

MANUAL NO. 901-2167

TRACK & FIELD

©1983

**SERVICE
MANUAL**



INTRODUCTION

"TRACK & FIELD 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 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 OR OUR TOLL FREE LINE LISTED BELOW.

QUESTIONS OR COMMENTS CONCERNING "TRACK & FIELD" 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.)

NOTES

NEVER REPLACE ANY COMPONENT WITH ANYTHING OTHER THAN THE EXACT REPLACEMENT PART.

NEVER REMOVE CIRCUIT BOARD CONNECTIONS WHILE POWER IS ON.

DO NOT REPLACE A FUSE WITH ANYTHING OTHER THAN THE PROPER VALUE.

A BLOWN FUSE INDICATES AN OVERLOAD CONDITION WITHIN THE GAME.

REPLACING A FUSE WITH A HIGHER VALUE CAN CAUSE SEVERE DAMAGE TO INTERNAL COMPONENTS IF AN OVERLOAD OCCURS.

ALWAYS CONSULT THE SERVICE MANUAL BEFORE ATTEMPTING REPAIRS.

PLAY INSTRUCTIONS

- * TAP "RUN" AND THE PLAYER WILL RUN.
- * PUSH "JUMP/THROW" AND THE PLAYER WILL JUMP OR THROW.
- * HOLD "JUMP/THROW" BUTTON DOWN TO INCREASE ANGLE OF JUMP OR THROW.
- * IF YOU DO NOT QUALIFY IN AN EVENT THE GAME IS OVER.

EVENTS

I. 100M DASH:

KEEP TAPPING "RUN" TO INCREASE SPEED.
DISQUALIFICATION FOR 3 FALSE STARTS.

II&III. LONG JUMP & JAVELIN THROW:

KEEP TAPPING "RUN" TO INCREASE SPEED.
PUSH "JUMP/THROW" AT PROPER POSITION AND HOLD TO CONTROL ANGLE.

IV. 110M HURDLE:

TAP "RUN" TO INCREASE SPEED OF RUNNER.
PRESS "JUMP" TO CLEAR HURDLES.

V. HAMMER THROW:

PRESS "RUN" AND RELEASE.
PRESS "THROW" AT PROPER POSITION.
HOLD TO DETERMINE ANGLE OF THROW.

VI. HIGH JUMP:

PUSH "RUN" AND RELEASE.
HIT "JUMP" AT PROPER POSITION.
CHANGE ANGLE OF JUMP BY USING "JUMP" BUTTON AS OFTEN AS YOU LIKE.

OPTIONAL DIP SWITCH SETTINGS

1. Dip Switch No.1 (8P Dip Switch)

Credits

Coin	Plays	SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8
1	1	Off	Off	Off	Off	Off	Off	Off	Off
1	2	On	Off	Off	Off	On	Off	Off	Off
1	3	Off	On	Off	Off	Off	On	Off	Off
1	4	On	On	Off	Off	On	On	Off	Off
1	5	Off	Off	On	Off	Off	Off	On	Off
1	6	On	Off	On	Off	On	Off	On	Off
1	7	Off	On	On	Off	Off	On	On	Off
2	1	On	On	On	Off	On	On	On	Off
2	3	Off	Off	Off	On	Off	Off	Off	On
2	5	On	Off	Off	On	On	Off	Off	On
3	1	Off	On	Off	On	Off	On	Off	On
3	2	On	On	Off	On	On	On	Off	On
3	4	Off	Off	On	On	Off	Off	On	On
4	1	On	Off	On	On	On	Off	On	On
4	3	Off	On	On	On	Off	On	On	On
Free Play		On	On	On	On	On	On	On	On

2. Dip Switch No.2 (8P Dip Switch)

ATHLETES GIVEN

NO. OF ATHLETES	SW1
One	Off
Two	On

EXTENDED ROUND

OPTION	SW2
No extended round permitted	Off
Extended round permitted	On

GAME TYPE

STYLE	SW3	PLAYERS
Table	Off	1 thru 4
Upright	On	1 thru 4

BONUS PLAYER

NO. OF PLAYER	SW4
None	Off
First at 100,000 and every 100,000	On

2. Dip Switch No. 2 continues

RANKING

MEMORY AT POWER UP	SW5
Data entered remains	Off
Data entered erased	On

LEVEL OF DIFFICULTY

OPTIONS	SW6	SW7
Easy	Off	Off
Normal	On	Off
Hard	Off	On
Difficult	On	On

AUDIO ATTRACTION

MUSIC MODE	SW8
MUSIC ON	On
MUSIC OFF	Off

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 HARNESSSES. 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. (REFER TO 110/220 VAC CONVERSION INSTRUCTIONS).

POWER SUPPLY CHASSIS SCHEMATIC INFORMATION AND PARTS LIST ARE INCLUDED IN THIS MANUAL.

110/220 VAC CONVERSION INSTRUCTIONS

THIS GAME CONTAINS A HARNESS CONFIGURATION WHICH ALLOWS THE MACHINE TO BE OPERATED FROM EITHER A 110 VAC OR 220 VAC, 50 HZ OR 60 HZ POWER SOURCE. ALL GAMES SHIPPED FROM CENTURI, INC., ARE IN THE 110 VAC CONFIGURATION. TO CHANGE TO THE 220 VAC CONFIGURATION FOLLOW THE PROCEDURE BELOW.

- FIRST: UNPLUG THE MACHINE FROM THE WALL OUTLET TO COMPLETELY ELIMINATE SHOCK HAZARDS.
- SECOND: REMOVE THE 110 VAC PLUG FROM THE AC POWER CORD AND REPLACE WITH A 220 VAC PLUG. ATTACH THE GREEN WIRE FROM THE AC CORD TO THE GREEN SCREW OF THE 220 VAC PLUG. ATTACH THE WHITE WIRE (NEUTRAL) AND THE BLACK WIRE (HOT) OF THE AC CORD TO THE 220 VAC PLUG.
- THIRD: REMOVE THE SINGLE 3 AMP SLOW-BLOW FUSE FOUND IN THE A.C. DISTRIBUTION BRACKET, AND INSTALL TWO, 1.5 AMP SLOW-BLOW FUSES. NEXT, CUT THE #18 AWG, WHITE JUMPER WIRE AT BOTH ENDS OF THE FUSE HOLDER AND REPLACE THE COVER.
- FOURTH: ON THE GAME POWER TRANSFORMER, LOCATE THE "ORANGE" JUMPER PLUG WHICH IS MARKED, 110 VAC. UNPLUG THE "ORANGE" JUMPER, AND PLUG IN THE "RED" JUMPER PLUG MARKED 220 VAC.

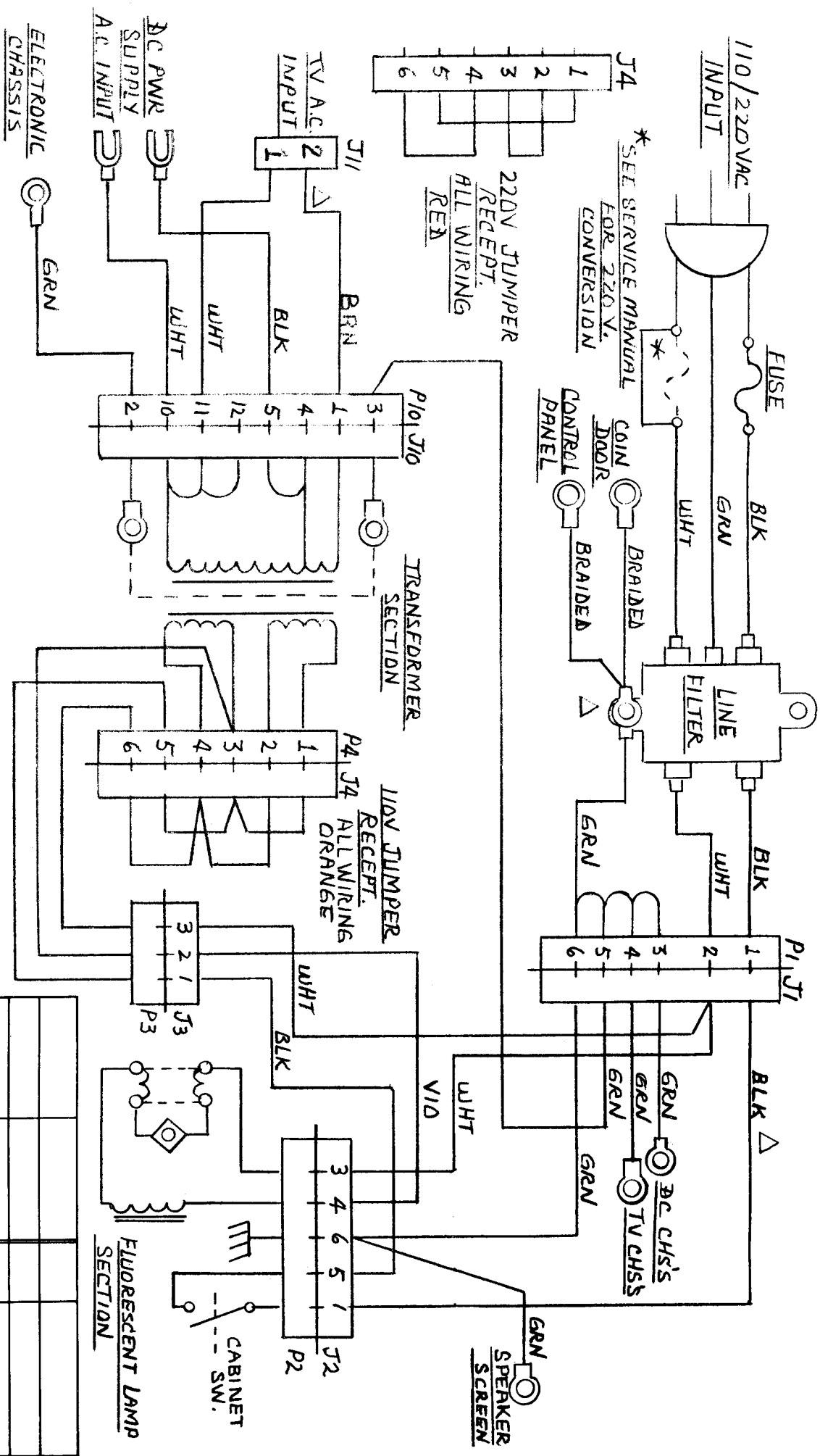
TO REVERT BACK TO 110 VAC, REPLACE THE COMPONENTS ORIGINALLY REMOVED FROM THE PROCEDURE STEPS ABOVE.

***NOTE: THE COMMON SIDE OF THE A.C. LINE MUST NOT BE FUSED IN THE 110 VAC CONFIGURATION, REPLACE THE #18 AWG. WHITE JUMPER WIRE.

(REFER ALSO TO THE 110/220 VAC POWER INTERCONNECT DIAGRAM)

THE MATERIAL CONTAINED HEREIN IS CONFIDENTIAL AND NO PART OF IT CAN BE REPRODUCED WITHOUT THE EXPRESSED PERMISSION OF CENTURI, INC.

FIGURE 1



REV. LET.		ECN NO.		REVISION		BY	
<p style="text-align: center;">TOLERANCES</p> <p style="text-align: center;">Unless Otherwise Specified</p>							
FRACTIONS		±		1/32			
DECIMALS 2 PL		±		.015			
DECIMALS 3 PL		±		.005			
HOLES		+		.003			
ANGLES		-		.001			
SHT. MET BENDS		±		1/2°			
SHT. MET BENDS		±		2°			
<p style="text-align: center;">centuri inc.</p> <p style="text-align: center;">HIALEAH, FLORIDA 33014</p>							
NAME				OC. AP/V/D			
110/220 V. POWER INTERCONNECT DIAGRAM				PROD. AP/V/D			
MATT'L'S.				QTY.			
HEAT TREAT.				ASSEMBLY NO.			
FINISH							
DATE		SCALE		PART NO.		REV.	
10-12-83		K		906-3129		A	
APP'D.		DWN.		M.A.			

ROUTINE MAINTENANCE & SERVICE

BECAUSE OF THE SOLID STATE ELECTRONIC CIRCUITRY, THIS MACHINE SHOULD REQUIRE VERY LITTLE MAINTENANCE, AND ONLY OCCASSIONAL ADJUSTMENT. HOWEVER, IT IS NECESSARY TO TAKE STEPS TO INSURE THIS.

THE VOLUME CONTROL IS LOCATED ON THE PRINTED CIRCUIT BOARD AND CAN BE ACCESSED THROUGH THE REAR CABINET DOOR.

THE VIDEO MONITOR HAS BEEN PROPERLY ADJUSTED BEFORE SHIPPING. OCCASSIONALLY 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 FLORIDA)

#(305) 558-5200 (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 VOLT. 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.

CABINET FRONT VIEW

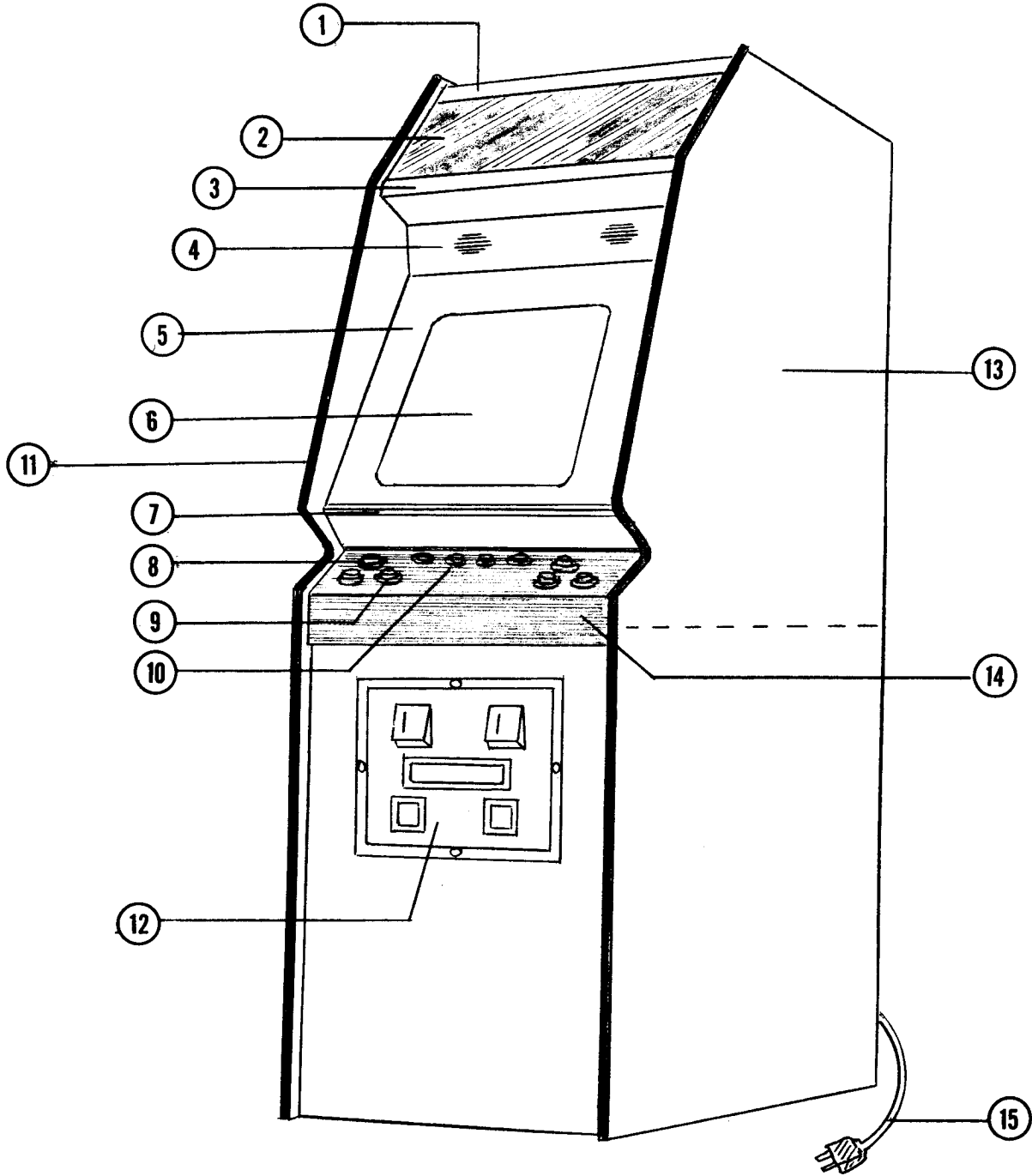


FIGURE-2

CABINET FRONT VIEW

PARTS LIST

<u>ITEM</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1	302-2705	MARQUEE HOLDING BRACKET
2	802-3113	MARQUEE, TRACK & FIELD
3	302-2846	MARQUEE LOWER HOLDING BRACKET
4	403-1171	SPEAKER, 8 OHM, 6 WATT, 5¼ IN. RD.
5	804-3133	MONITOR BEZEL, TRACK & FIELD
6	605-0975	VIEWING GLASS
7	302-2844	FRONT GLASS HOLDING BRACKET
	302-2845	FRONT GLASS REAR HOLDING BRACKET (NOT SHOWN)
8	701-1170	WHITE PUSH BUTTON
9	701-1171	RED PUSH BUTTON
10	701-1181	DARK BLUE PUSH BUTTON
	409-1163	SWITCH W/HOLDER
	103-0951	PAL NUT
11	801-3093	LEFT SIDE DECAL, TRACK & FIELD
12	009-4697	COIN DOOR
13	801-3094	RIGHT SIDE DECAL, TRACK & FIELD
14	801-3095	CONTROL PANEL OVERLAY
15	402-1511	A.C. POWER CORD, 12FT.

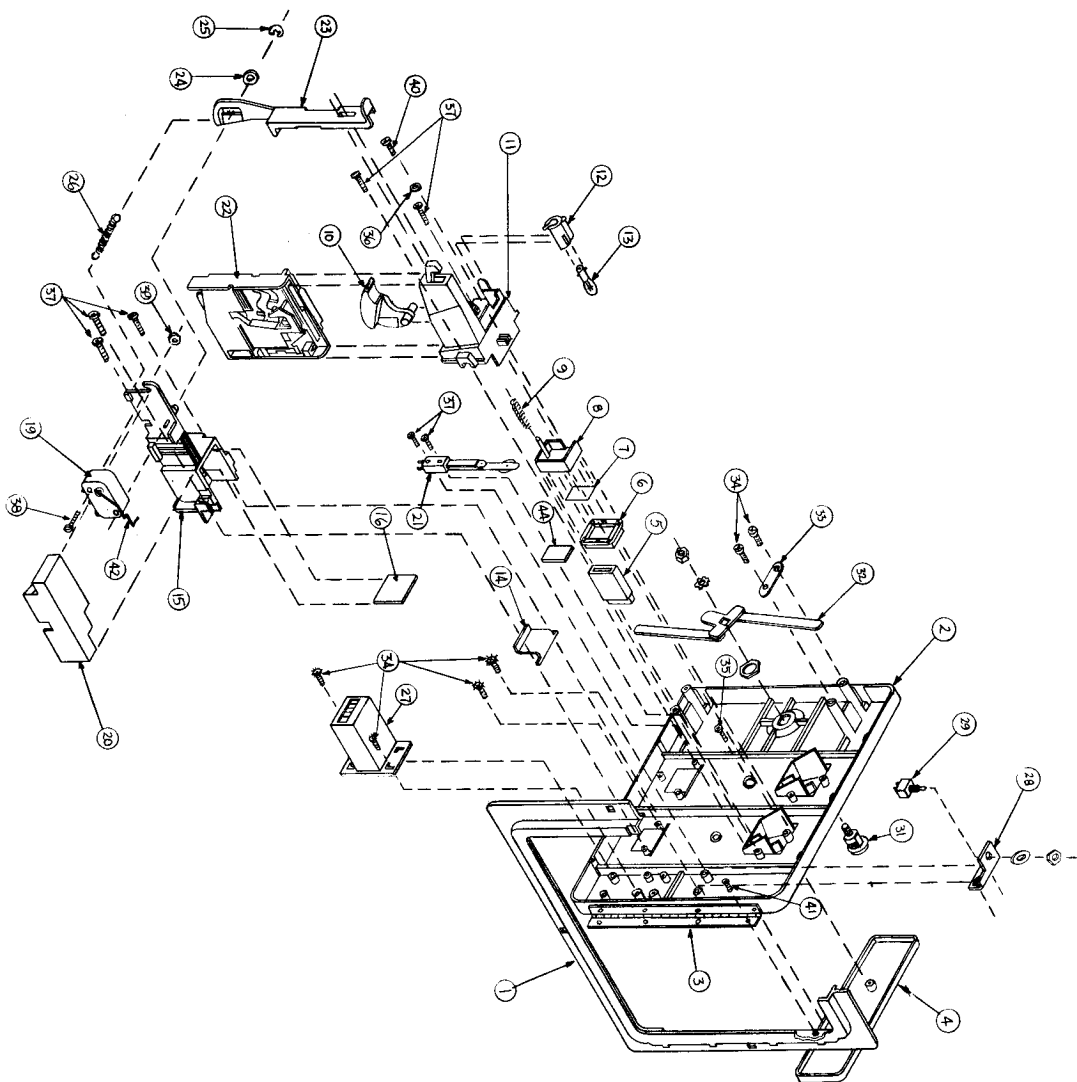


FIGURE 3

MICO PIN 15-8291-02

REV. LET.		ECN NO.		REVISION		BY		DATE		SCALE		PART NO.		REV.	
								8-8-83		N		009-4697			
<p>TOLERANCES</p> <p>Unless Otherwise Specified</p> <p>FRACTIONS ± 1/32</p> <p>DECIMALS ± .015</p> <p>DECIMALS 2 PL ± .005</p> <p>HOLES ± .001</p> <p>ANGLES ± 1/2°</p> <p>SHT. MET BENDS ± 2°</p>								<p>NAME: centuri</p> <p>STD. SINGLE COIN DROPPER w/2 COIN ENTRY</p> <p>FINISH:</p>		<p>OC. APP'D</p> <p>PROD. APP'D</p> <p>QTY.</p> <p>ASSEMBLY NO.</p>		<p>HALEAH, FLORIDA 33014</p>			

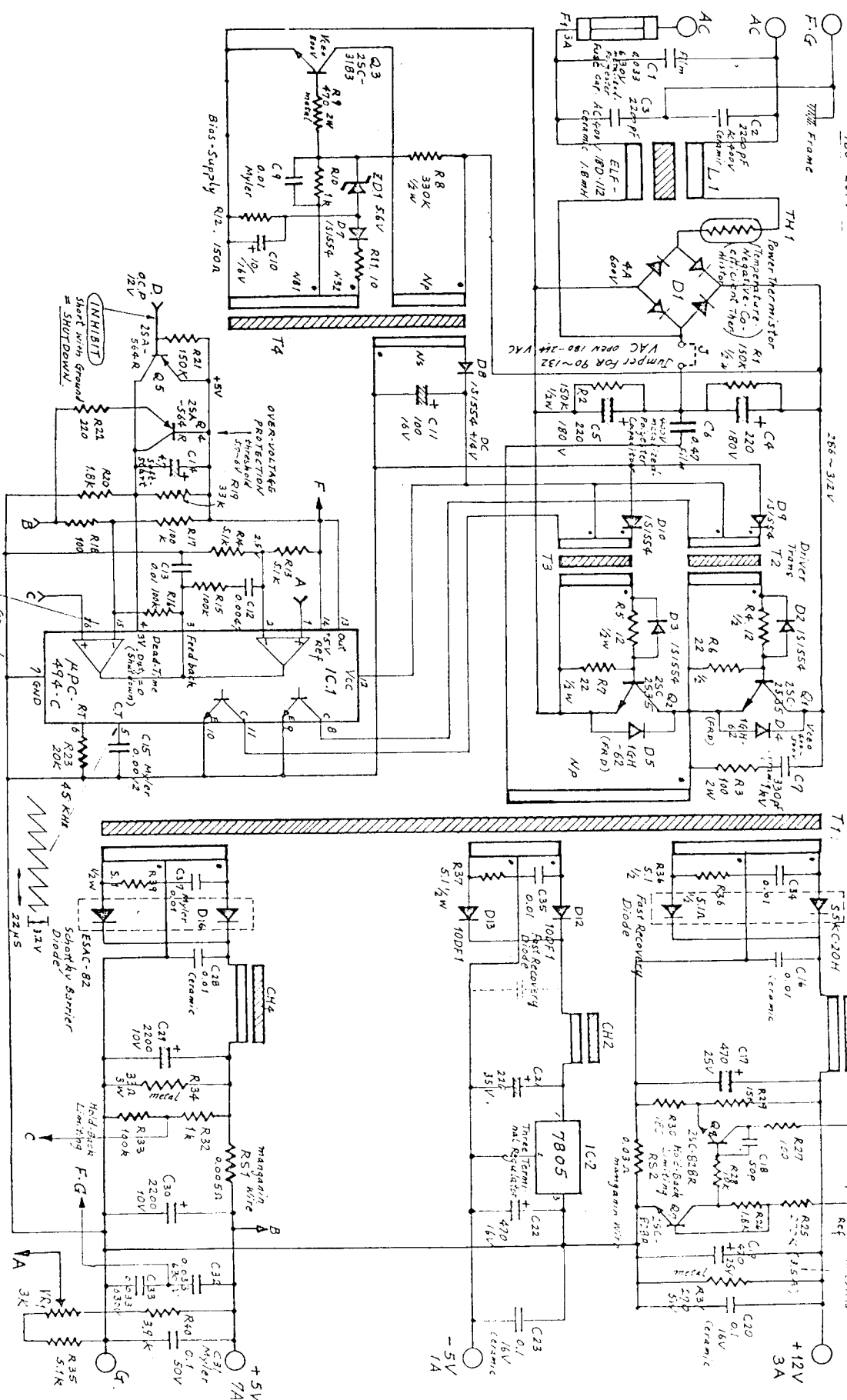
STANDARD COIN DOOR
WICO P/N 15-8281-01

PARTS LIST

<u>ITEM NO.</u>	<u>Wico P/N</u>	<u>Description</u>	<u>Req'd</u>
1	15-8039	Door Frame	1
2	15-8038	Door	1
3	30-9125	Hinge	1
4	15-8117	Nameplate, Centuri	1
5	15-8074	Coin Entry Plate	2
6	15-8072	Push Button, Cover	2
7	26-0583	Label, Push to reject, 25¢	2
8	15-8071	Push Button	2
9	30-7722	Compression Spring	2
10	15-8084	Reject Lever	2
11	15-8075	Coin Chute	2
12	15-9419	Lamp Holder Ass'y	2
13	21-0044	Miniature Lamp, 6V	2
14	15-8083	Coin Return Door	2
15	15-8081	Coin Box	2
16	15-8092	Guard	2
19	23-1347	Coin Switch	2
20	15-8043	Switch Cover	2
21	15-1255	Slam Switch	1
22	31-4015	Plastic Coin Acceptor, 25¢	2
23	15-8086	Coin Acceptor Retainer	2
24	30-1790	Washer, .255 ID x .625 OD x .037" Thick	2
25	30-0931	"E" Ring, ¼"	2
26	30-7372	Extension Spring	2
27	31-4550	Coin Counter, 6VDC, W/Brkt	1
28	15-8113	Bracket	1
29	23-1370	Service Switch	1
31	34-1855	Lock Ass'y, 5/8"	1
32	55-2905	Lock Cam Ass'y	1
33	55-2909	Lock Cam Plate	2
34	30-3001	M.S. Pan Hd, Phil.#6-32 x ¼"lg	9
35	30-0164	M.S. F/Hd, Phil.#6-32 x 3/8"lg	2
36	30-1921	Washer, .165 ID x .475 OD x .032" Thick	2
37	30-2826	M.S. Fil/Hd. Phil.#6-32 x 7/16"lg	12
38	30-2818	M.S. Rd/Hd. #4-40 x 7/8" lg	2
39	30-1213	Hex. Nut, #4-40	2
40	30-2778	M.S. Fil/Hd. Phil.#6-32 x ½"lg	2
41	30-2833	M.S.Pan/Hd. Phil. #6-32 x 3/16"lg	9
42	23-1348	Wire Form (Coin Switch)	2
43	97-0007	Door Cable Ass'y	1
44	26-3125	Double Sided Tape (3M) ½"x½"	1
45	15-8107	Key Hook	1

INPUT
AC - 90~132V
180~264V

FIGURE 4



* CAPACITORS NOT MENTIONED ARE ALL MYLAR-FILM CAPACITORS
* RESISTORS NOT MENTIONED ARE ALL CARBON RESISTORS

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TOLERANCES		DC AVD		PROD. AVD		QTY		ASSEMBLY NO.	
RESISTORS	±1%	NAME	PCN	DATE	SCALE	PART NO.	REV.	DATE	REV.
CAPACITORS	±5%	PCN	703-AE						
DIODES	±5%	DATE							
TRANSISTORS	±5%	SCALE							
INDUCTORS	±5%	DATE							
RELAYS	±5%	SCALE							
CONNECTORS	±5%	DATE							
OTHER	±5%	SCALE							

Power Supply PSR-703AE
PARTS LIST (414-2020)

<u>Symbol</u>	<u>Description</u>	<u>Qty</u>
D1	Bridge Stack, RB-40, 600V	1
D4,D5	Fast Recovery Diode, 1GH62	2
D2,D3,D7, D8,D9,D10	Switching Diode, 1S1554	6
D11	Fast Recovery Diode, S5KC20H	1
D12,D13	Fast Recovery Diode, 10DF1	2
D16	Schotky Barrier Diode, C8P030	1
ZD1	Zener Diode, 05Z, 5.6V, 500mw	1
Q1,Q2	Power Transistor, 2SC2553	2
Q3	Power Transistor, 2SC2831	1
Q4,Q5	Transistor, 2SA564R	2
Q6,Q7	Transistor, 2SC828R	2
IC 1	Switching Control, UPC494C	1
IC 2	Regulator IC, 7805 (1A)	1
T1	Power Transformer, SM2335	1
T2,T3	Driver Transformer, SM2215B	2
T4	Power Transformer (Sub) SM2376	1
CH1	Choke Transformer, SM2219	1
CH2	Choke Transformer, SM2376B	1
CH4	Choke Transformer, SM2366	1
L1	AC Line Filter, ELF-18D-112	1
TH1	Power Thermistor, TD18-010	1
C2,C3	Ceramic Capacitor, 2200pf, AC400V	2
C1	Capacitor, Metalized, 0.033mf, 600V	1
C6	" " , 0.47mf, 50V	1
C15	" , Mylar, 0.001mf, 50V	1
C9,C13,C34, C35,C37	" " , 0.01mf	5
C12	" " , 0.0047mf	1
C31	" " , 0.1mf	1
C18	Capacitor, Ceramic, 50pf, 50V	1
C7	" " , 330pf, 1kv	1
C16,C28	" " , 0.01mf, 16V	2
C20,C23	" " , 0.1mf, 16V	2
C14	Capacitor,Electrolytic, 4.7mf, 25V	1
C10	" " , 10mf, 16V	1
C11	" " , 100mf, 16V	1
C21	" " , 220 mf, 35V	1
C22	" " , 470mf, 16V	1
C17,C19	" " , 470mf, 25V	2
C29,C30	" " , 2200mf, 10V	2
C4, C5	" " , 220mf, 180V	2
R31	Resistor,Cement, 270 ohm, 5W	1
R34	" , Oxide Metal Film, 33 ohm, 3W	1
R9	" " " " , 470 ohm,2W	1
R3	" " " " , 100 ohm,2W	1

POWER SUPPLY PSR-703AE
PART LIST (414-2020)

<u>Symbol</u>	<u>Description</u>	<u>Qty</u>
R36,R37,R39	Resistor, Carbon, 5.1 ohm, 1/2 W	3
R4,R5	" " , 12 ohm, 1/2 W	2
R6,R7	" " , 22 ohm, 1/2 W	2
R1,R2	" " , 150K ohm, 1/2 W	2
R8	" " , 330K ohm, 1/2 W	1
R12	" " , 150 ohm, 1/4 W	1
R10	" " , 1K ohm, 1/4 W	1
R11	" " , 10 ohm, 1/4 W	1
R40	" " , 3.9K ohm, 1/4 W	1
R35	" " , 5.1K ohm, 1/4 W	1
R18,R27	" " , 100 ohm, 1/4 W	2
R30	" " , 180 ohm, 1/4 W	1
R22	" " , 220 ohm, 1/4 W	1
R32	" " , 1K ohm, 1/4 W	1
R26	" " , 1.8K ohm, 1/4 W	1
R12,R14	" " , 5.1K ohm, 1/4 W	2
R28	" " , 10K ohm, 1/4 W	1
R29	" " , 15K ohm, 1/4 W	1
R23	" " , 20K ohm, 1/4 W	1
R19	" " , 6.8K ohm, 1/4 W	1
R15,R16,R17,R33	" " , 100K ohm, 1/4 W	4
R21	" " , 150K ohm, 1/4 W	1
R25	" " , 270K ohm, 1/4 W	1
R20	" " , 390 ohm, 1/4 W	1
VR1	Semi-fixed resistor, GFD6-B 3K	1
RS1	Manganese Metal Wire, A-2145	1
RS2	Manganese Metal Wire, 1.0 Ø x 55m/m	1
F1	Fuse, 3 amp.	1
	Fuse Holder, F-207	1

centuriTM inc.

Centuri, Inc. • 245 W. 74th Place • Hialeah, Florida 33014
Telephone: 305-558-5200 • Telex: 803694 • ANSB Centuri