MAT'L'S.                             |             | HEAT TREAT.        | FINISH              |
| OWN. <b>Ag.</b>                      | APP'D.      | DATE <b>5-7-82</b> | SCALE PART NO. REV. |
| REV. LET.                            | EDN NO.     | REVISION           | BY                  |

C.P.U. BOARD ASS'YPARTS LIST

| <u>NO.</u> | <u>PART NUMBER:</u> | <u>DESCRIPTION:</u>                  | <u>QNTY.</u> |
|------------|---------------------|--------------------------------------|--------------|
| 1.         | 50210250            | P.C.B. (BARE)                        | 1            |
| 2.         | 50030210            | 1/4 WATT, 5%, 47 OHM, RESISTOR       | 1            |
| 3.         | 50030125            | 1/4 WATT, 5%, 220 OHM, RESISTOR      | 5            |
| 4.         | 50030095            | 1/4 WATT, 5%, 330 OHM, RESISTOR      | 3            |
| 5.         | 50030010            | 1/4 WATT, 5%, 470 OHM, RESISTOR      | 10           |
| 6.         | 50030051            | 1/4 WATT, 5%, 1K OHM, RESISTOR       | 64           |
| 7.         | 50030087            | 1/4 WATT, 5%, 1.5K OHM, RESISTOR     | 1            |
| 8.         | 50030001            | 1/4 WATT, 5%, 2.2K OHM, RESISTOR     | 1            |
| 9.         | 50030006            | 1/4 WATT, 5%, 4.7K OHM, RESISTOR     | 15           |
| 10.        | 50030149            | 1/4 WATT, 5%, 5.6K OHM, RESISTOR     | 2            |
| 11.        | 50030165            | 1/4 WATT, 5%, 8.2K OHM, RESISTOR     | 1            |
| 12.        | 50030063            | 1/4 WATT, 5%, 10K OHM, RESISTOR      | 13           |
| 13.        | 50030106            | 1/4 WATT, 5%, 12K OHM, RESISTOR      | 1            |
| 14.        | 50030151            | 1/4 WATT, 5%, 22K OHM, RESISTOR      | 4            |
| 15.        | 50030093            | 1/4 WATT, 5%, 27K OHM, RESISTOR      | 1            |
| 16.        | 50030148            | 1/4 WATT, 5%, 39K OHM, RESISTOR      | 8            |
| 17.        | 50030150            | 1/4 WATT, 5%, 47K OHM, RESISTOR      | 2            |
| 18.        | 50030146            | 1/4 WATT, 5%, 15K OHM, RESISTOR      | 1            |
| 19.        | 50030003            | 1/4 WATT, 5%, .330K OHM, RESISTOR    | 1            |
| 20.        | 50040208            | 100V, .047Mf, MYLAR CAPACITOR        | 3            |
| 21.        | 50040001            | 25V, .1mf, CERAMIC CAPACITOR         | 84           |
| 22.        | 50040049            | 25V, .01mf, CERAMIC CAPACITOR        | 1            |
| 23.        | 50040209            | 100V, 100Pf, MICA CAPACITOR          | 1            |
| 24.        | 50060060            | 25V, 10mf, ELECTROLYTIC, AXIAL CAP.  | 2            |
| 25.        | 50060189            | 25V, 470mf, ELECTROLYTIC, AXIAL CAP. | 2            |
| 26.        | 50100042            | IN 751, DIODE                        | 1            |

C.P.U. BOARD ASS'YPARTS LIST

| <u>NO.</u> | <u>PART NUMBER:</u> | <u>DESCRIPTION:</u>                    | <u>QNTY.</u> |
|------------|---------------------|--|--------------|
| 27.        | 50100008            | LED                                    | 1            |
| 28.        | 50070023            | 12.096 Mhz, CRYSTAL                    | 1            |
| 29.        | 50370004            | TEST POINT                             | 26           |
| 30.        | 50130034            | 8 POSITION DIP SWITCH, SPST            | 2            |
| 31.        | 50020010            | 2N 3643, TRANSISTOR (Q-4)              | 1            |
| 32.        | 50020024            | 2N 3904, TRANSISTOR (Q-2,7,8,9)        | 4            |
| 33.        | 50020046            | 2N 3906, TRANSISTOR (Q-1,6)            | 2            |
| 34.        | 50020134            | 2N 6044, TRANSISTOR (Q-3,5)            | 2            |
| 35.        | 50010254            | LM 324, I.C. (L-11)                    | 1            |
| 36.        | 50010046            | LM 339, I.C. (M-11)                    | 1            |
| 37.        | 50010019 S          | 74S74, I.C. (K-8)                      | 1            |
| 38.        | 50010002 LS         | 74LS00, I.C. (K-3,H-5,N-8)             | 3            |
| 39.        | 50010004 S          | 74S02, I.C. (R-4)                      | 1            |
| 40.        | 50010005            | 7404, I.C. (R-2)                       | 1            |
| 41.        | 50010005 S          | 74S04, I.C. (R-3)                      | 1            |
| 42.        | 50010005 LS         | 74LS04, I.C. (P-3,J-6,H-8)             | 3            |
| 43.        | 50010142            | 7407, I.C. (B-12,D-12,F-12)            | 3            |
| 44.        | 50010096 S          | 74S08, I.C. (A-6,R-8)                  | 2            |
| 45.        | 50010096 LS         | 74LS08, I.C. (E-3,K-4,10,R-6,P-8,B-11) | 6            |
| 46.        | 50010007 LS         | 74LS10, I.C. (J-8)                     | 1            |
| 47.        | 50010161 LS         | 74LS11, I.C. (J-7,N-10)                | 2            |
| 48.        | 50010170 LS         | 74LS14, I.C. (J-2)                     | 1            |
| 49.        | 50010009            | 7425, I.C (R-5)                        | 1            |
| 50.        | 50010105 S          | 74S32, I.C. (F-3)                      | 1            |
| 51.        | 50010105 LS         | 74LS32, I.C. (J-5,L-10,M-10,N-11,R-9)  | 5            |
| 52.        | 50010014 LS         | 74LS42, I.C. (H-3,H-4)                 | 2            |



C.P.U. BOARD ASS'YPARTS LIST

| <u>NO.</u> | <u>PART NUMBER:</u> | <u>DESCRIPTION:</u>                                     | <u>QNTY.</u> |
|------------|---------------------|---|--------------|
| 53.        | 50010019            | 7474, I.C. (L-2)  | 1            |
| 54.        | 50010019 LS         | 74LS74, I.C. (L-3)                                      | 1            |
| 55.        | 50010021 LS         | 74LS83, I.C. (B-5,C-5,C-7,E-7)                          | 4            |
| 56.        | 50010022 LS         | 74LS86, I.C. (H-7)                                      | 1            |
| 57.        | 50010023            | 7490, I.C. (J-3)  | 1            |
| 58.        | 50010368            | 74125, I.C. (J-10)                                      | 1            |
| 59.        | 50010192 LS         | 74LS139, I.C. (H-2, J-4,P-4)                            | 3            |
| 60.        | 50010045 LS         | 74LS157, I.C. (E-5,F-5,7,9,10,L-5,6,7,H-6,10)           | 10           |
| 61.        | 50010035 LS         | 74LS161, I.C. (K-5,P-6,7,R-7,C-8,D-8,9,E-8,<br>F-8,J-9) | 10           |
| 62.        | 50010369            | 74163, I.C. (M-2,3,N-2,3,P-2)                           | 5            |
| 63.        | 50010221 LS         | 74LS163A, I.C. (L-8,M-8)                                | 2            |
| 64.        | 50010085 LS         | 74LS164, I.C. (C-9,A-10)                                | 2            |
| 65.        | 50010139 LS         | 74LS175, I.C. (M-4,A-5)                                 | 2            |
| 66.        | 50010139 S          | 74S175, I.C. (K-9)                                      | 1            |
| 67.        | 50010289 LS         | 74LS195, I.C. (A-9,B-9,B-10)                            | 3            |
| 68.        | 50010273 LS         | 74LS244, I.C. (B-1,C-1,E-2,F-2,M-5)                     | 5            |
| 69.        | 50010359 LS         | 74LS251, I.C. (R-12)                                    | 1            |
| 70.        | 50010261 LS         | 74LS273, I.C. (D-5,7,10,K-6,7,A-7,B-7,R-10)             | 8            |
| 71.        | 50010252 LS         | 74LS374, I.C. (N-5,J-12)                                | 2            |
| 72.        | 50010335 LS         | 27LS00, I.C. (L-9,M-9,N-9,P-9,10)                       | 5            |
| 73.        | 50010230            | 2101A-2, I.C. (B-6,C-6,D-6,E-6,9,10,F-6)                | 7            |
| 74.        | 50010310            | 2114, (E-4,F-4)   | 2            |
| 75.        | 50010366            | 6502A, (C-2)  | 1            |
| 76.        | 50010367            | POKEY, (C-3,4,D-3,4)                                    | 2            |
| 77.        | 50010361            | 82S25, RAM (F-11,H-11,N-6,7)                            | 4            |
| 78.        | 50010362            | 82S123, PROM (C-11,D-11)                                | 2            |

C.P.U. BOARD ASS'YPARTS LIST

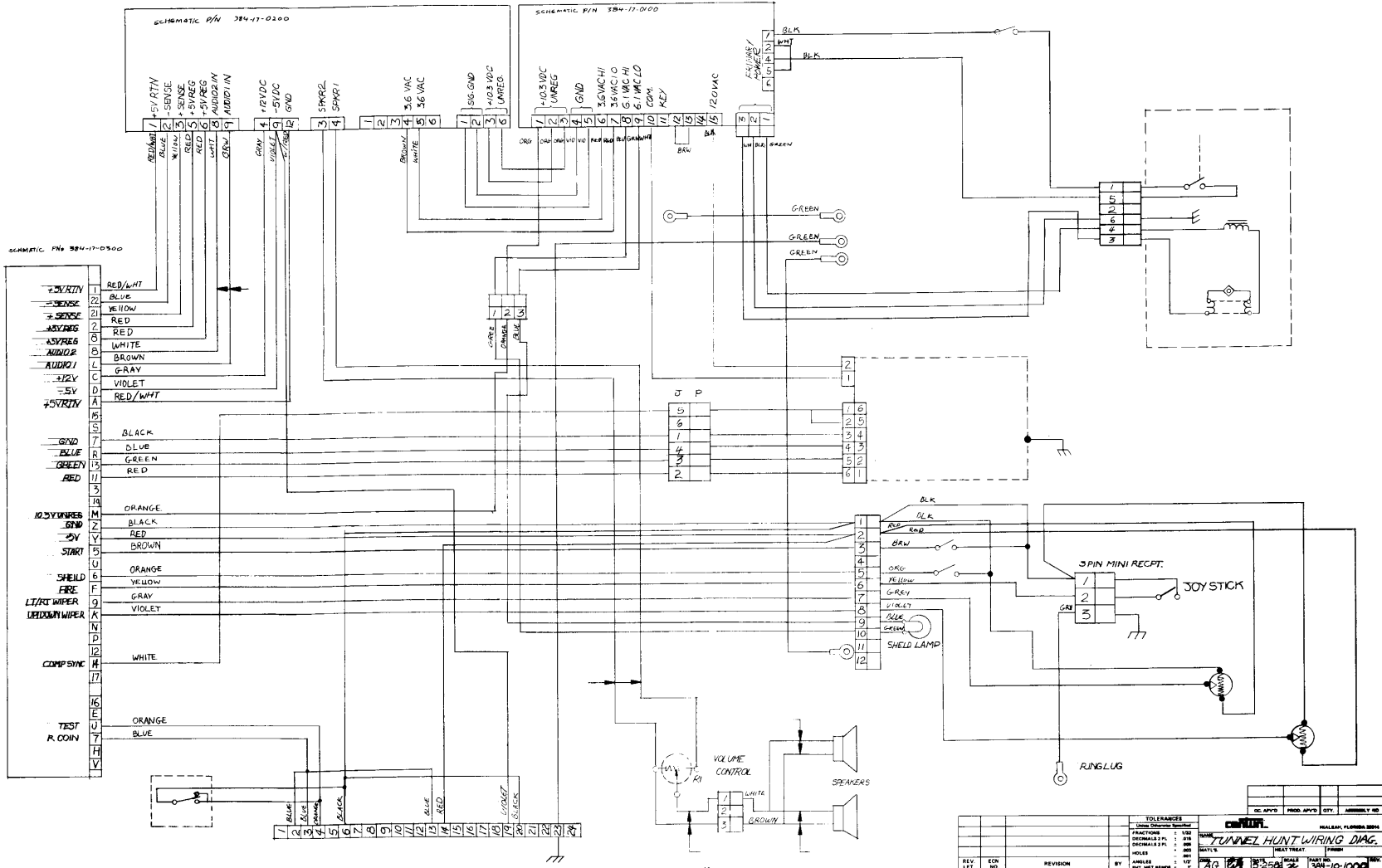
| <u>NO.</u> | <u>PART NUMBER:</u> | <u>DESCRIPTION:</u>           | <u>QNTY.</u> |
|------------|---------------------|-------------------------------|--------------|
| 79.        | 50010363            | 82S129, PROM (N-4)            | 1            |
| 80.        | 50010364            | 82S131, PROM (A-8,B-8)        | 2            |
| 81.        | 50010365            | 82S137, PROM (H-9,C-10)       | 2            |
| 82.        | 50010171            | 2716, EPROM                   | 6            |
| 83.        | 50150111            | 16 PIN I.C. SOCKET SOLDERTAIL | 7            |
| 84.        | 50150060            | 40 PIN I.C. SOCKET SOLDERTAIL | 1            |
| 85.        | 50150061            | 24 PIN I.C. SOCKET SOLDERTAIL | 6            |

REG/AUDIO P.C.B. ASS'YPARTS LIST

| <u>NO.</u> | <u>PART NUMBER:</u> | <u>DESCRIPTION:</u>                           | <u>QNTY.</u> |
|------------|---------------------|---|--------------|
| 1.         | 50030231            | 2.7 OHM, 1 WATT, 5%, RESISTOR                 | 1            |
| 2.         | 50030357            | 4 OHM, 5 WATT, 5%, WIREWOUND RESISTOR         | 1            |
| 3.         | 50030358            | .1 OHM, 7 WATT, 3%, WIREWOUND RESISTOR        | 1            |
| 4.         | 50120021            | 1K OHM, VERT. P.C.B. MOUNTING CERMET TRIM POT | 1            |
| 5.         | 50030345            | 1 OHM, 1/4 WATT, 5%, RESISTOR                 | 2            |
| 6.         | 50030019            | 10 OHM, 1/4 WATT, 5%, RESISTOR                | 4            |
| 7.         | 50030256            | 100 OHM, 1/4 WATT, 5%, RESISTOR               | 3            |
| 8.         | 50030051            | 1K OHM, 1/4 WATT, 5%, RESISTOR                | 2            |
| 9.         | 50030063            | 10K OHM, 1/4 WATT, 5%, RESISTOR               | 2            |
| 10.        | 50030014            | 270 OHM, 1/4 WATT, 5%, RESISTOR               | 1            |
| 11.        | 50030101            | 33 OHM, 1/4 WATT, 5%, RESISTOR                | 1            |
| 12.        | 50030005            | 3.9K OHM, 1/4 WATT, 5%, RESISTOR              | 1            |
| 13.        | 50030149            | 5.6K OHM, 1/4 WATT, 5%, RESISTOR              | 2            |
| 14.        | 50030359            | 7.5K OHM, 1/4 WATT, 5%, RESISTOR              | 1            |
| 15.        | 50030094            | 220 OHM, 1/2 WATT, 5%, RESISTOR               | 2            |
| 16.        | 50030360            | 22 OHM, 10 WATT, 5%, WIREWOUND RESISTOR       | 1            |
| 17.        | 50060222            | 1000uf, AXIAL ELECTROLYTIC @ 25V, CAP.        | 1            |
| 18.        | 50060189            | 470uf, AXIAL ELECTROLYTIC @ 25V, CAP.         | 3            |
| 19.        | 50060223            | 22uf, AXIAL ELECTROLYTIC @ 35V, CAP.          | 2            |
| 20.        | 50060224            | 3300uf, AXIAL ELECTROLYTIC @ 35V, CAP.        | 4            |
| 21.        | 50060095            | 1uf, AXIAL ELECTROLYTIC @ 50V, CAP.           | 2            |
| 22.        | 50040001            | .1uf, CERAMIC DISC, RADIAL @ 25V, CAP.        | 4            |
| 23.        | 50040049            | .01uf, CERAMIC DISC, RADIAL @ 25V, CAP.       | 2            |
| 24.        | 50040206            | .001uf, CERAMIC DISC, RADIAL @ 25V, CAP.      | 3            |
| 25.        | 50040207            | .22uf, CERAMIC DISC, RADIAL @ 25V, CAP.       | 4            |
| 26.        | 50100028            | IN 4002 DIODE                                 | 2            |

REG/AUDIO P.C.B. ASS'yPARTS LIST

| <u>NO.</u> | <u>PART NUMBER:</u> | <u>DESCRIPTION:</u>                    | <u>QNTY.</u> |
|------------|---------------------|--|--------------|
| 27.        | 50100101            | IN 5401 DIODE                          | 4            |
| 28.        | 50020131            | TIP 32, TRANSISTOR                     | 1            |
| 29.        | 50020037            | 2N 3055, TRANSISTOR                    | 1            |
| 30.        | 50020132            | LM 305, 5V, REGULATOR                  | 1            |
| 31.        | 50010258            | 7812 + 12V, REGULATOR                  | 1            |
| 32.        | 50020133            | 7905 - 5V, REGULATOR                   | 1            |
| 33.        | 50010360            | TDA 2002 A, 8 WATT, AMPLIFIER          | 2            |
| 34.        | 50150196            | 9 PIN MOLEX RECEPTACLE W/EARS OR TABS  | 1            |
| 35.        | 50150195            | 12 PIN MOLEX RECEPTACLE W/EARS OR TABS | 1            |
| 36.        | 50150336            | 4 PIN MOLEX RECEPTACLE W/EARS          | 1            |
| 37.        | 50150194            | 6 PIN MOLEX RECEPTACLE W/EARS OR TABS  | 2            |
| 38.        | 50270104            | THERMO COMPOUND                        | A/R          |
| 39.        | 50370002            | THERMO CONDUCTIVE SILICON INSULATOR    | 5            |
| 40.        | 50370003            | TO-3 SILICON INSULATOR                 | 1            |
| 41.        | 50150247            | FEMALE PINS MOLEX, P.C.B. MOUNT        | 37           |
| 42.        | 10010032            | 6-32x1/2 PA/PH/MS                      | 4            |
| 43.        | 10150003            | 6-32 KEP NUT                           | 4            |
| 44.        | 10010146            | 6-32x3/8" NYLON SCREW                  | 5            |
| 45.        | 384-03-0600         | HEAT SINK                              | 1            |
| 46.        | 50370004            | TEST POINT                             | 14           |
| 47.        | 50210251            | REG/AUDIO II P.C.B. (BARE)             | 1            |



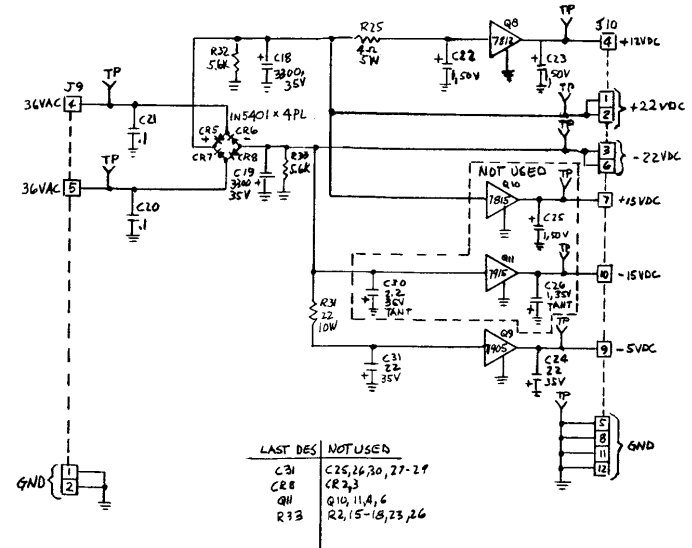
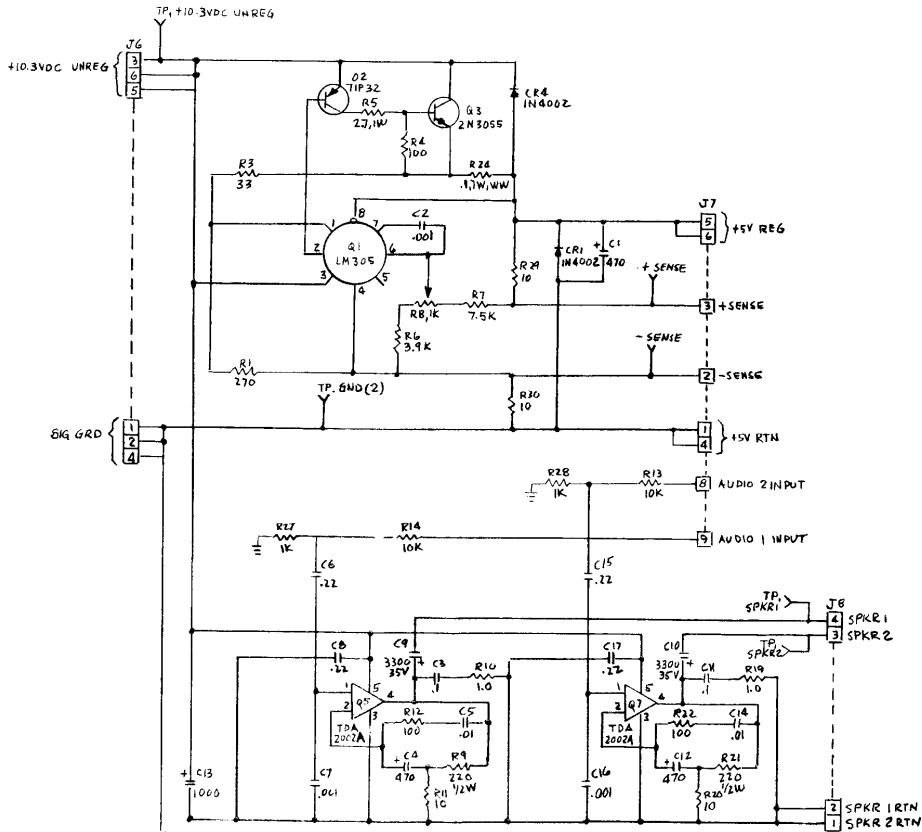
SCHEMATIC P/N 384-17-0300

|    |         |
|----|---------|
| 1  | RED/WHT |
| 2  | BLUE    |
| 3  | YELLOW  |
| 4  | RED     |
| 5  | WHITE   |
| 6  | BROWN   |
| 7  | GRAY    |
| 8  | VIOLET  |
| 9  | RED/WHT |
| 10 | BLACK   |
| 11 | BLACK   |
| 12 | RED     |
| 13 | ORANGE  |
| 14 | BLACK   |
| 15 | RED     |
| 16 | BROWN   |
| 17 | ORANGE  |
| 18 | YELLOW  |
| 19 | GRAY    |
| 20 | VIOLET  |
| 21 | WHITE   |
| 22 | WHITE   |
| 23 | ORANGE  |
| 24 | BLUE    |

| REV | LET | CON | NO | REVISION | BY | DATE | TESTED | DATE | APPROVED | DATE |
|-----|-----|-----|----|----------|----|------|--------|------|----------|------|
|     |     |     |    |          |    |      |        |      |          |      |
|     |     |     |    |          |    |      |        |      |          |      |
|     |     |     |    |          |    |      |        |      |          |      |
|     |     |     |    |          |    |      |        |      |          |      |

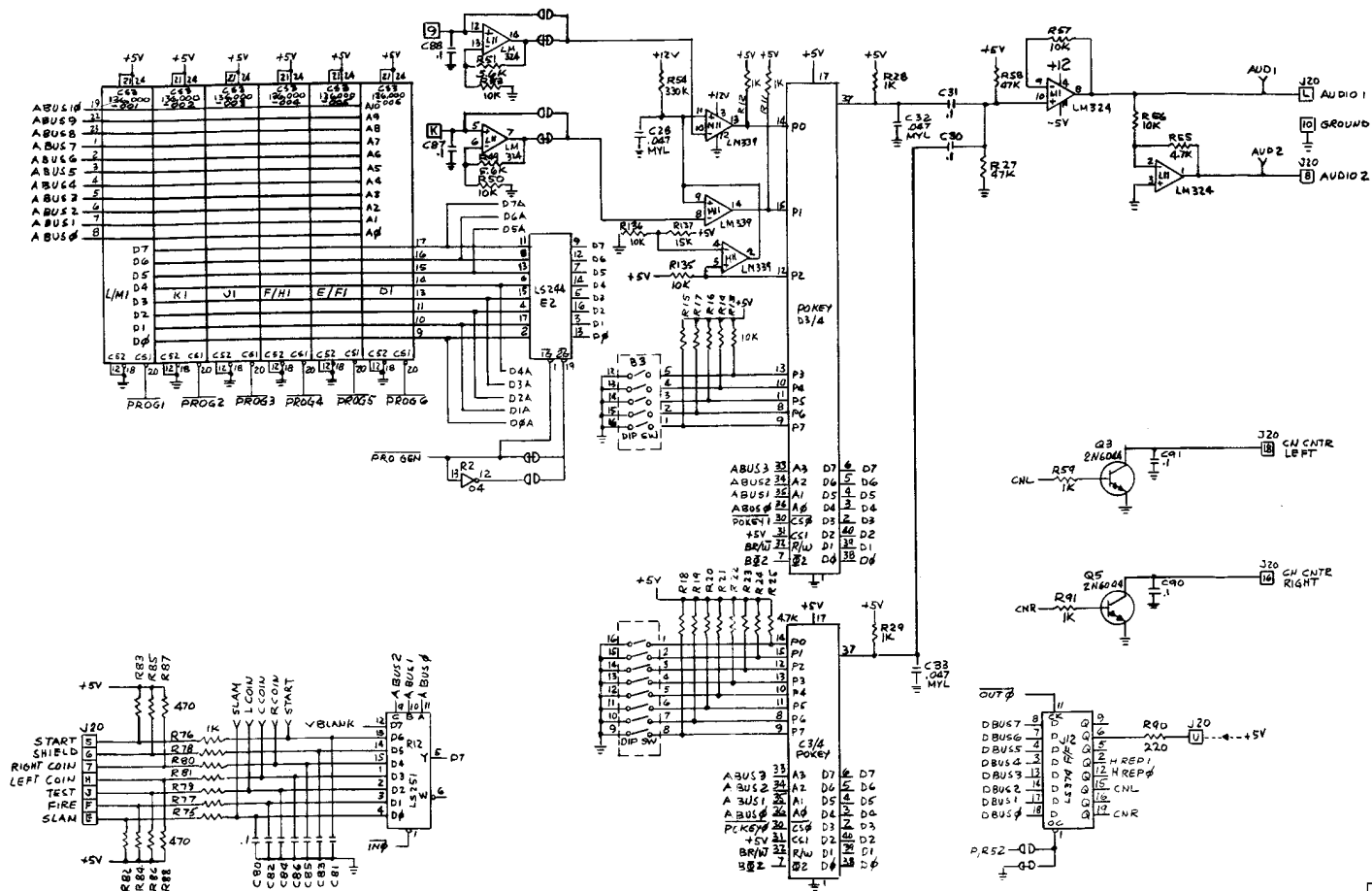
| TOLERANCES    |      | UNLESS OTHERWISE SPECIFIED |         |
|---------------|------|----------------------------|---------|
| FRONT         | 1/2  | DATE                       | 3/20/00 |
| DRILLING      | ±.01 | DESIGNED BY                | AG      |
| OPERATION     | ±.01 | TESTED BY                  | AG      |
| HOLD          | ±.01 | DATE                       | 3/20/00 |
| FINISH        | ±.01 | TESTED                     | 3/20/00 |
| ANODE         | ±.01 | DATE                       | 3/20/00 |
| DRY NET MOUNT | ±.01 | DATE                       | 3/20/00 |



LAST DES NOT USED  
 C31 C25, 26, 30, 27-29  
 CR8 CR2, 3  
 Q10 Q11, 4, 6  
 R13 R2, 15-18, 23, 26

| QC. AP'V'D | PROD. AP'V'D | QTY. | ASSEMBLY NO |
|------------|--------------|------|-------------|
|            |              |      |             |

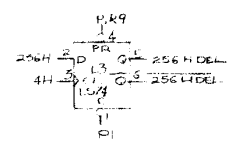
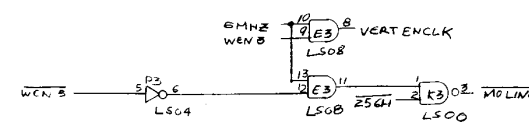
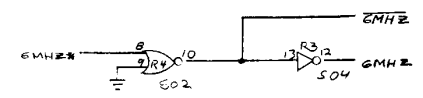
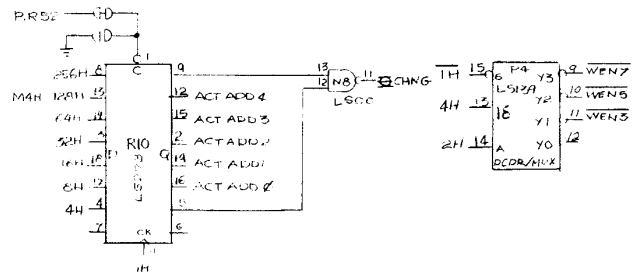
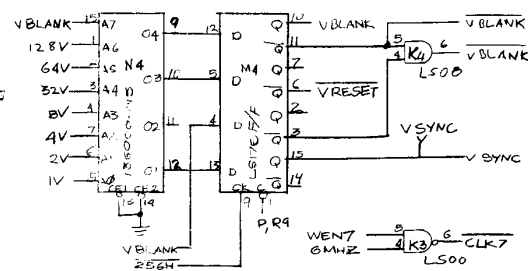
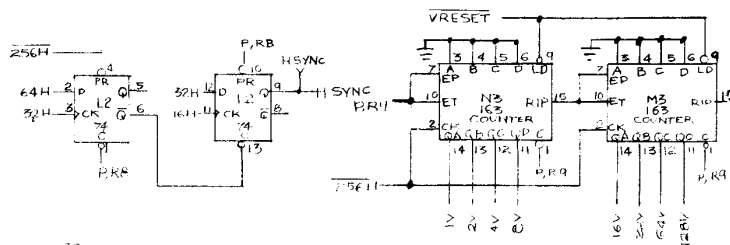
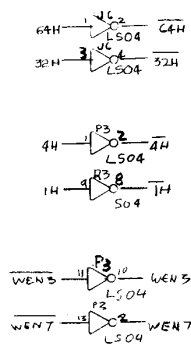
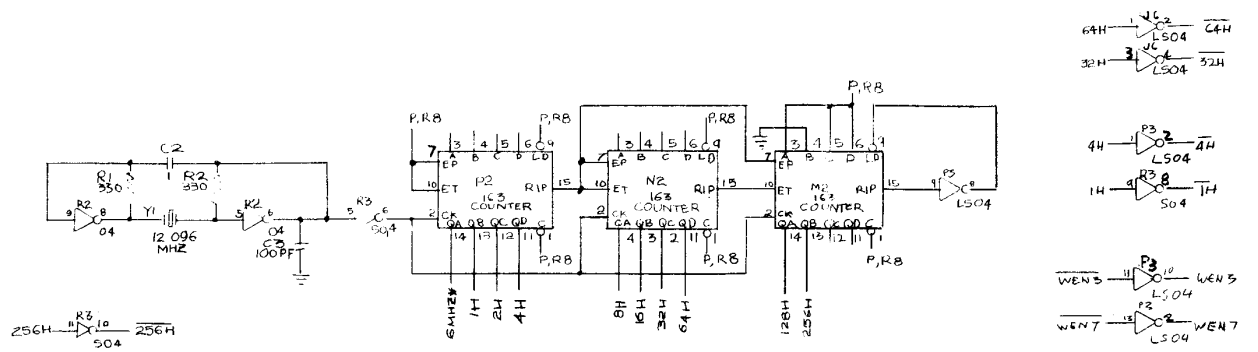
| REV. | ECN NO. | REVISION | BY | TOLERANCES<br>Unless Otherwise Specified | centuri inc.<br>NAME<br>SCHEMATIC, REGULATOR/AUDIO II P.C. BD | HIALEAH, FLORIDA 33014 |
|------|---------|----------|----|--|---|------------------------|
|      |         |          |    | FRACTIONS ± 1/32                         | MAT'L'S.  | HEAT TREAT.            |
|      |         |          |    | DECIMALS 2 PL ± .015                     | FINISH  |                        |
|      |         |          |    | DECIMALS 3 PL ± .005                     | DWN. AAN  | DATE 5-17-82           |
|      |         |          |    | HOLES + .003                             | SCALE   | PART NO. 384-17-0200   |
|      |         |          |    | ANGLES ± 1/2°                            | REV.  |                        |
|      |         |          |    | SHT. MET BENDS ± 2°                      |   |                        |



| DC. AP'VD | PROD. AP'VD | QTY. | ASSEMBLY NO |
|-----------|-------------|------|-------------|
|           |             |      |             |

| TOLERANCES                 |   |      |  |
|----------------------------|---|------|--|
| Unless Otherwise Specified |   |      |  |
| FRACTIONS                  | ± | 1/32 |  |
| DECIMALS 2 PL.             | ± | .015 |  |
| DECIMALS 3 PL.             | ± | .005 |  |
| Holes                      | ± | .003 |  |
| ANGLES                     | ± | .001 |  |
| SHT. MET BENDS             | ± | 1/2° |  |

|                                      |               |                        |      |
|--------------------------------------|---------------|------------------------|------|
| <b>centurion</b>                     |               | HIALEAH, FLORIDA 33014 |      |
| NAME: SCHEMATIC TUNNEL HUNT PCB. BD. |               |                        |      |
| MAT'L'S.                             | HEAT TREAT.   | FINISH                 |      |
| DOWN: AAN                            | DATE: 5-18-82 | SCALE: 394-17-0300     | REV. |



|           |             |      |              |
|-----------|-------------|------|--------------|
| QC. APV'D | PROD. APV'D | QTY. | ASSEMBLY NO. |
|-----------|-------------|------|--------------|

| REV. LET. | ECN NO. | REVISION | BY | TOLERANCES<br>Unless Otherwise Specified   | DATE     | SCALE | PART NO.    | REV. |
|-----------|---------|----------|----|--|----------|-------|-------------|------|
|           |         |          |    | FRACTIONS ± 1/32<br>DECIMALS 2 PL ± .015<br>DECIMALS 3 PL ± .005<br>HOLES + .003<br>ANGLES ± .001<br>SHT. MET BENDS ± 2° | 02/20/82 | 1/2   | 384-17-0300 |      |

**centurion** HIALEAH, FLORIDA 33014

NAME: SCHEMATIC TUNNEL HUNT.PC.

MATT'L'S: HEAT TREAT: FINISH:

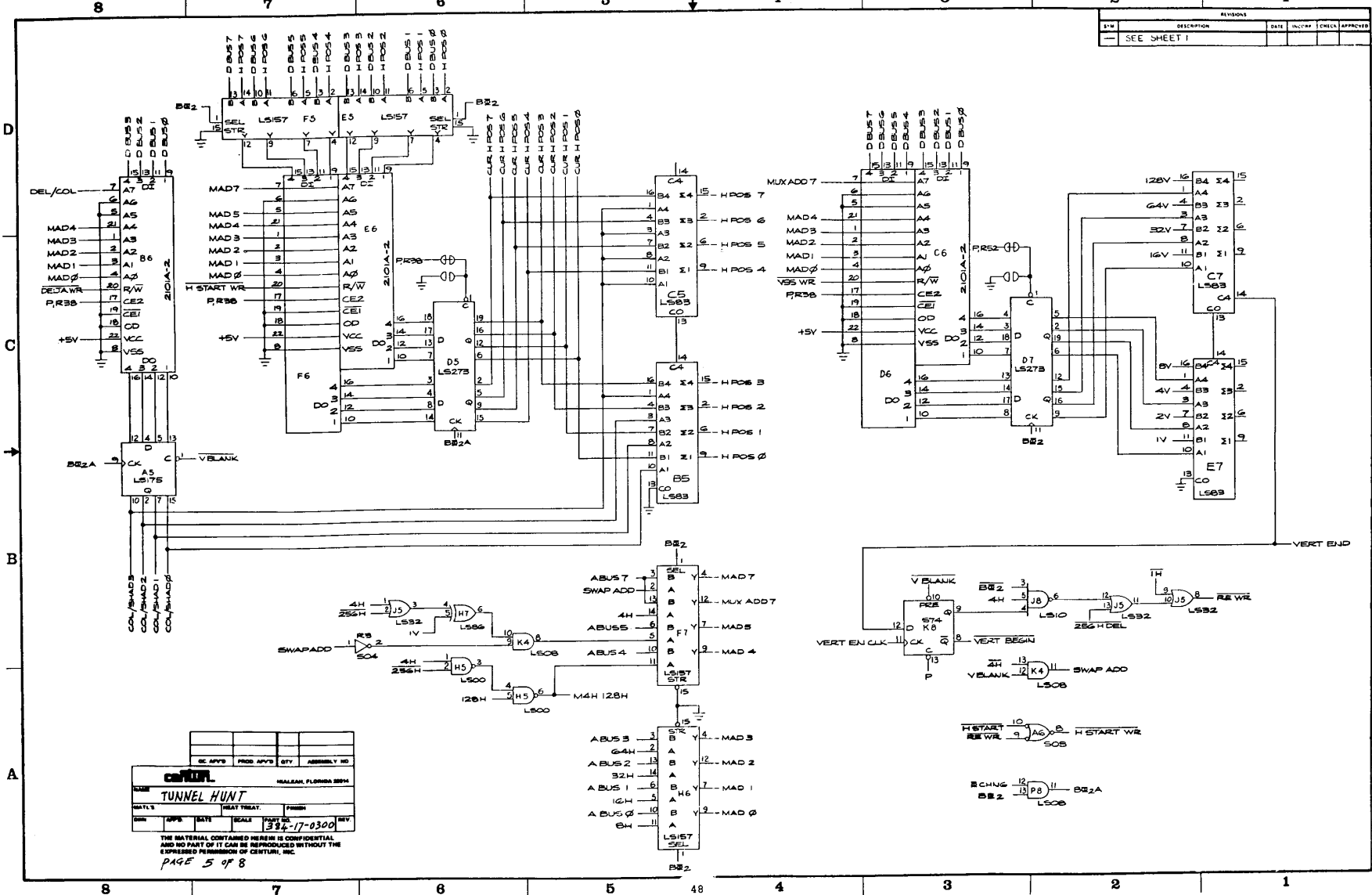
OWN: ALBERTO DAYE 02/20/82 SCALE: 1/2





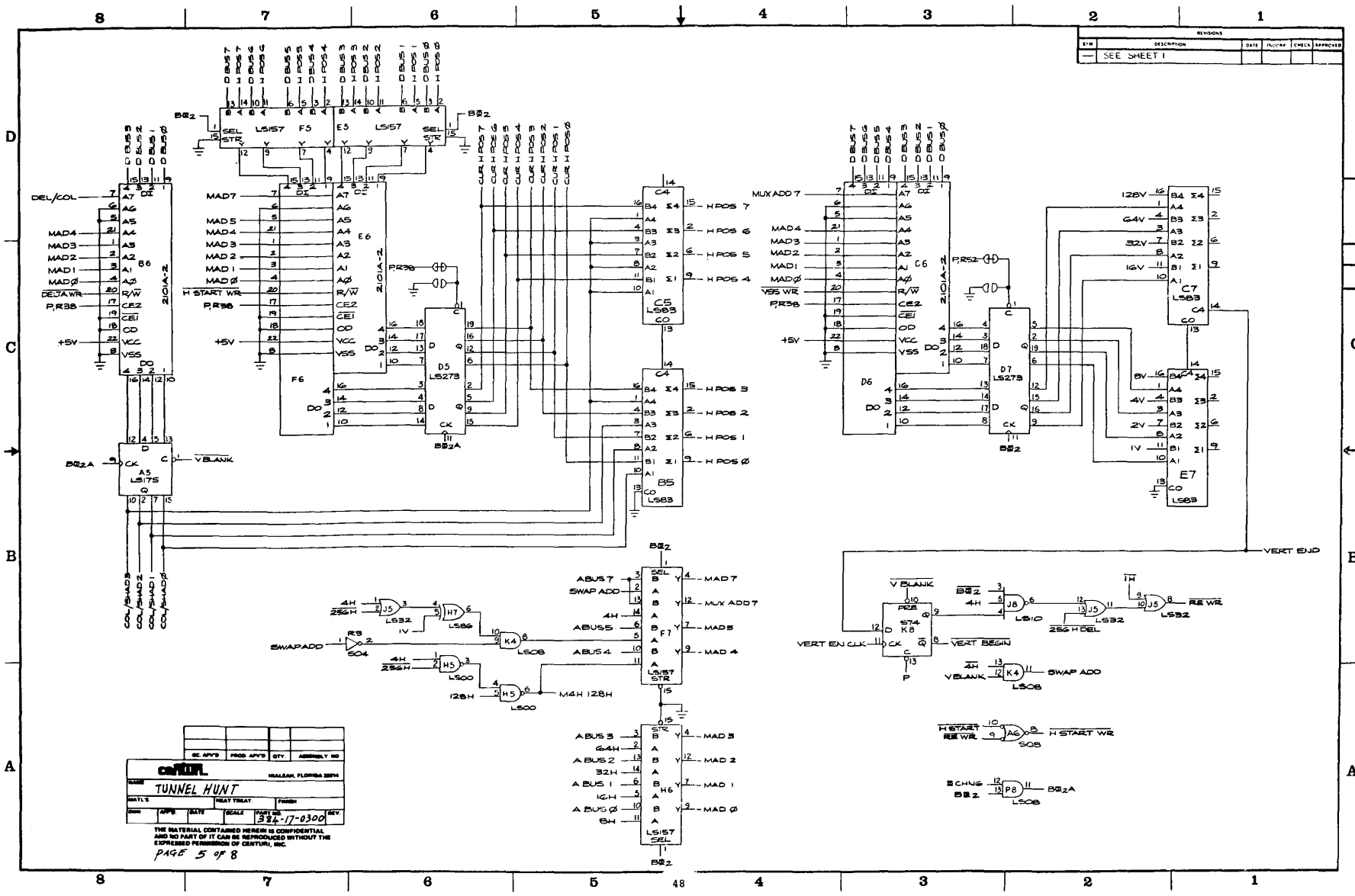


| REVISONS |             | DATE | INCHG | CHECK | APPROVED |
|----------|-------------|------|-------|-------|----------|
| 1        | SEE SHEET 1 |      |       |       |          |



|   |           |     |             |
|---|-----------|-----|-------------|
| IC APPS   | PROD APPS | QTY | ASSEMBLY NO |
|   |           |     |             |
| <b>CENTRAL</b>  |           |     |             |
| TUNNEL HUNT   |           |     |             |
| MADE IN FLORIDA 32941   |           |     |             |
| DATE  | SCALE     | REV | REV         |
| 1974-11-15  | 1:1       | 1   | 1           |
| 332-17-0300   |           |     |             |
| THE MATERIAL CONTAINED HEREIN IS CONFIDENTIAL AND NO PART OF IT CAN BE REPRODUCED WITHOUT THE EXPRESSED PERMISSION OF CENTRAL, INC. |           |     |             |
| PAGE 5 OF 8   |           |     |             |

| REV | DESCRIPTION | DATE | INITIAL | CHECK | APPROVAL |
|-----|-------------|------|---------|-------|----------|
| 1   | SEE SHEET 1 |      |         |       |          |

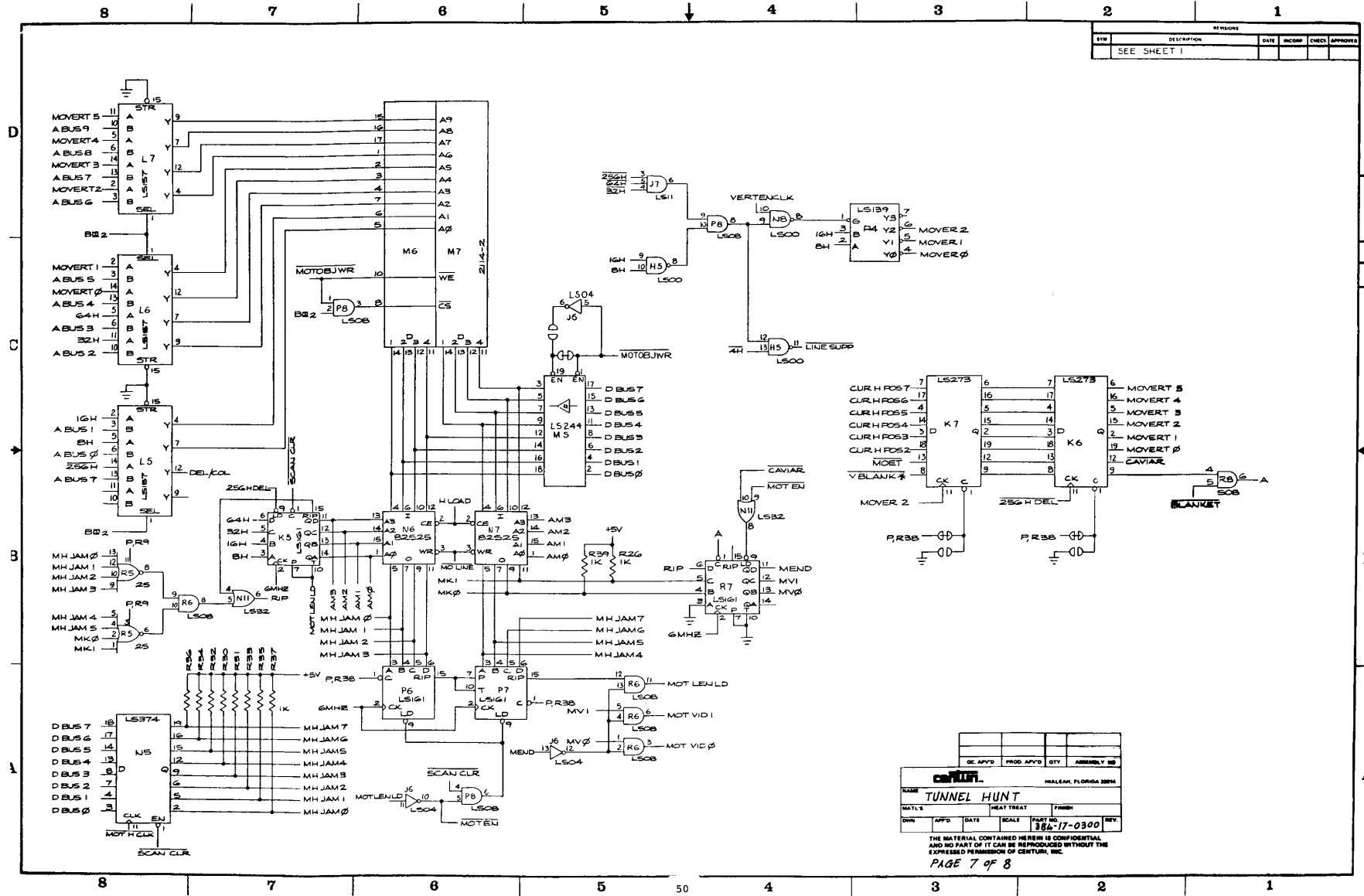


| REV | DATE         | SCALE | PART NO | REV |
|-----|--------------|-------|---------|-----|
| 1   | 3/22-17-0300 |       |         |     |

**CENTURION**  
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 PAGE 5 OF 8



| REV | DESCRIPTION | DATE | BY | CHKD | APPROVED |
|-----|-------------|------|----|------|----------|
| 1   | SEE SHEET 1 |      |    |      |          |

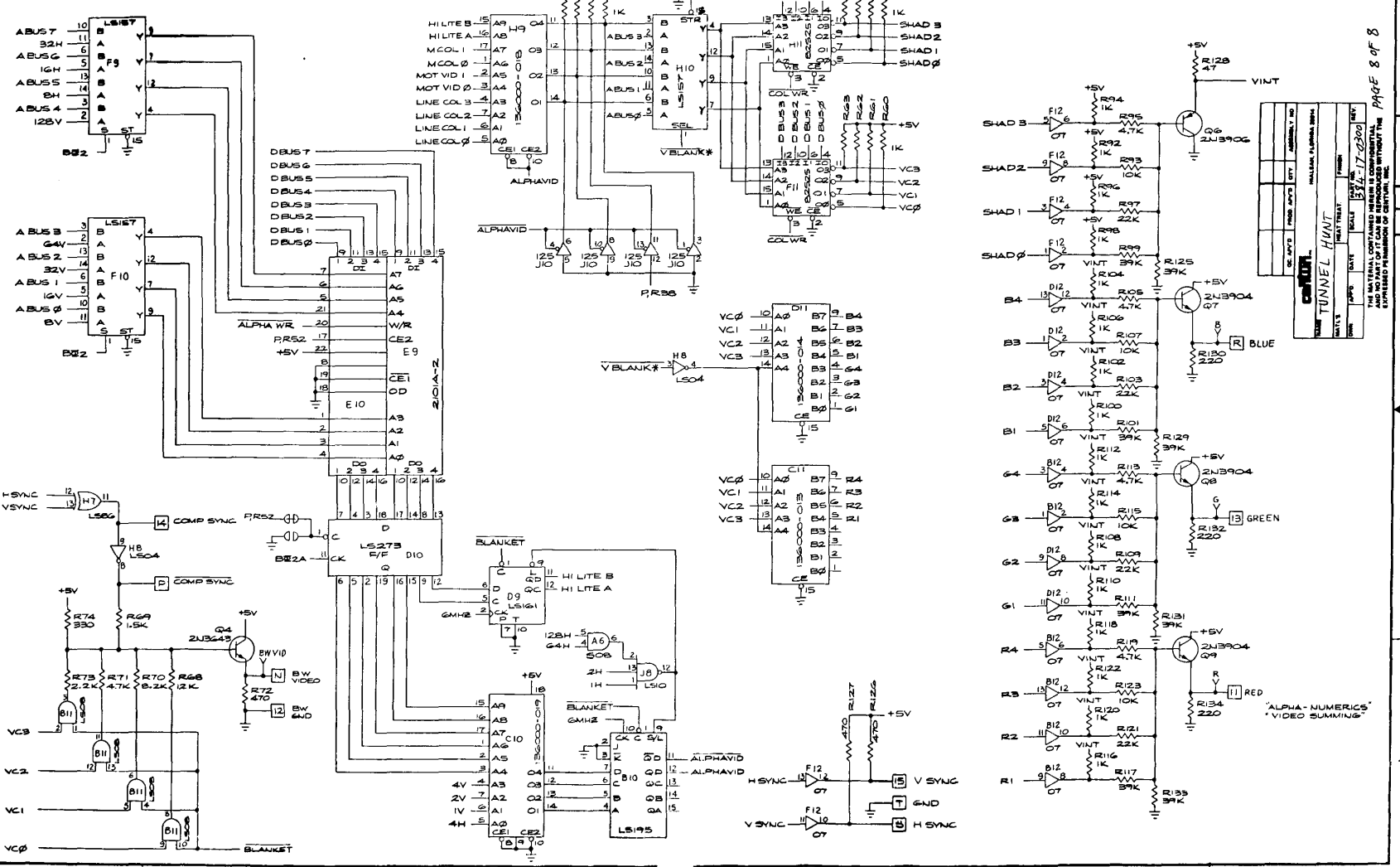


| QC AP'D | PROC AP'D | QTY | ASSEMBLY | DB |
|---------|-----------|-----|----------|----|
|         |           |     |          |    |

NAME: TUNNEL HUNT  
 MAT'L: HEAT TREAT  
 DATE: 38-17-0300  
 SCALE: 1:1  
 PART NO: 38-17-0300  
 REV:

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 PAGE 7 OF 8

| REVISIONS |             |      |       |                 |
|-----------|-------------|------|-------|-----------------|
| REV       | DESCRIPTION | DATE | INCAR | CHECKS + PROJNO |
| 1         | SEE SHEET 1 |      |       |                 |



TUNNEL HUNT  
 THE MATERIAL CONTAINED HEREIN IS CONFIDENTIAL AND IS TO BE CONTAINED THEREIN.  
 DATE: 3/21/77  
 PROJ: 17-0300  
 PAGE 8 OF 8