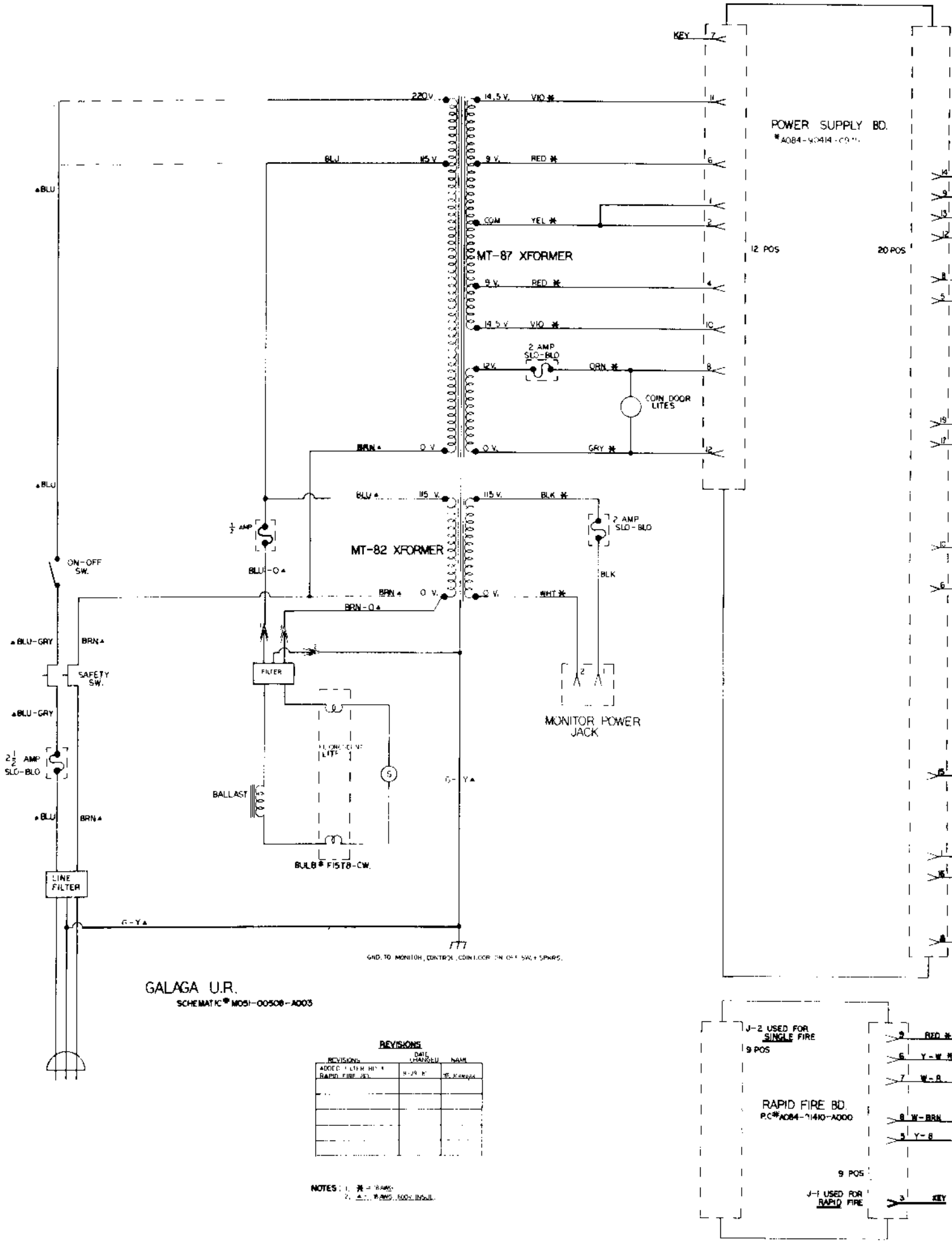
DISPLAY	DESCRIPTION
RAM OK	All RAMs are good
RAM OL	RAM located on Video PC board at position 1K is bad.
RAM OH	RAM located on Video PC board at position 1K is bad.
RAM 1L	RAM located on Video PC board at position 1K is bad.
RAM 1H	RAM located on Video PC board at position 1K is bad.
RAM 2L	RAM located on Video PC board at position 3E is bad.
RAM 2H	RAM located on Video PC board at position 3F is bad.
RAM 3L	RAM located on Video PC board at position 3K is bad.
RAM 3H	RAM located on Video PC board at position 3L is bad.
RAM 4L	RAM located on Video PC board at position 3H is bad.
RAM 4H	RAM located on Video PC board at position 3J is bad.
ROM OK	All ROMs are good.
ROM 01	ROM located on CPU PC board at position 3N is bad.
ROM 02	ROM located on CPU PC board at position 3M is bad.
ROM 03	ROM located on CPU PC board at position 3L is bad.
ROM 04	ROM located on CPU PC board at position 3K is bad.
ROM 11	ROM located on CPU PC board at position 3J is bad.
ROM 21	ROM located on CPU PC board at position 3E is bad.

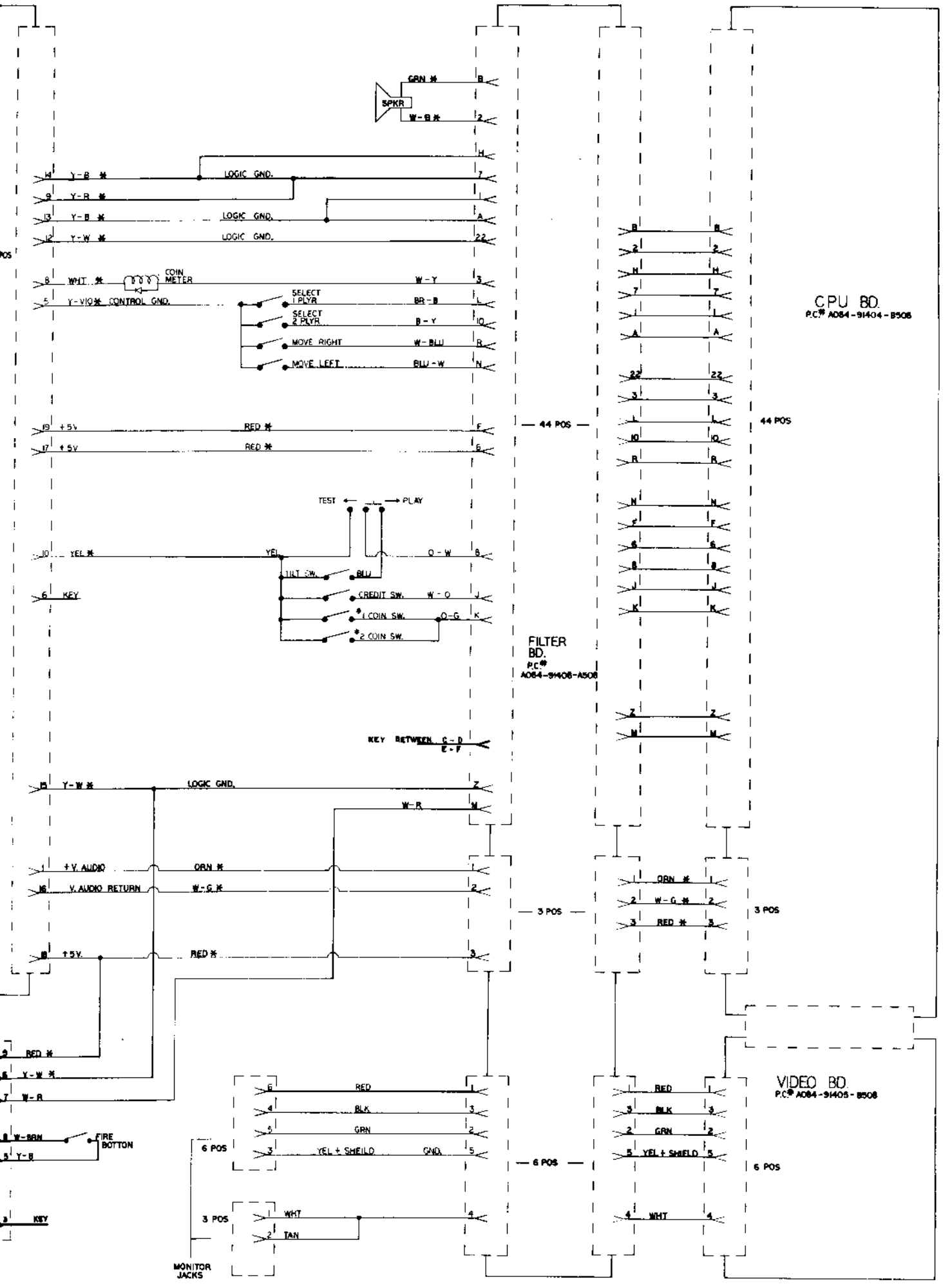
Figure 4b. Board location coordinates (Self test display)

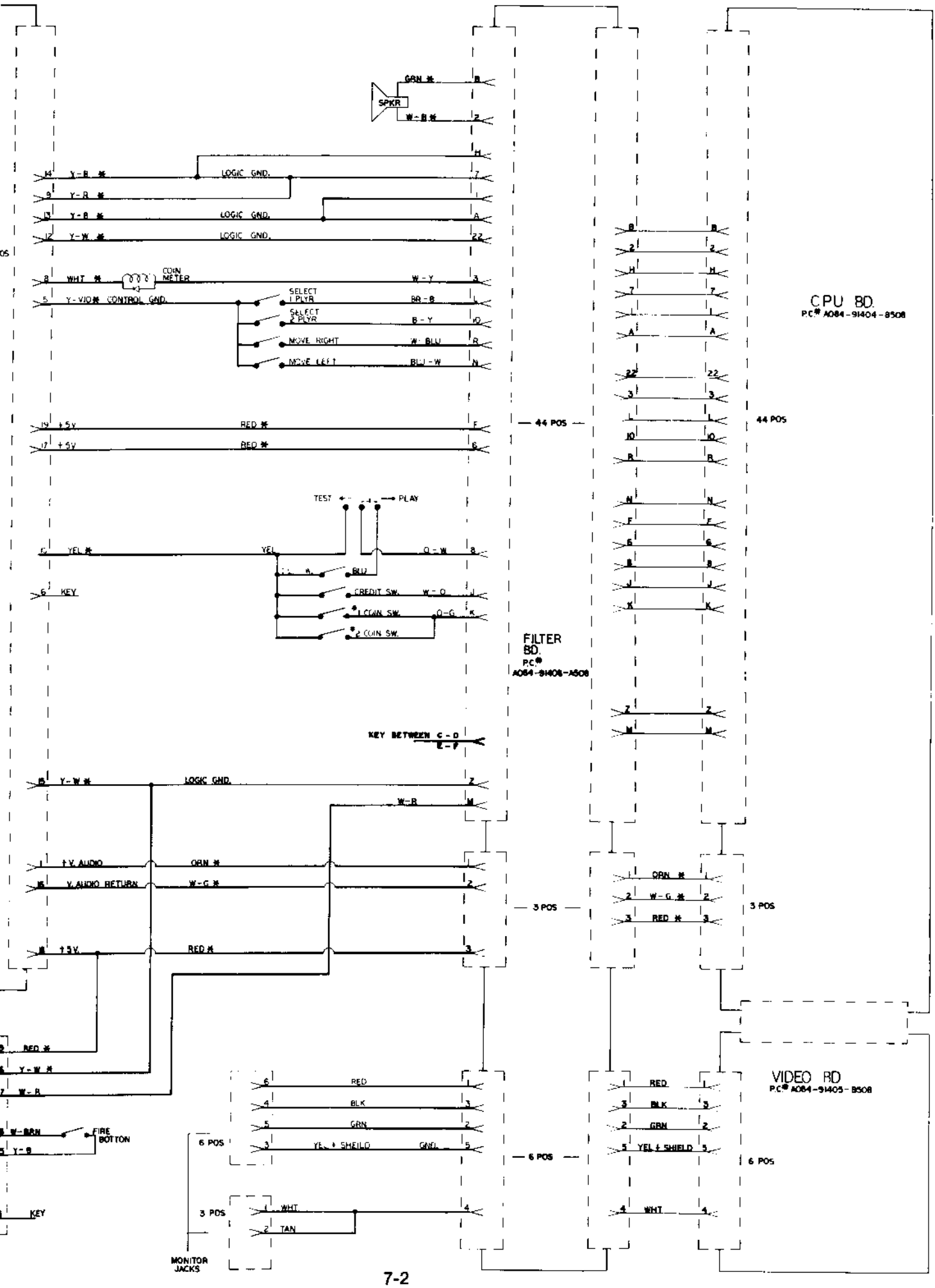


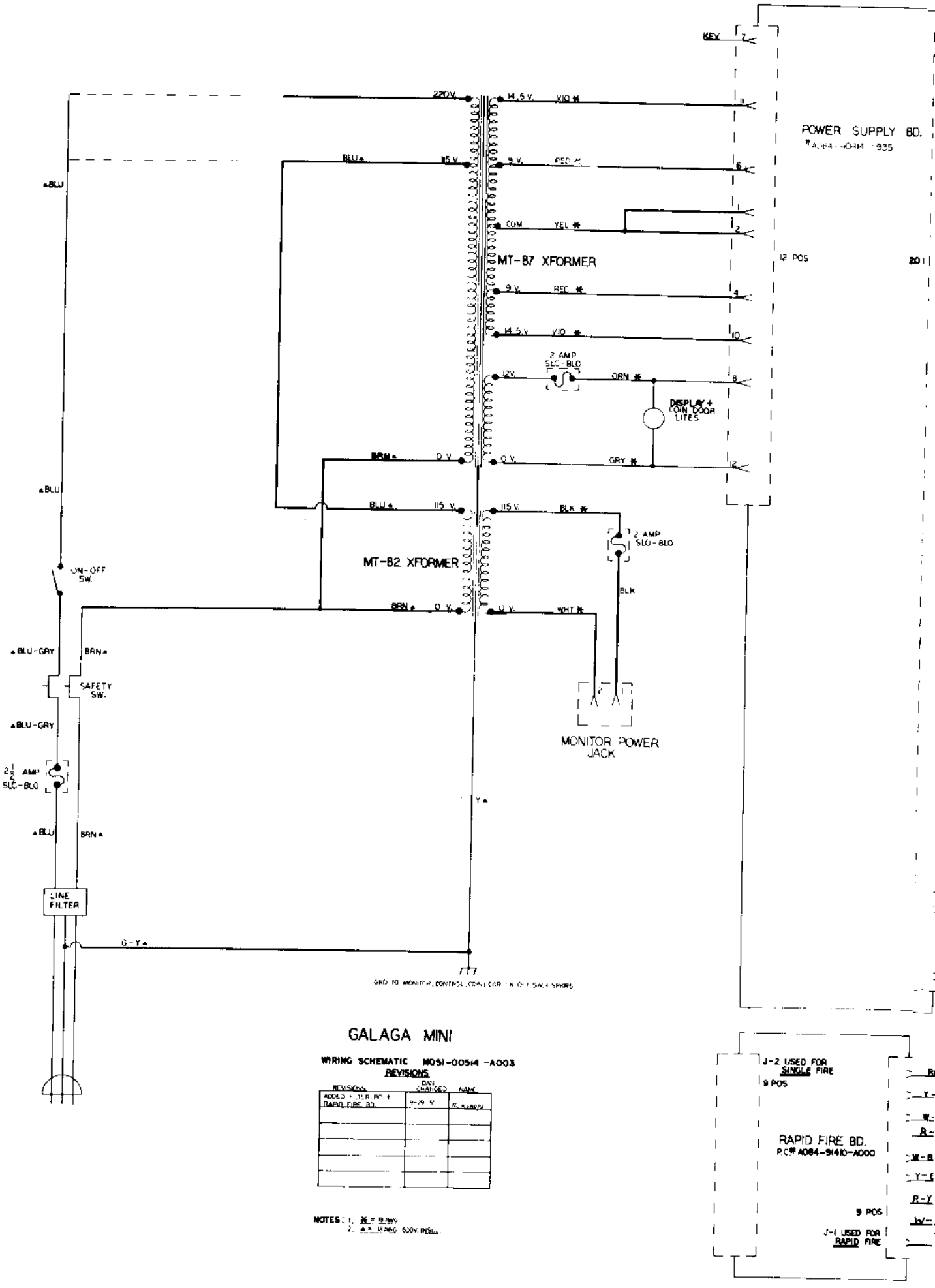
REVISIONS

REVISIONS	DATE CHANGED	NAME
ADDED FILTER BD. & RAPID FIRE BD.	9-29-81	[illegible]

NOTES: 1. ✱ = 18 AWG
2. ▲ = 18 AWG, 600V INSUL.


SPKR
GRN *
W-B *
Y-B *
Y-B *
Y-B *
Y-W *
LOGIC GND.
LOGIC GND.
LOGIC GND.
WHT. *
Y-VIO *
COIN METER
CONTROL GND.
SELECT 1 PLYR
SELECT 2 PLYR
MOVE RIGHT
MOVE LEFT
W-Y
BR-B
B-Y
W-BLU
BLU-W
+5V
+5V
RED *
RED *
44 POS
CPU BD.
P.C.# A084-91404-B508
44 POS
TEST
PLAY
YEL *
YEL
O-W
TILT SW.
BLU
KEY
CREDIT SW.
W-O
1 COIN SW.
O-G
2 COIN SW.
FILTER BD.
P.C.# A084-91406-A508
KEY BETWEEN C-D E-F
Y-W *
LOGIC GND.
W-R
+V. AUDIO
V. AUDIO RETURN
ORN *
W-G *
+5V.
RED *
3 POS
ORN *
W-G *
RED *
3 POS
RED *
Y-W *
W-R
W-BRN
Y-B
FIRE BOTTON
KEY
6 POS
RED
BLK
GRN
YEL + SHEILD
GND.
6 POS
RED
BLK
GRN
YEL + SHIELD
6 POS
VIDEO BD.
P.C.# A084-91405-B508
3 POS
WHT
TAN
WHT
MONITOR JACKS


SPKR
GRN *
W-B *
LOGIC GND.
Y-B *
Y-W *
WHT *
COIN METER
Y-VIO * CONTROL GND.
SELECT 1 PLYR
SELECT 2 PLYR
MOVE RIGHT
MOVE LEFT
W-Y
BR-B
B-Y
W-BLU
BLU-W
+5V
RED *
TEST
PLAY
YEL *
YEL
O-W
BLU
KEY
CREDIT SW.
1 COIN SW.
2 COIN SW.
W-O
O-G
KEY BETWEEN C-D
E-F
44 POS
CPU BD.
P.C.* A084-91404-8508
FILTER BD.
P.C.* A084-91406-A508
+V. AUDIO
V. AUDIO RETURN
W-G *
W-R
3 POS
VIDEO BD
P.C.* A084-91405-8508
RED
BLK
GRN
YEL + SHEILD
GND.
6 POS
WHT
TAN
3 POS
FIRE BOTTON
W-BRN
MONITOR JACKS



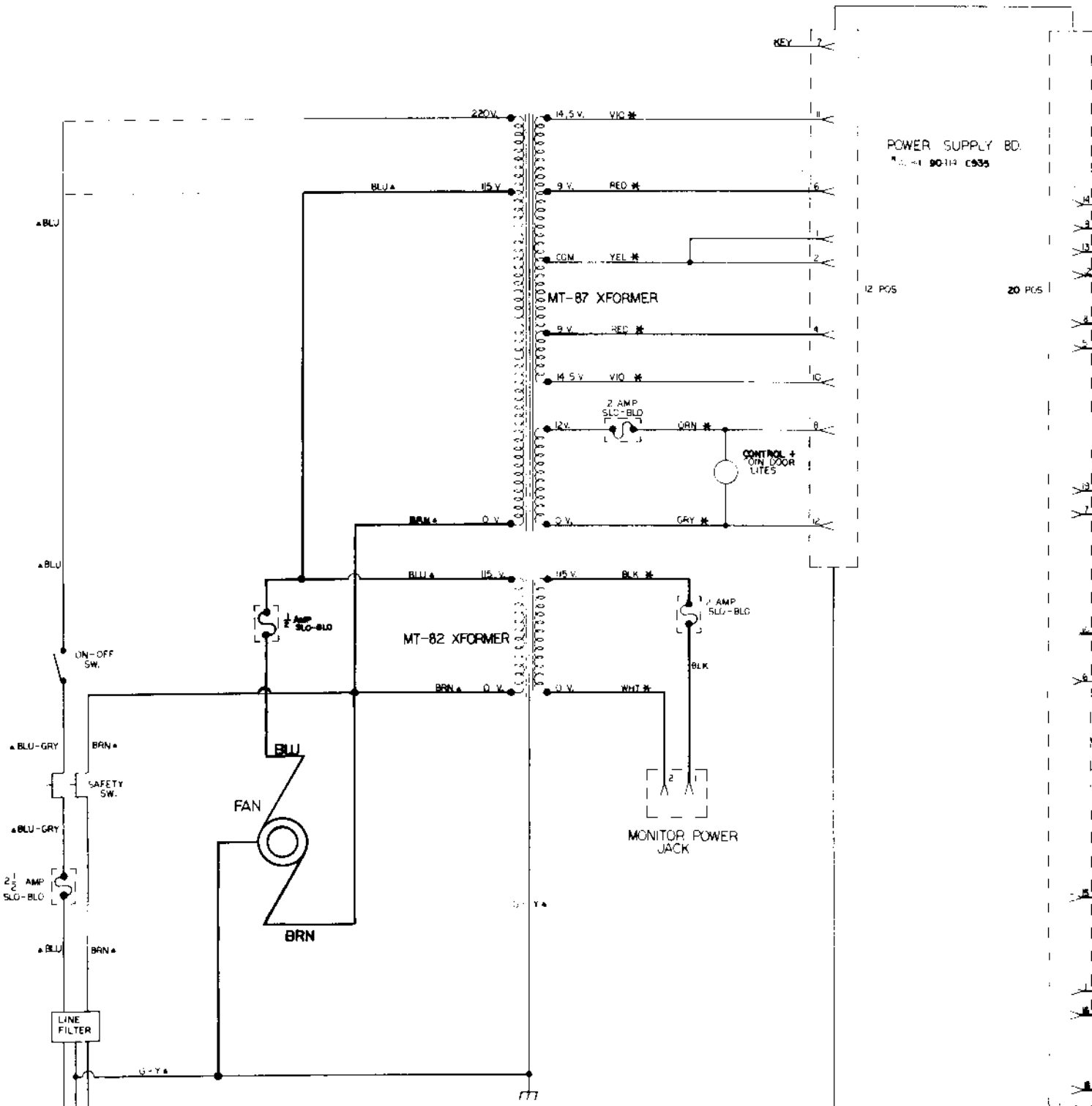
GALAGA MINI

WIRING SCHEMATIC MOSI-00514-A003

REVISIONS

REVISIONS	DATE CHANGED	NAME
ADDED J-1,J-2 FOR RAPID FIRE BD.	9-29-81	R. HARRIS

NOTES: 1. ▲ = 18 AWG
2. ▲ = 18 AWG 600V INSUL.



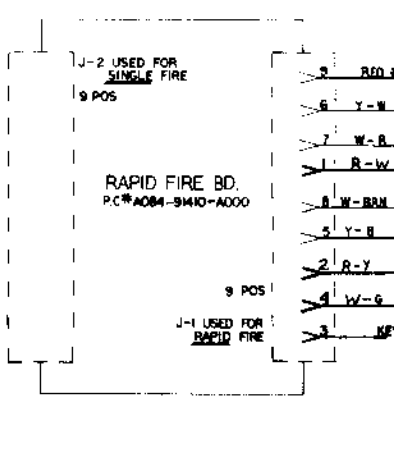
GALAGA C.T.

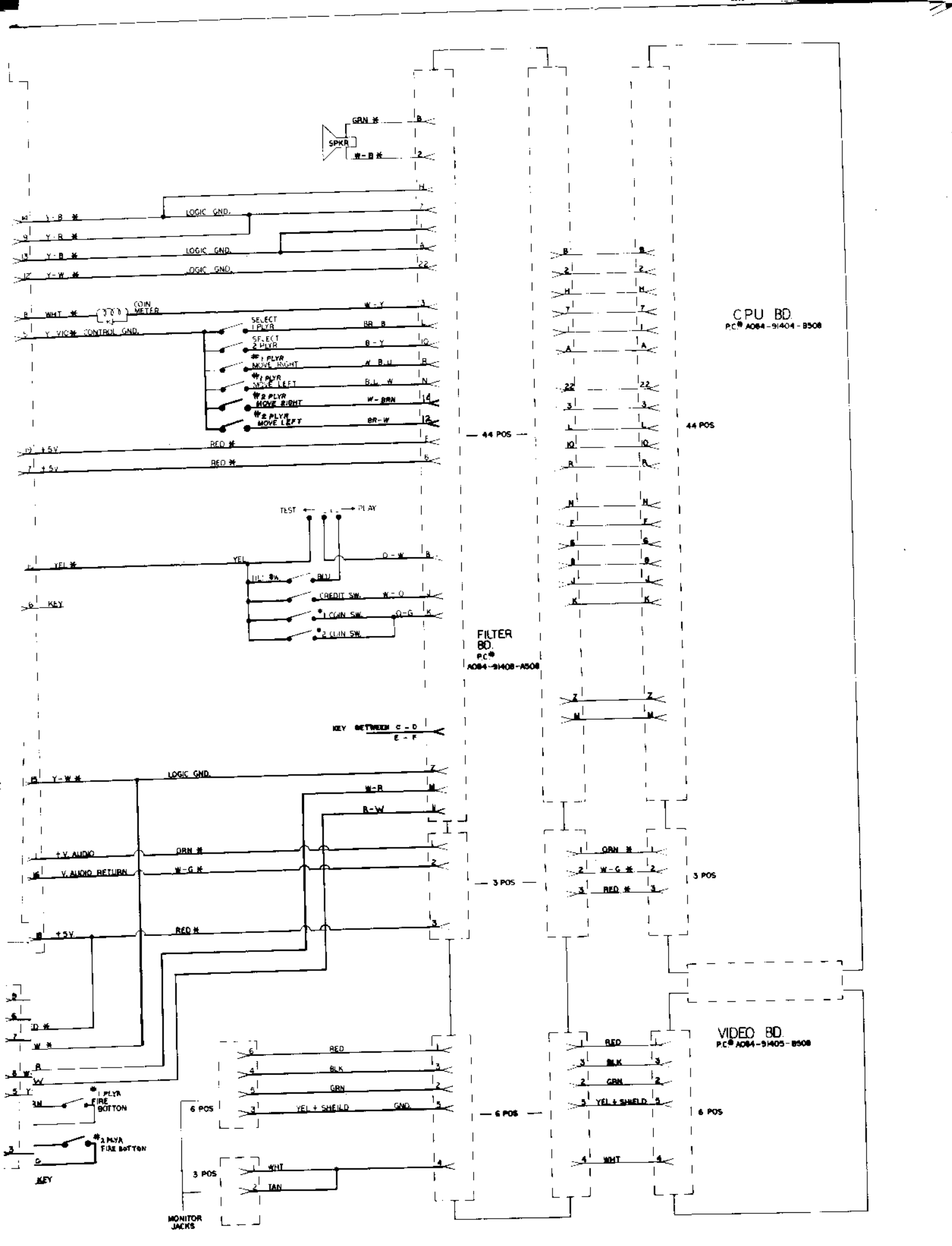
SCHEMATIC # MOSI-00510-A003

REVISIONS

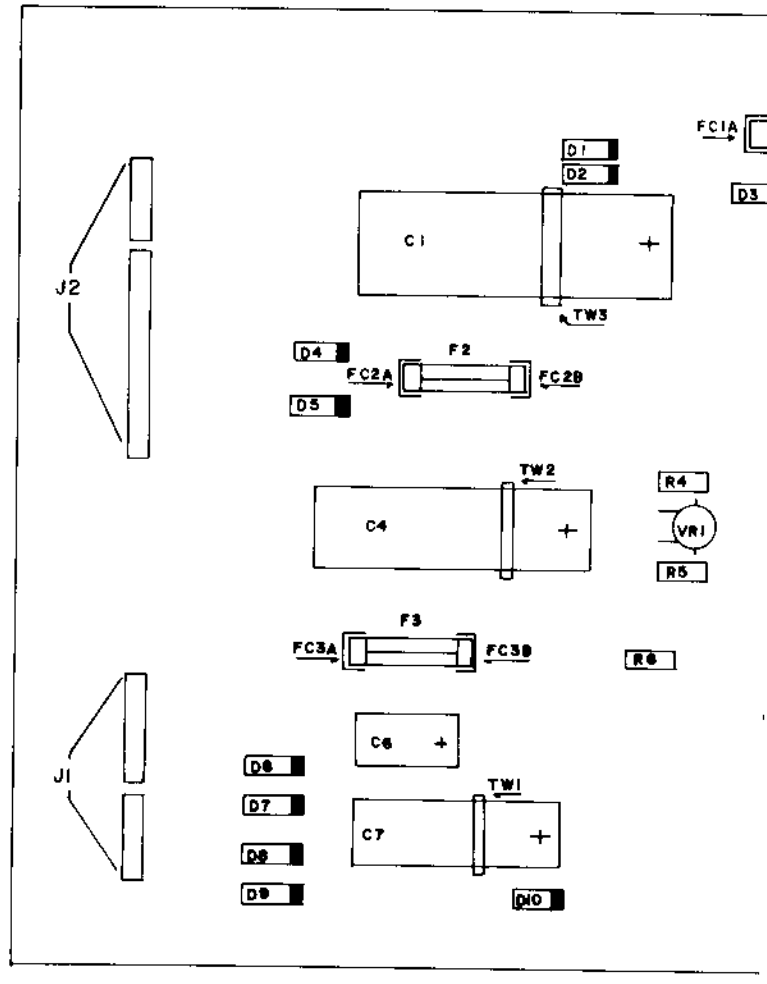
REVISIONS	DATE CHANGED	NAME
ADDED J-1 & J-2 FOR RAPID FIRE BD.	9-29-81	

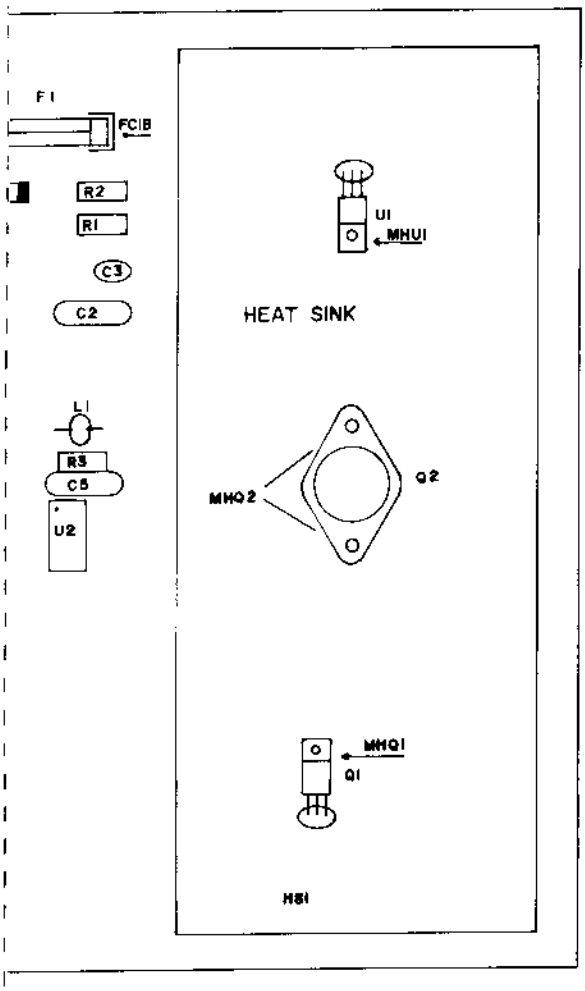
NOTES: 1. # = 18 AWG.
2. A = 16 AWG. BODY INSUL.




CPU BD.
P.C.# A084-91404-B508
44 POS
FILTER BD.
P.C.# A084-91408-A508
3 POS
VIDEO BD.
P.C.# A084-91405-B508
6 POS
SPKR
GRN *
W-B *
LOGIC GND.
Y-B *
Y-W *
COIN METER
WHT *
Y-VIO *
CONTROL GND.
SELECT 1 PLYR
SELECT 2 PLYR
#1 PLYR MOVE RIGHT
#1 PLYR MOVE LEFT
#2 PLYR MOVE RIGHT
#2 PLYR MOVE LEFT
+5V.
RED *
TEST
PLAY
YEL *
YEL
D-W
KEY
CREDIT SW.
*1 COIN SW.
*2 COIN SW.
KEY BETWEEN C - D
E - F
+V. AUDIO
ORN *
V. AUDIO RETURN
W-G *
W-R
R-W
BLK
GRN
YEL + SHIELD
GND.
WHT
TAN
*1 PLYR FIRE BOTTON
*2 PLYR FIRE BOTTON
KEY
MONITOR JACKS

DESIGNATION	DESCRIPTION
C1	10000 MF 35V AX. ELEC.
C2	.01 MF 50V AX. CER.
C3	1MF 25V TANT.
C4	20000 MF 16V AX. ELEC.
C5	100 PF 50V AX. CER
C6	470 MF 16V AX. ELEC.
C7	4700 MF 25V " "
R1	470 OHM 1/4W 5% CRBN
R2	100 " " " "
R3	2.7K " " " "
R4	560 " " " "
R5	510 " " " "
R6	10 " " " "
VR1	100 OHM 1/4W CRBN. FLM.
D1, D2	AI4F
D3	IN4004
D4, D5	MR750
D6-D9	AI5F
D10	AI4F
Q1	TIP31
Q2	2N3055
U1	LM317
U2	3532
L1	FERROXCUBE BEAD
HS1	HEAT SINK
F1	FUSE 2A
F2	" 6A
F3	" 6A
FC1A, FC1B, FC2A	FUSECLIP W/ STOP
FC2B, FC3A, FC3B	" "
J1	CONN. KK.156 (RA)(5-PIN) (6-PIN)
J2	" " (RA)(5-PIN) (13-PIN)
MHQ1	MOUNTING HARDWARE Q1 (1) SCREW 4-40X10 SLT RND (1) WSH.4 I20-.250-018 (1) HEXNUT 4-40 (1) SHOULDER WSH. 974-302 THERMAL COMPOUD AS REQ. (1) TO-220 INSULATOR RT-3.5 MICA
MHQ2	MOUNTING HARDWARE Q2 (2) SCREW 4-40X10 SLT RND (2) WSH 4 I20-.250-018 (2) HEXNUT 4-40 (2) SHOULDER WSH. 974-302 THERMAL COMPOUD AS REQ. (1) TO-3 RT-1.5 FILM
MHU1	MOUNTING HARDWARE U1 (1) SCREW 4-40X10 SLT RND (1) WSH 4 I20-.250-018 (1) HEXNUT 4-40 (1) SHOULDER WSH. 974-302 THERMAL COMPOUD AS REQ. (1) TO-220 INSULATOR RT-3.5 MICA
TW1-TW3	TIE WRAPS





DESCRIPTION	QTY	DESIGNATION	PART NUMBER
100 PF 50v AX.CER.	1	C5	0171-043H6-JXVX
.01MF " " "	1	C2	0171-097H2-JXXX
1MF 25v TANT.	1	C3	0935-00814-0100
470MF " AX.ELEC.	1	C6	0175-271EX-EXXX
4700MF " " "	1	C7	0175-314EX-EXBX
10000MF 35v AX.ELEC.	1	C1	0175-322GX-EXBX
20000 16v MF " "	1	C4	0935-00814-0800
10 OHM 1/4w 5% CBN	1	R6	0062-051B3-1XXX
100 " " " "	1	R2	0062-110B3-1XXX
470 " " " "	1	R1	0062-156B3-1XXX
510 " " " "	1	R5	0062-159B3-1XXX
560 " " " "	1	R4	0062-162B3-1XXX
2.7K " " " "	1	R3	0062-199B3-1XXX
100 " " CBN FLM	1	VR1	0063-025AX-1DEX
1N4004	1	D3	0508-00801-0200
A14F	3	D1,D2,D10	0064-168XX-XXGX
A15F	4	D6-D9	0064-169XX-XXGX
MR750	2	D4,D5	0064-303XX-XXJX
TIP31	1	Q1	0065-485XX-XXXX
2N3055	1	Q2	0935-00800-0000
3532	1	U2	0066-044BX-XXXX
LM317	1	U1	0935-00804-3600
FERROXCUBE BEAD	1	L1	0017-00009-0225
HEAT SINK	1	HS1	0068-045XX-ABDX
FUSE 2A	1	F1	0017-00003-0005
FUSE 6A	1	F3	0017-00003-0008
FUSE 8A	1	F2	0017-00003-0184
FUSECLIP	6	FC1A,FC1B,FC2A, FC2B,FC3A,FC3B	0017-00003-0214
KK 156 (RA) (5)	2	J1,J2	3000-16387-0500
KK 156 (RA) (6)	1	J1	3000-16387-0600
KK 156 (RA) (13)	1	J2	3000-16387-1300
SCREW 4-40x10	4	MHU1,MHQ1,MHQ2	0017-00101-0727
WSH 4 120-.250-018	4	" " "	0017-00104-0071
HEXNUT 4-40	4	" " "	0017-00103-0002
SHOULDER WSH	4	" " "	0017-00042-0109
THERMAL COMPOUND	AS REQ.	" " "	0017-00009-0204
TO-220,INSULATOR	2	MHU1,MHQ1	0017-00003-0205
TO-3 INSULATOR	1	MHQ2	0017-00042-0108
TIE WRAPS	3	TW1-TW3	0017-00042-0105

M051-00935-C028

THIS DWG IS CONFIDENTIAL & PROPERTY OF MIDWAY MFG. CO.

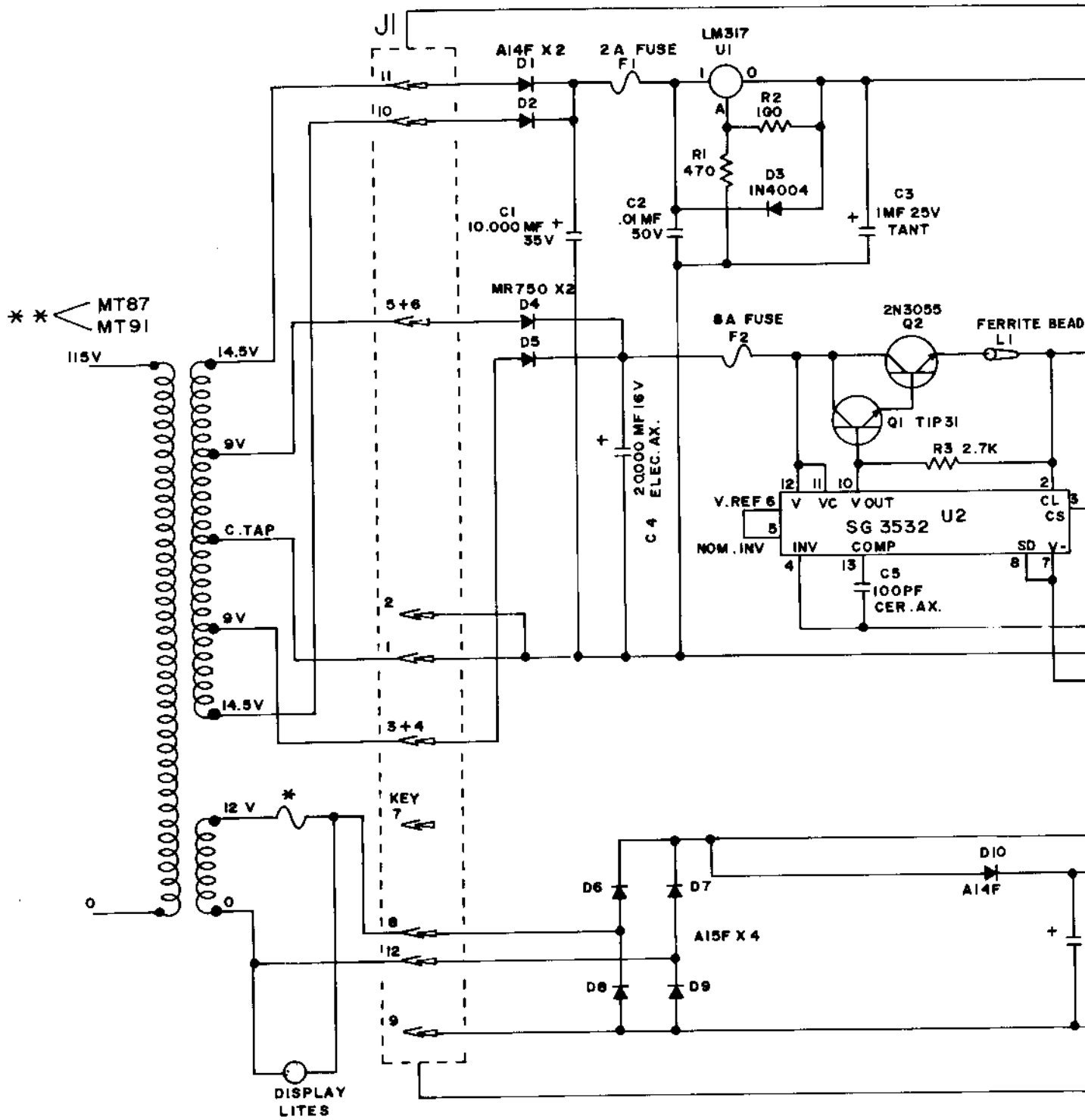
DIM TOLERANCES UNLESS OTHERWISE SPEC.
CONCENTRICITY ± 1/8 .002
FRACTIONAL ± 1/64
DECIMAL ± .005
HOLE DIA ± .002 .000
ANGLE ± 1/2°
DO NOT SCALE DWG

FIRST DESIGN GALAGA
DRN ARM DATE 10-10-81 SCALE Full
MFG CHK MAT
ELEC CHK FINISH

MIDWAY MFG. CO.
FRANKLIN PK., IL 60131 A BALLY CO

POWER SUPPLY

REVISIONS
PART NO A.0.B.4.9.6.4.1.4 C.9.3.5

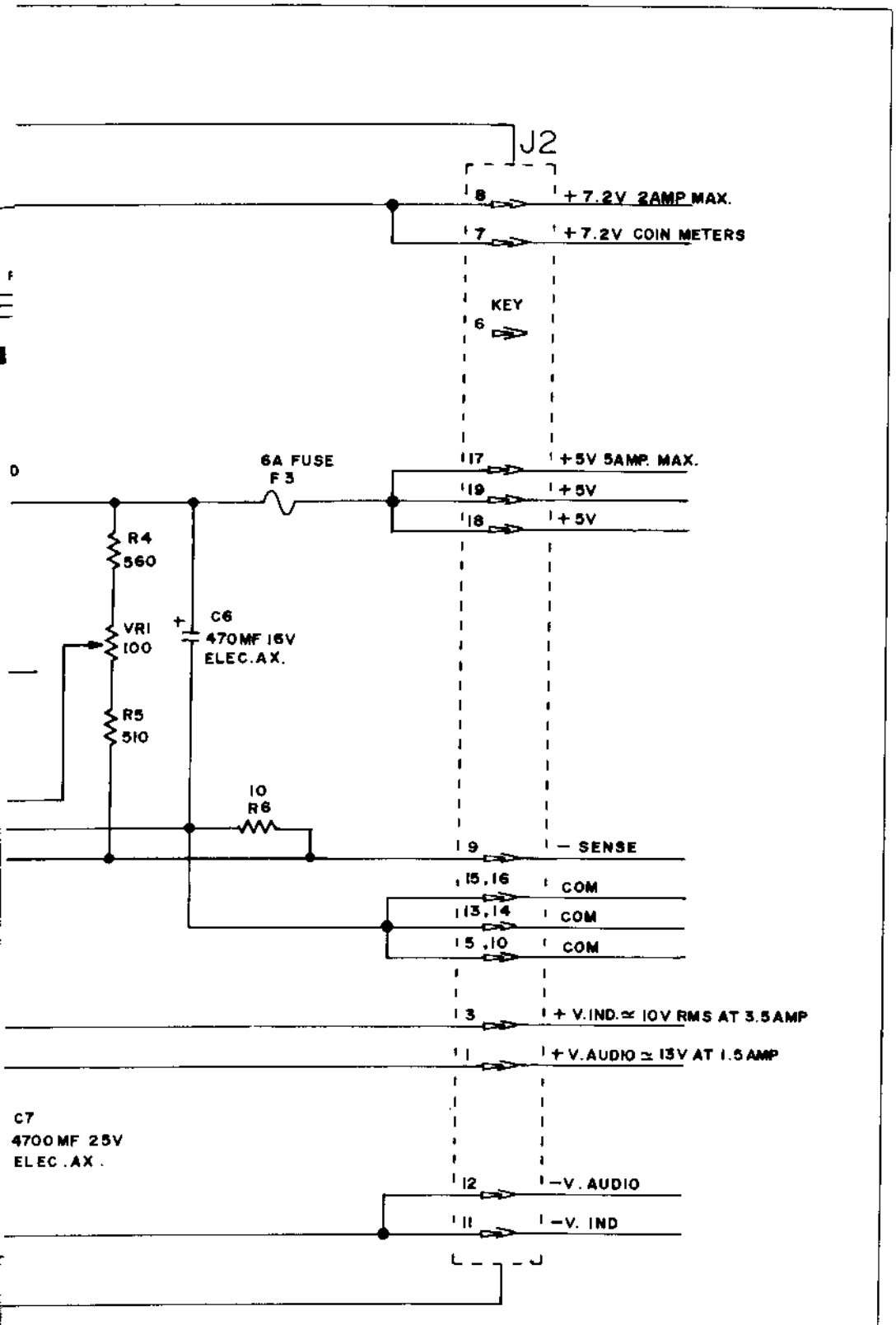


NOTES:

* 2AMP FUSE W/O DISPLAY LITES

** MT87 FOR UR.
MT91 FOR C.T.

DO NOT SCALE
DIM. TOLERANCES
UNLESS SPECIFIED
CONCENTRICITY T.I.R. .003
FRACTIONAL ± 1/64
DECIMAL ± .005
HOLE DIA + .002 .000



SCHEMATIC: M051-00935-C025

REVISIONS

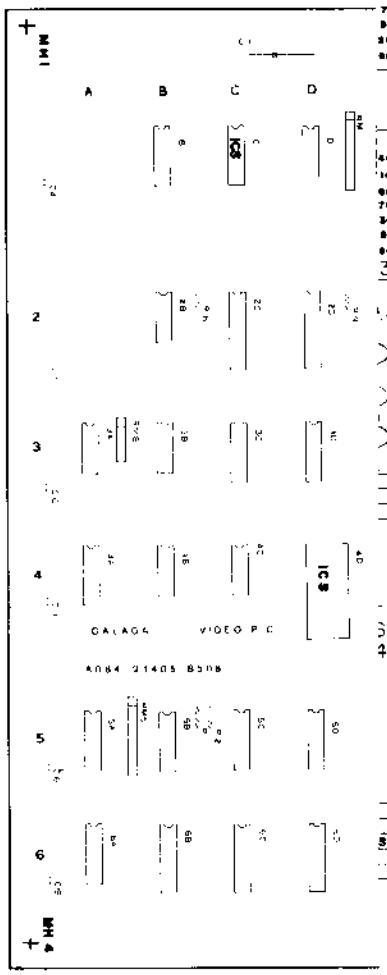
DWG	HEAT TREAT	SCALE FULL	USED ON GALAGA	MIDWAY MFG. CO. FRANKLIN PK ILL
M.M	MAT'L		NO REQ'D 1 PER	
DATE 10-1-81	FINISH	POWER SUPPLY		PART NO A084-90414-C935

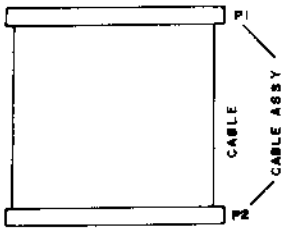
DESIGNATION LIST

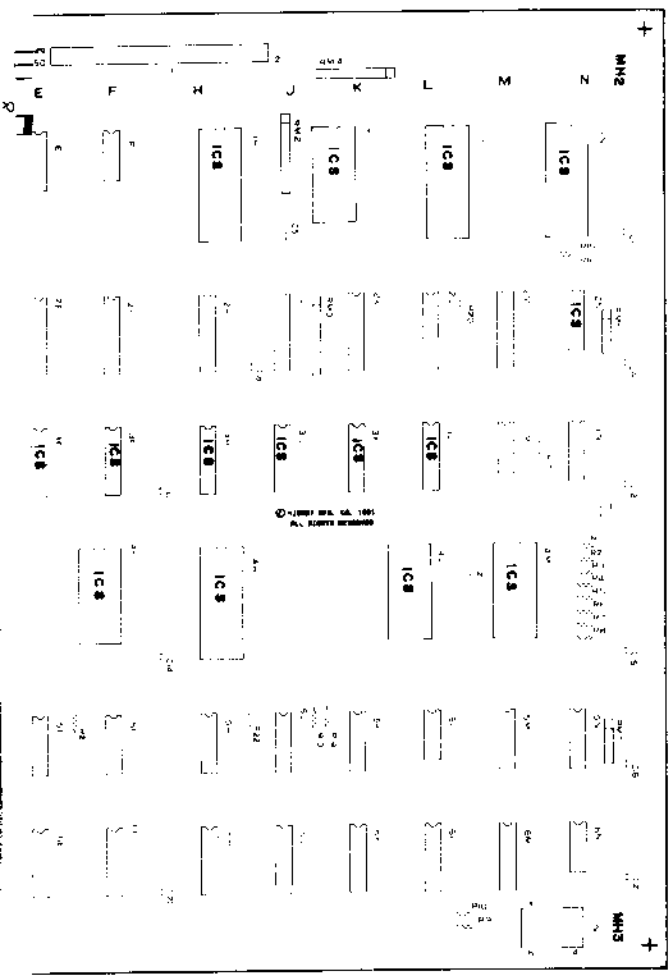
DESIGNATION	DESCRIPTION
C1	470 MF 16V AX ELEC.
C2	.001 MF 50V CER.
C3	220 PF 500V ±5% MICA.
C4 - C21	.1 MF 50V CER.
R1	220 OHM 1/4W 5% CRBN.
R2	470 " " " "
R3	220 " " " "
R4	470 " " " "
R5	1 K " " "
R6	220 " " " "
R7	470 " " " "
R8, R9	1K " " " "
R10	100 " " " "
R11 - R14	470 " " " "
R15, R16	1K " " " "
R17	330 " " " "
R18 - R22	1K
RM1 - RM4	2.2K OHM 8-UNIT 9-PIN SIP
RM5	1K " " " "
RM6 - RM8	1K OHM 4-UNIT 5-PIN SIP
IC 1B	74LS155
" 1C	99-3 PROM (256 X 4)
" 1D	74LS08
" 1E	74LS138
" 1F	74LS32
" 1H	04XX CUSTOM IC
" 1K	STATIC RAM (2K X 8)
" 1L	00XX CUSTOM IC
" 1N	07XX " "
" 2B	74LS20
" 2C	74LS273
" 2D	74LS377
" 2E	74LS273
" 2F, 2H, 2J, 2K	74LS245
" 2L	74LS273
" 2M	74LS377
" 2N	99 - 4 PROM (256 X 4)
" 3A	74LS20
" 3B	74LS86
" 3C, 3D	74LS283
" 3E, 3F, 3H, 3J, 3K, 3L	2114 - 2 RAM (1K X 4)
" 3M	74LS00
" 3N	74LS366
" 4A	74LS157
" 4B, 4C	74LS86
" 4D	99-L EPROM (4096 X 8)
" 4F	99-K " "
" 4H	02XX CUSTOM IC
" 4L	99-J EPROM (4096 X 8)
" 4M	05XX CUSTOM IC
" 5A	74LS365
" 5B	74LS298

DESIGNATION	DESCRIPTION
IC 5C, 5D, 5E, 5F, 5H, 5J	74LS161
" 5K	74LS259
" 5L	74LS20
" 5M	74LS257
" 5N	99-5 PROM (32 X 8)
" 6A	74LS365
" 6B	"VIDEO RAM KIT" - "OPTION 1"
" 6C, 6D, 6E, 6F	"VIDEO RAM KIT" - "OPTION 2"
" 6H	"VIDEO RAM KIT" - "OPTION 1"
" 6J, 6K, 6L, 6M	"VIDEO RAM KIT" - "OPTION 2"
" 6N	74LS366
ICS IC	16 - PIN IC SOCKET
" 1H	28 - PIN " "
" 1K	24 - PIN " "
" 1L, 1N	28 - PIN " "
" 2N	16 - PIN " "
" 3E, 3F, 3H, 3J, 3K, 3L	18 - PIN " "
" 4D, 4F	24 - PIN " "
" 4H	28 - PIN " "
" 4L, 4M	24 - PIN " "
" 5N	16 - PIN " "
J1	CONN - R.A. HEADER 50 - PIN
J2	CONN - PCB HEADER 6 - PIN
MH1 - MH4	DUAL LKG PCB SPACER
PCB	A080 - 91405 - 8508

CABLE ASSY	AS BELOW
P1, P2	PLUG - SOCKET CONNECTOR 50 - PIN
CABLE	RIBBON CABLE - 33 FT 50 - CONNECTOR
	28 GA STRND. RND. CONDUCTOR







CROSS REFERENCE LIST

DESCRIPTION	QUANTITY	DESIGNATION	PART #
220PF 500V 5% MICA CAP	1	C3	0508-00603-0100
.001MF 50V CER CAP	1	C2	0508-00800-0200
.1 MF	18	C4-C21	0508-00800-0300
470MF 16V AX. ELEC	1	C1	0508-00800-0400
100 OHM 1/4W 5% CRBN. RES.	1	R10	0062-11083-1XXX
220 " " " " "	3	R1, R3, R6	0062-13383-1XXX
330 " " " " "	1	R17	0062-14483-1XXX
470 " " " " "	7	R2,R4,R7,R11-R14	0062-15683-1XXX
1K " " " " "	10	R5,R8,R9,R15,R16, R18-R22	0062-17883-1XXX
1K SIP (4-UNIT) 5-PIN	3	RM6-RM8	0508-00804-0100
1K SIP (8-UNIT) 9-PIN	1	RM5	0508-00804-0200
2.2K " " "	4	RM1-RM4	0508-00804-0300
00XX CUSTOM IC	1	IC1L	0066-001CX-XAPX
02XX " "	1	IC4H	0066-002CX-XAPX
04XX " "	1	IC1H	0066-003CX-XAPX
05XX " "	1	IC4M	0066-004CX-XAPX
07XX " "	1	IC1N	0066-006CX-XAPX
2114-2 ST.RAM 200NS.(1024X4)	6	IC3E,3F,3H,3J,3K,3L	0508-00803-0300
74LS00	1	IC3M	0508-00803-0400
74LS08	1	IC1D	0508-00803-0500
74LS20	3	IC2B, 3A, 5L	0508-00803-0600
74LS32	1	IC1F	0508-00803-0700
74LS86	4	IC3B,4B,4C,6N	0508-00803-0800
74LS138	1	IC1E	0508-00803-0900
74LS153	1	IC1B	0508-00803-1000
74LS157	1	IC4A	0508-00803-1100
74LS161	6	IC5C,5D,5E,5F,5H,5J	0508-00803-1200
74LS245	4	IC2F, 2H, 2J, 2K	0508-00803-1300
74LS257	1	IC5M	0508-00803-1400
74LS259	1	IC5K	0508-00803-1500
74LS273	3	IC2C, 2E, 2L	0508-00803-1600
74LS283	2	IC3C, 3D	0508-00803-1700
74LS298	1	IC5B	0508-00803-1800
74LS365	2	IC5A, 6A	0508-00803-1900
74LS368	1	IC3N	0508-00803-2000
74LS377	2	IC2D, 2M	0508-00803-2100
GG-3 PROM (256X4)	1	IC1C	0508-00803-2900
GG-4 " "	1	IC2N	0508-00803-3000
GG-5 PROM (32X8)	1	IC5N	0508-00803-3100
GG-J EPROM(4096X8)	1	IC4L	0508-00803-2600
GG-K " "	1	IC4F	0508-00803-2700
GG-L " "	1	IC4D	0508-00803-2800
STATC RAM (2KX8)	1	IC1K	0508-00803-2500
* "VIDEO RAM KIT"	1	MAIN PHATOM	0508-00803-4000
* OPTION1"	1	SUB PHATOM	NOT RELEASED
- 2148 RAM (1KX4)	2	IC6B,6H	(IN ABOVE NUMBER)
* OPTION2"	1	SUB PHATOM	0508-00803-2200
- 2147 RAM (4KX1)	9	IC6C,6D,6E,6F, IC6J,6K,6L,6M	(IN ABOVE NUMBER)

* NOTE: ASSEMBLY TO INCLUDE EITHER "OPTION1" OR "OPTION2" AS PER LATEST RELEASED B.O.M.

16-PIN IC SOCKET	3	IC5IC,2N,5N	0508-00804-0700
18-PIN " "	6	IC3 3E,3F,3H,3J,3K,3L	0508-00804-0800
24-PIN " "	5	IC3IK,4D,4F,4L,4M	0508-00804-0500
28-PIN " "	4	IC3IH, IL, IN, 4H	0508-00804-0400
CONNECTOR-R.A. HEADER 50-PIN	1	J1	0508-00804-0800
CONNECTOR-PCB HEADER 6-PIN	1	J2	0017-00021-0424
MOUNTING HARDWARE -			
DUAL LKG. PCB SPACER	4	MH1-MH4	0017-00042-0253
PCB	1	"GALAGA" VIDEO P.C.B	A080-91405-8508
CABLE ASSEMBLY	1	CABLE ASSY	A508-00027-0000
50-PIN			
PLUG-SOCKETCONNECTOR	2	P1,P2	0508-00804-0900
RIBBON CABLE-.33FT	1	CABLE	0017-00033-0348
50-CONDUCTOR 28GA			
STRND AND CONDUCTOR			

ASSEMBLY M051-00508-8007

PROJECT ENG JERRY SZERSZEN

REVISIONS

DO NOT SCALE DWG

DIM TOLERANCES UNLESS SPECIFIED

DRWN M M 08-22-81

CHKD

DATE

HEAT TREAT

MATL

FINISH

SCALE FULL

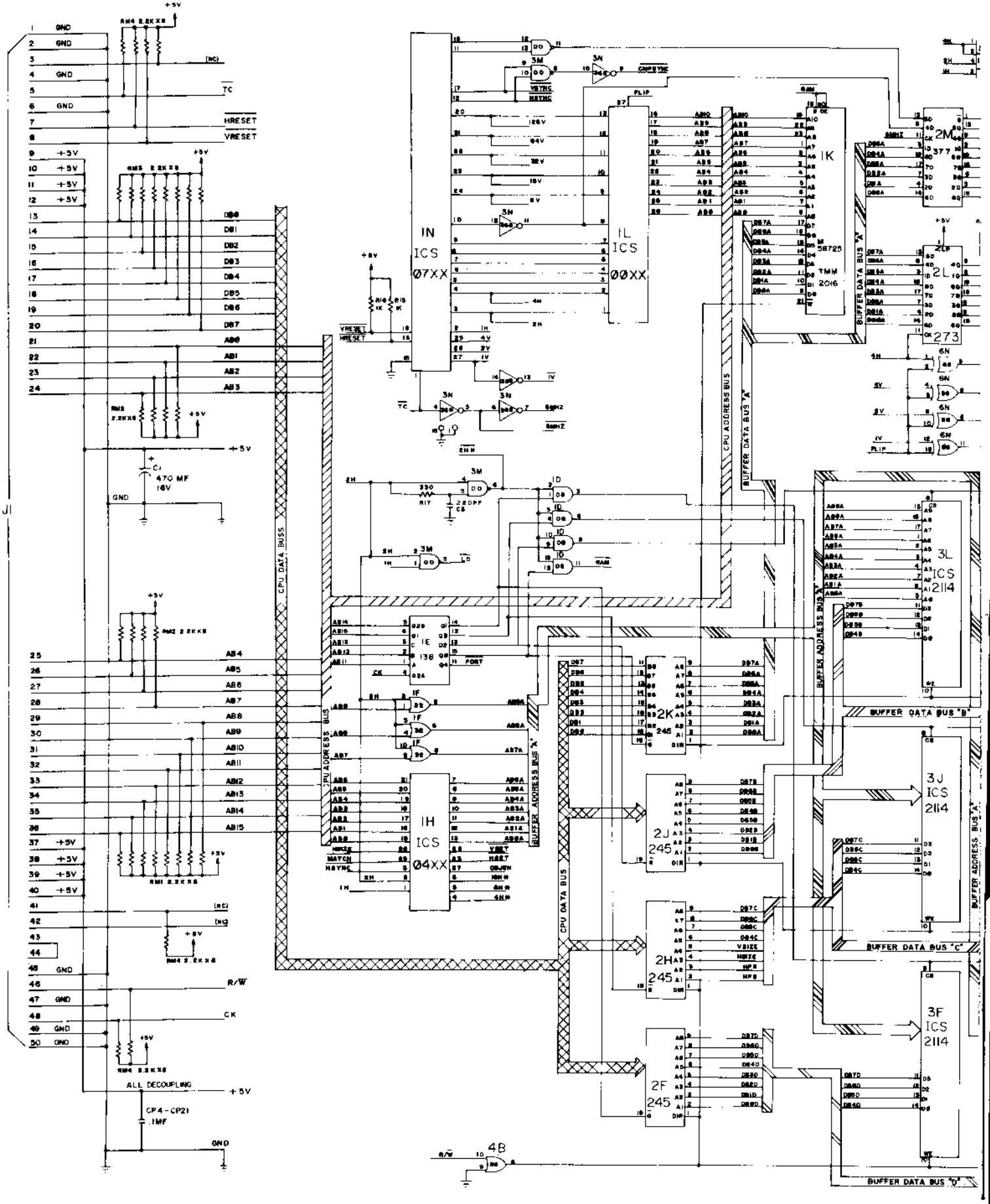
DRWG NO REQD IPER

DRWG GALAGA

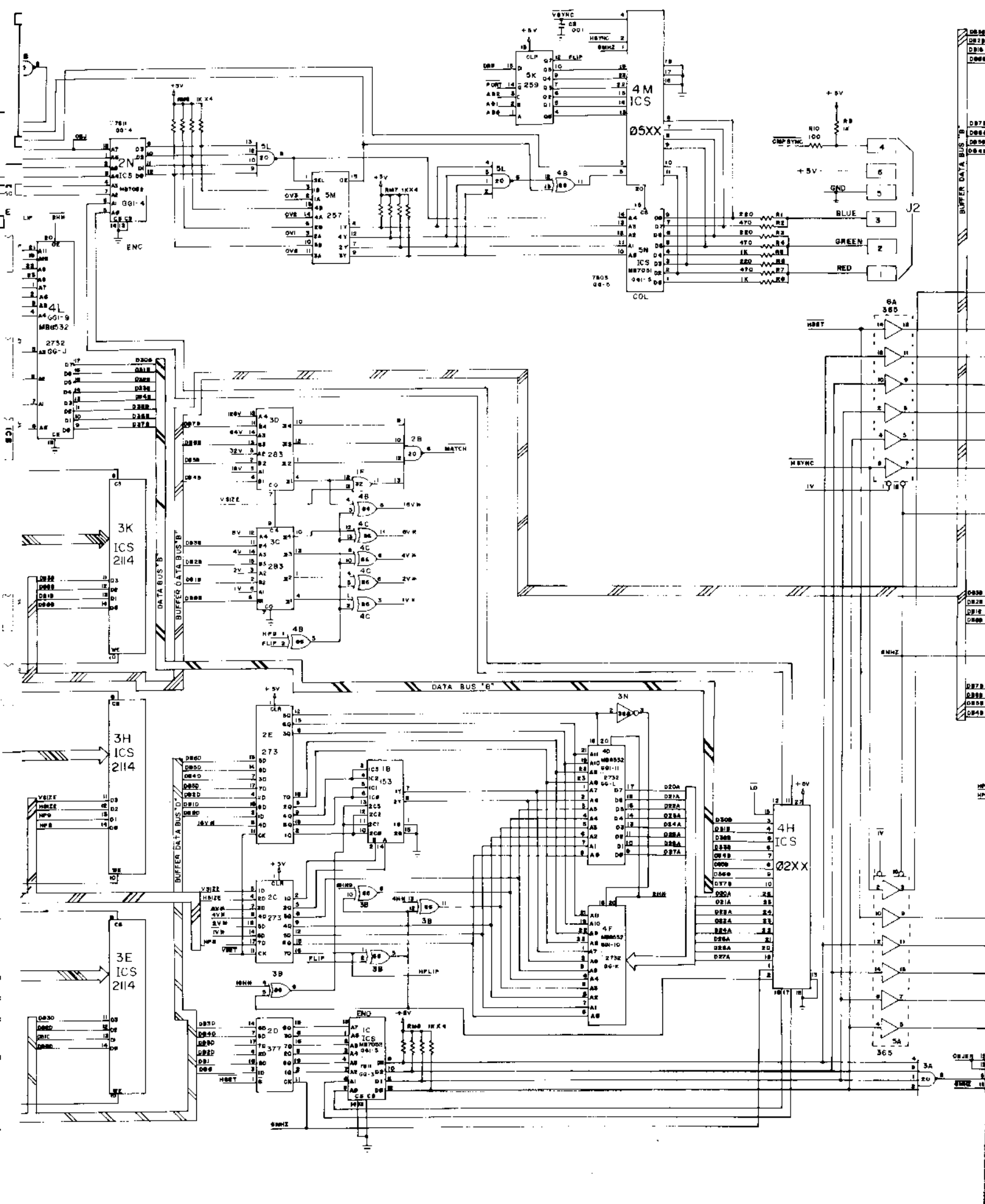
MIDWAY MFG. CO.
FRANKLIN PK ILL

GALAGA VIDEO P.C

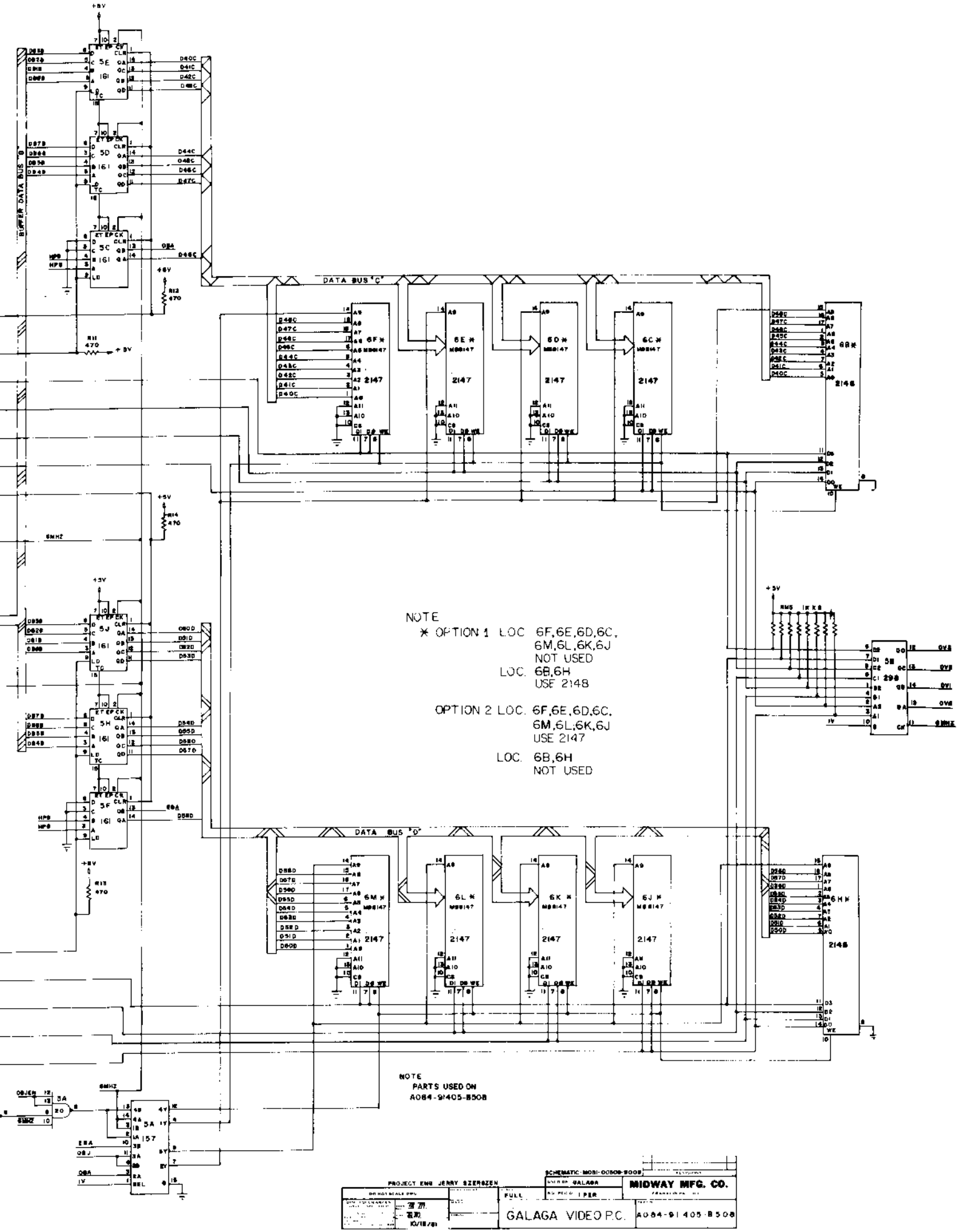
PART NO A084-91405-8508



IN
ICS
07XX
IL
ICS
00XX
1K
TMM
2016
2M
377
2L
273
3L
ICS
2114
3J
ICS
2114
3F
ICS
2114
1E
138
1H
ICS
04XX
2K
245
2J
245
2H
245
2F
245
4B
CPU DATA BUSS
CPU ADDRESS BUS
BUFFER DATA BUS "A"
BUFFER DATA BUS "B"
BUFFER DATA BUS "C"
BUFFER DATA BUS "D"
BUFFER ADDRESS BUS "A"
ALL DECOUPLING
CP4 - CP21
.1MF
470 MF
16V



4M
ICS
Ø5XX
5K
259
5M
257
5N
ICS
COL
2N
ICS
ENC
4L
MB8532
2732
J2
BLUE
GREEN
RED
GND
BUFFER DATA BUS "B"
DATA BUS "B"
3K
ICS
2114
3H
ICS
2114
3E
ICS
2114
3D
283
3C
283
2B
MATCH
2E
273
2C
273
2D
377
1B
153
4F
MB8552
2732
4H
ICS
Ø2XX
3N
3B
3A
6A
365
5A
365


DATA BUS 'C'
DATA BUS 'D'
BUFFER DATA BUS 'B'
NOTE
* OPTION 1 LOC. 6F,6E,6D,6C,
6M,6L,6K,6J
NOT USED
LOC. 6B,6H
USE 2148
OPTION 2 LOC. 6F,6E,6D,6C,
6M,6L,6K,6J
USE 2147
LOC. 6B,6H
NOT USED
NOTE
PARTS USED ON
A084-91405-B508
PROJECT ENG JERRY SZEREZEN
SCHEMATIC-MOSI-00508-B008
MIDWAY MFG. CO.
GALAGA VIDEO P.C.
A084-91405-B508

DESIGNATION LIST

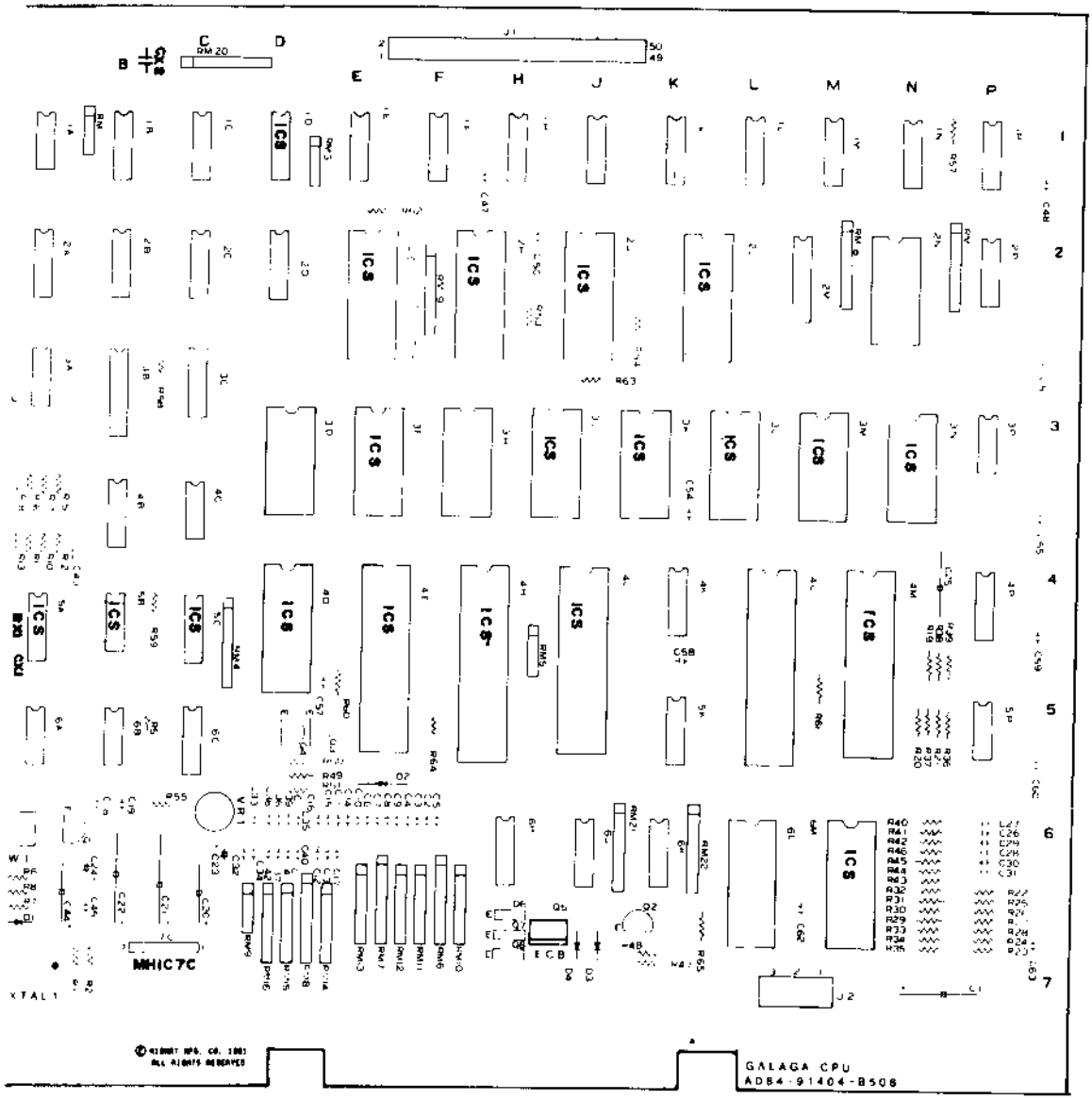
DESIGNATION	DESCRIPTION
C1	470 MF 16V AX. ELEC
C2-C17	.01 MF 50V CER
C18	.1 MF " "
C19	.01MF " "
C20	22 MF 35V AX. ELEC
C21	220 MF 16V AX. ELEC
C22	100 MF " "
C23,C24	.15 MF 25V 10% RD.TANT
C25	10 MF 16V AX. ELEC
C26-C29	.01 MF 100V 10% MYLAR
C30-C42	NOT USED
C43	.0022 MF 50V 10% CER
C44	10MF 16V AX. ELEC
C45	100 PF 50V CER
C46-C63	.1 MF 50V CER
R1,R2	330 OHM 1/4w 5% CRBN
R3,R4	NOT USED
R5	100 OHM 1/4 5% CRBN
R6	1K " " " "
R7,R8	10K " " " "
R9	NOT USED
R10	10K OHM 1/4w 5% CRBN
R11	22K " " " "
R12	47K " " " "
R13	100K " " " "
R14	NOT USED
R15	470 OHM 1/4w 5% CRBN
R16	1K " " " "
R17	2.2K " " " "
R18	4.7K " " " "
R19	10K " " " "
R20	3.3K " " " "
R21-R28	NOT USED
R29	4.7K OHM 1/4w 5% CRBN
R30	10K " " " "
R31	22K " " " "
R32,R33	47K " " " "
R34	10K " " " "
R35	150K " " " "
R36	33K " " " "
R37	10K " " " "
R38	3.3K " " " "
R39	2.2K " " " "
R40	470K " " " "
R41	22K " " " "
R42	150K " " " "
R43	4.7K " " " "
R44	10K " " " "
R45	22K " " " "
R46	47K " " " "
R47,R48	470 " " " "
R49,R50	NOT USED
R51	10K OHM 1/4w 5% CRBN
R52-R54	1K " " " "
R55	NOT USED
R56-R63	1K OHM 1/4w 5% CRBN
R64,R65	4.7K " " " "
CX1	33PF 50V CER
CX2	100PF " "
RX1	1K OHM 1/4w 5% CRBN

DESIGNATION	DESCRIPTION
RM1-RM3	1K OHM 4-UNIT 5-PIN SIP
RM4	1K OHM 8-UNIT 9-PIN SIP
RM5	1K OHM 4-UNIT 5-PIN SIP
RM6,RM7	1K OHM 8-UNIT 9-PIN SIP
RM8	NOT USED
RM9	1K OHM 4-UNIT 5-PIN SIP
RM10-RM13	2.2K OHM 4-UNIT 8-PIN SIP
RM14,RM15	NOT USED
RM16	220 OHM 4-UNIT 8-PIN SIP
RM17-RM20	2.2K OHM 8-UNIT 9-PIN SIP
RM21,RM22	4.7K OHM 8-UNIT 9-PIN SIP
VR1	1K OHM 1/4w CRBN. POT UP W/O KNOB ALPS # HI05IA-1K OHM
D1	1N9148
D2-D4	NOT USED
Q1	2N3391A
Q2	2N4403
Q3,Q4	NOT USED
Q5	TIP 110
Q6-Q8	NOT USED
IC 1A	74LS107
" 1B	74LS283
" 1C	74LS174
" 1D	GG-1 PROM (256X4)
" 1E,1F,1H,1J,1K,1L,	74LS367
" 1M,1N	74LS367
" 1P	74LS138
" 2A,2B	7489
" 2C	74LS157
" 2D	74LS156
" 2E,2H,2J	06XX CUSTOM IC
" 2L	06XX " "
" 2M,2N	NOT USED
" 2P	74LS136
" 3A	4066 CMOS
" 3B	74LS273
" 3C	74LS259
" 3D	NOT USED
" 3E	GG-G EPROM (4KX8)
" 3H	NOT USED
" 3J	GG-E EPROM (4KX8)
" 3K	GG-D " "
" 3L	GG-C " "
" 3M	GG-B " "
" 3N	GG-A " "
" 3P	74L832
" 4B	74LS139
" 4C	74LS32
" 4D	07XX CUSTOM IC
" 4E	Z80 MICROPROCESSOR 2.5MHZ
" 4H	51XX CUSTOM IC
" 4J	Z80 MICROPROCESSOR 2.5MHZ
" 4K	74LS151
" 4L	NOT USED
" 4M	Z80A MICROPROCESSOR 4.0 MHZ

DESIGNATION LIST

DESIGNATION	DESCRIPTION
RMI-RM3	IK OHM 4-UNIT 5-PIN SIP
RM4	IK OHM 8-UNIT 9-PIN SIP
RM5	IK OHM 4-UNIT 5-PIN SIP
RM6, RM7	IK OHM 8-UNIT 9-PIN SIP
RM8	NOT USED
RM9	IK OHM 4-UNIT 5-PIN SIP
RMI0-RMI3	2.2K OHM 4-UNIT 6-PIN SIP
RMI4, RMI5	NOT USED
RMI6	220 OHM 4-UNIT 6-PIN SIP
RMI7-RM20	2.2K OHM 8-UNIT 9-PIN SIP
RM21, RM22	4.7K OHM 8-UNIT 9-PIN SIP
VR I	IK OHM I/4w CRBN. POT UP W/O KNOB ALPS "HI05IA-IK OHM
DI	IN9I4B
D2-D4	NOT USED
QI	2N3391A
Q2	2N4403
Q3, Q4	NOT USED
Q5	TIP II0
Q6-Q8	NOT USED
IC IA	74LS107
" IB	74LS283
" IC	74LSI74
" ID	GG-I PROM (256X4)
" IE, IF, IH, IJ, IK, IL,	74LS367
" IM, IN	74LS367
" IP	74LSI38
" 2A, 2B	7489
" 2C	74LSI57
" 2D	74LSI58
" 2E, 2H, 2J	08XX CUSTOM IC
" 2L	06XX " "
" 2M, 2N	NOT USED
" 2P	74LSI38
" 3A	4066 CMOS
" 3B	74LS273
" 3C	74LS259
" 3D	NOT USED
" 3E	GG-G EPROM (4KX8)
" 3H	NOT USED
" 3J	GG-E EPROM (4KX8)
" 3K	GG-D " "
" 3L	GG-C " "
" 3M	GG-B " "
" 3N	GG-A " "
" 3P	74LS32
" 4B	74LSI39
" 4C	74LS32
" 4D	07XX CUSTOM IC
" 4E	Z80 MICROPROCESSOR 2.5MHZ
" 4H	5IXX CUSTOM IC
" 4J	Z80 MICROPROCESSOR 2.5MHZ
" 4K	74LSI5I
" 4L	NOT USED
" 4M	Z80A MICROPROCESSOR 4.0 MHZ

DESIGNATION	DESCRIPTION
IC 4P	74LSI39
" 5A	74LS368
" 5B	74LSI07
" 5C	GG-2 PROM (256X4)
" 5K	74LSI5I
" 5P	LM324
" 6A	74LS393
" 6B	74I28
" 6C	74LSI39
" 6H	NOT USED
" 6L	" "
" 6M	54XX CUSTOM IC
" 7C	MB3730
ICS ID	I6-PIN IC SOCKET
" 2E, 2H, 2J, 2L	28-PIN " "
" 3E, 3J, 3K, 3L, 3M, 3N	24-PIN " "
" 5A	I6-PIN " "
" 5B	I4-PIN " "
" 5C	I6-PIN " "
" 4D	28-PIN " "
" 4E	40-PIN " "
" 4H	42-PIN " "
" 4J, 4M	40-PIN " "
" 6M	28-PIN " "
XTALI	I8.432 MHZ CRYSTAL
SWI	AKC-6 P.B SWITCH
DIP SW 6J, 6K	8-POS DIP SWITCH
JI	CONN.- R.A. HEADER 50-PIN
J2	CONN.- PCB HEADER 3-PIN
MHIC7C	MOUNTING HARDWARE -(2) 4-40 HEX NUT -(2) 4-40 X 8 SLT. PAN M.S -(2) WSH. 4 .125-.250-.032 FLT. ST. -(2) WSH. 4 .120-.250-.018 EXT. ST.
A080-9I404-C508	GALAGA "CPU P.C.B"



DESCRIPTION	QUA
33PF 50V CER	
100PF " "	
.0022MF " "	
.01MF 25V CER	
.01MF 100V MYLAR	
.1MF 50V CER	
.15MF 25V R.D TANT	
10MF 16V AX. ELEC	
22MF 35V " "	
100MF 16V " "	
220MF 16V " "	
470MF 16V " "	
100 OHM 1/4w CRBN RESIS	
330 " " " "	
470 " " " "	
1K " " " "	
2.2K " " " "	
3.3K " " " "	
4.7K " " " "	
10K " " " "	
22K " " " "	
33K " " " "	
47K " " " "	
100K " " " "	
150K " " " "	
470K " " " "	
220 OHM SIP (4-UNIT) 8-P	
1K " " " 5-P	
1K " " (8-UNIT) 9-P	
2.2K " " (4-UNIT) 8-P	
2.2K " " (8-UNIT) 9-P	
4.7K " " " "	
1K OHM POTENTIOMETER	
IN9148	
2N3391A	
2N4403	
TIP 110	
06XX CUSTOM IC	
07XX " "	
08XX " "	
51XX " "	
54XX " "	
4066 CMOS	
74LS32	
7489	
74LS107	
74128	
74LS136	
74LS139	
74S139	
74LS151	
74LS157	
74LS158	
74LS174	
74LS259	

CROSS REFERENCE LIST

NTITY	DESIGNATION	PART #
	CXI *	0508-00800-2000
	C45, CX2 **	0508-00800-0500
	C43	0508-00800-0600
	C2-CI7, CI9	0508-00800-0800
	C26-C29	0508-00800-0700
	CI8, C46-C63	0508-00800-0900
	C23, C24	0508-00800-1000
	C25, C44	0508-00800-1100
	C20	0508-00800-1200
	C22	0508-00800-1300
	C21	0508-00800-1400
	CI	0508-00800-1500
	R5	0062-11083-1XXX
	RI, R2	0062-14483-1XXX
	RI5, R47, R48	0062-15883-1XXX
	R6, RI6, R52-R54	0062-17983-1XXX
	R56-R63, RXI ***	
	RI7, R39	0062-19583-1XXX
	R20, R38	0062-20383-1XXX
	RI9, R29, R43, R64, R65	0062-21183-1XXX
	R7, R8, RI0, RI9, R30	0062-22783-1XXX
	R34, R37, R44, R51	
	RII, R3I, R4I, R46	0062-24383-1XXX
	R36	0062-25183-1XXX
	RI2, R32, R33, R48	0062-25983-1XXX
	RI3	0062-27583-1XXX
	R35, R42	0062-28383-1XXX
	R40	0062-30783-1XXX
IN 1	RMI6	0508-00804-1100
N 5	RMI-RM3, RM5, RM9	0508-00804-0100
IN 3	RM4, RM6, RM7	0508-00804-0200
N 4	RMI0-RMI3	0508-00804-1200
IN 4	RMI7-RM20	0508-00804-0300
2	RM2I, RM22	0508-00804-1000
1	VRI	0508-00804-1500
	DI	0508-00801-0100
	QI	0508-00802-0200
	Q2	0508-00802-0100
	Q5	0508-00802-0300
	IC2L	0066-005CX-XAPX
	IC4D	0066-006CX-XAPX
	IC2E, 2H, 2J	0066-007CX-XAPX
	IC4H	0066-008CX-XAPX
	IC6M	0066-009CX-XAPX
	IC3A	0508-00803-5300
	IC3P, 4C	0508-00803-0700
	IC2A, 2B	0508-00803-4100
	IC IA, 5B	0508-00803-4200
	IC 6B	0508-00803-4300
	IC IP, 2P	0508-00803-0900
	IC 9, 6C	0508-00803-4400
	IC [illegible]	0508-00803-5100
	IC4K, 5K	0508-00803-4500
	IC 2C	0508-00803-1100
	IC2D	0508-00803-4600
	IC IC	0508-00803-4700
	IC3C	0508-00803-1500

DESCRIPTION	QUANTITY
74LS273	1
74LS283	1
74LS367	6
74LS368	1
74LS393	1
GG-1 PROM (256X4)	1
GG-2 " "	1
GG-A EPROM 2732	1
GG-B " "	1
GG-C " "	1
GG-D " "	1
GG-E " "	1
GG-G " "	1
LM324	1
M83730	1
Z-80 (2.5MHZ)	2
Z-80A (4.0MHZ)	1
14-PIN IC SOCKET	1
16-PIN " "	3
24-PIN " "	6
28-PIN " "	6
40-PIN " "	3
42-PIN " "	1
18.432 MHZ CRYSTAL	1
P.B SWITCH AKC-8	1
8-POS DIP SWITCH	2
CONN.-R.A. HEADER 50-PIN	1
CONN. PCB HEADER 2-PIN	1
MOUNTING HARDWARD IC7C	
-4-40 HEX NUT	2
-4-40X6 PAN M.S	2
-WASHER #4 FLT. ST.	2
- WASHER #4 EXT. ST	2
GALAGA CPU PCB	1

DESIGNATION	PART #
IC3B	0508-00803-1600
IC1B	0508-00803-1700
IC1E, IF, IH, IJ, IK, IL IM, IN	0508-00803-4800
IC5A	0508-00803-2000
IC6A	0508-00803-4900
IC1D	0508-00803-3800
IC5C	0508-00803-3900
IC3N	0508-00803-3200
IC3M	0508-00803-3300
IC3L	0508-00803-3400
IC3K	0508-00803-3500
IC3J	0508-00803-3600
IC3E	0508-00803-3700
IC5P	0508-00803-5400
IC7C	0066-188XX-XX4X
IC4E, 4J	0508-00803-5000
IC4M	0508-00803-5200
IC35B	0508-00804-1700
ICS ID, 5A, 5C	0508-00804-0700
ICS 3E, 3J, 3K, 3L, 3M, 3N	0508-00804-0500
ICS 2E, 2H, 2J, 2L, 4D, 6M	0508-00804-0400
ICS 4E, 4J, 4M	0508-00804-1800
ICS 4H	0508-00804-1900
XTAL 1	0508-00804-1400
SW1	0508-00804-1500
6J, 6K	0508-00804-1600
J1	0508-00804-0800
J2	0017-00021-0443
MHIC7C	
-	0017-00103-0002
-	0017-00101-0510
-	0017-00104-0015
-	0017-00104-0071
A080-91404-c508	A080-91404-B508

ASSEMBLY M051-00508-C005

PROJECT ENG: JERRY SZERSZEN

USED ON GALAGA

NO REQ'D 1 PER

DO NOT SCALE DWG

HEAT TREAT

SCALE FULL

DIM TOLERANCES UNLESS SPECIFIED

DRN M.M

CKD

DATE 10-1-81

MAT'L

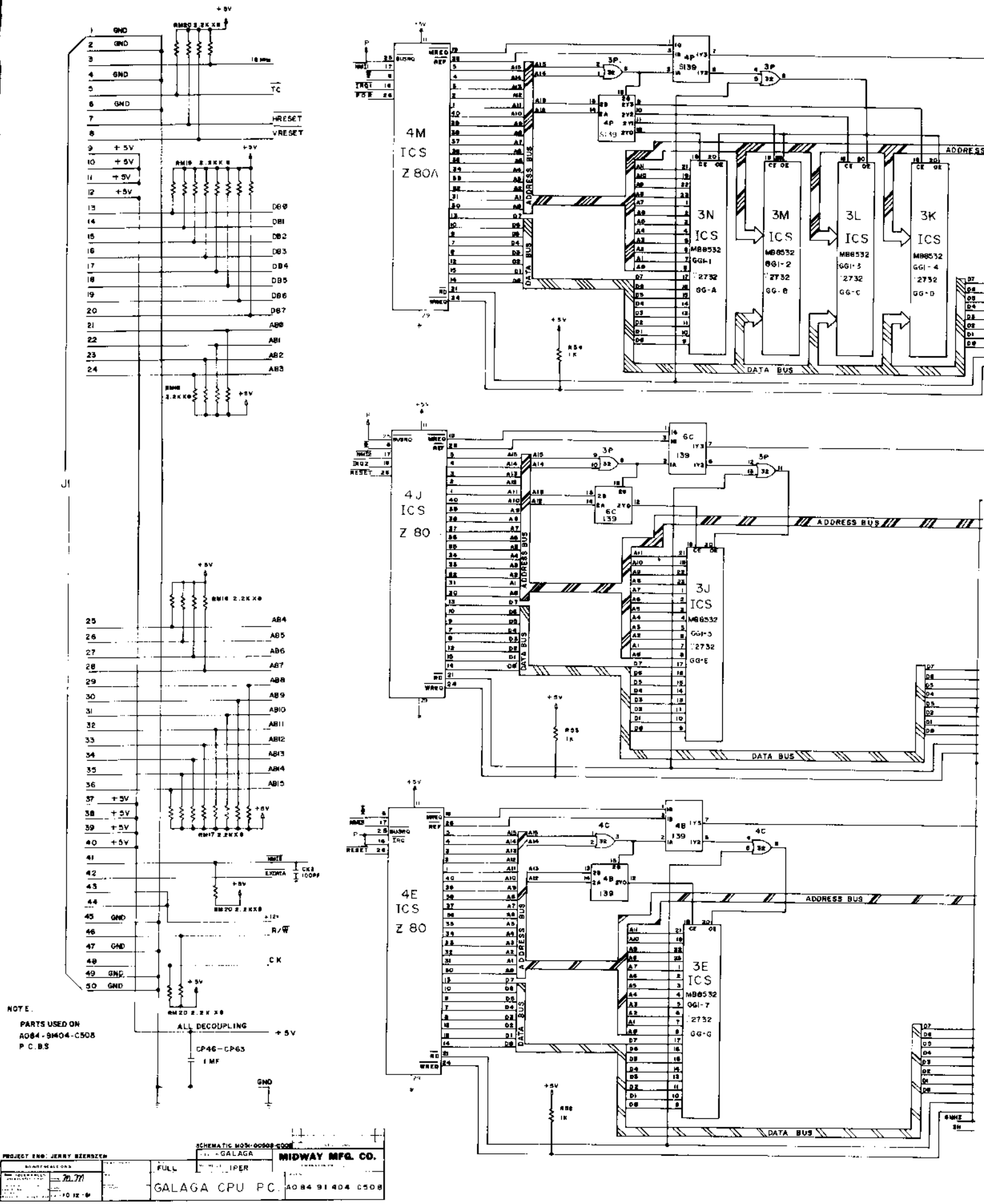
FINISH

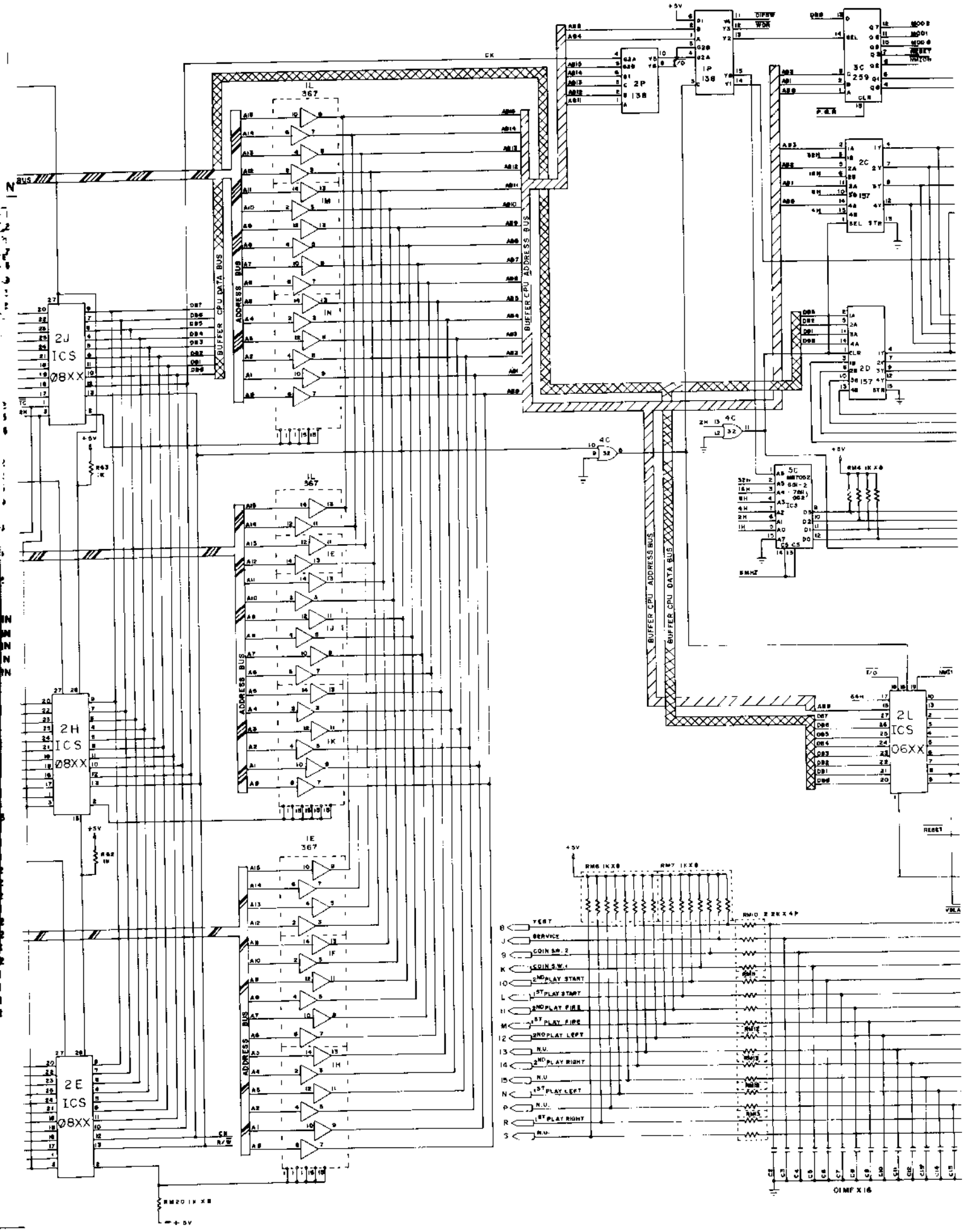
REVISIONS

MIDWAY MFG. CO.
FRANKLIN PK ILL

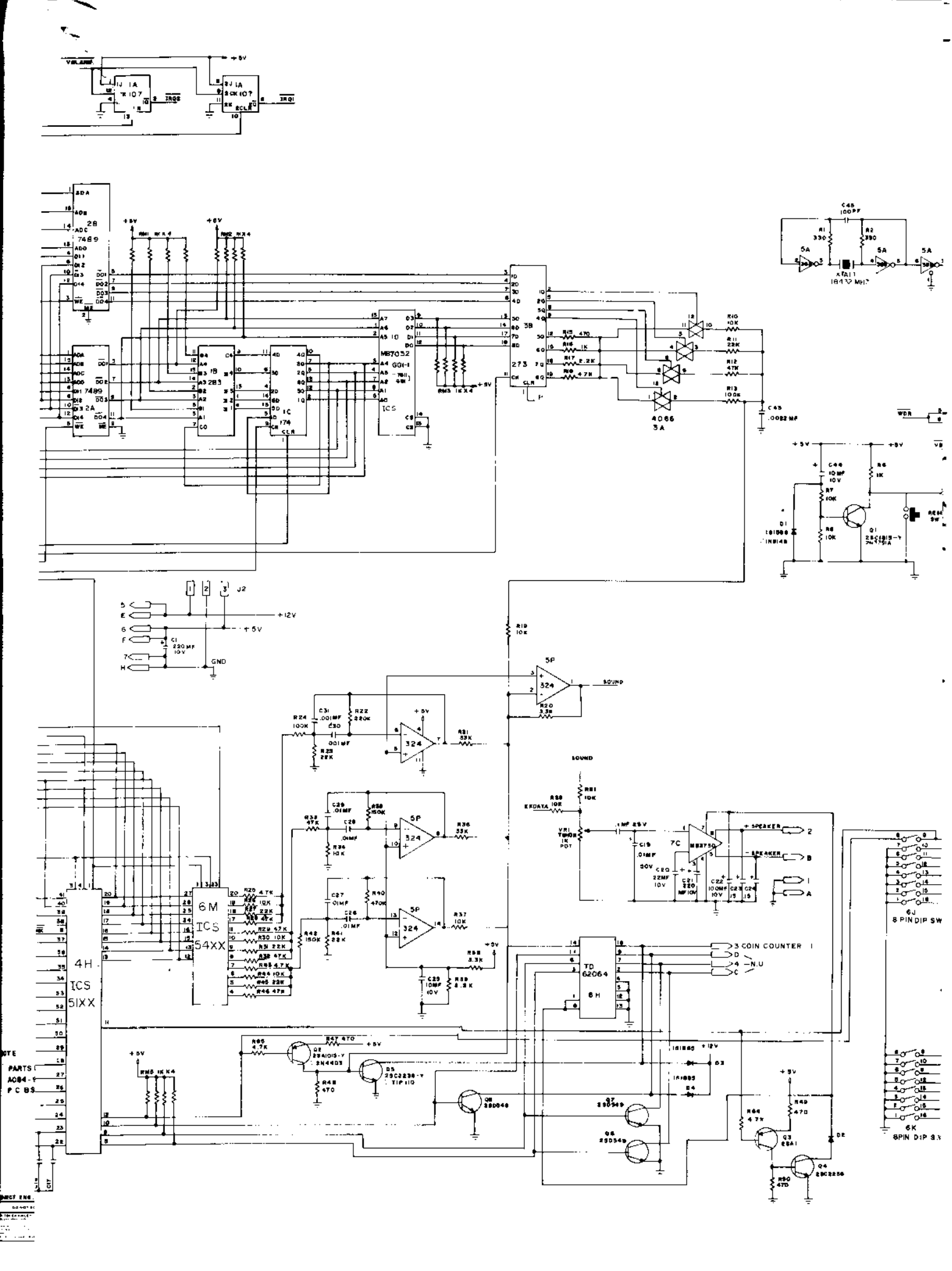
GALAGA CPU P.C.

PART NO A084-91404-C508

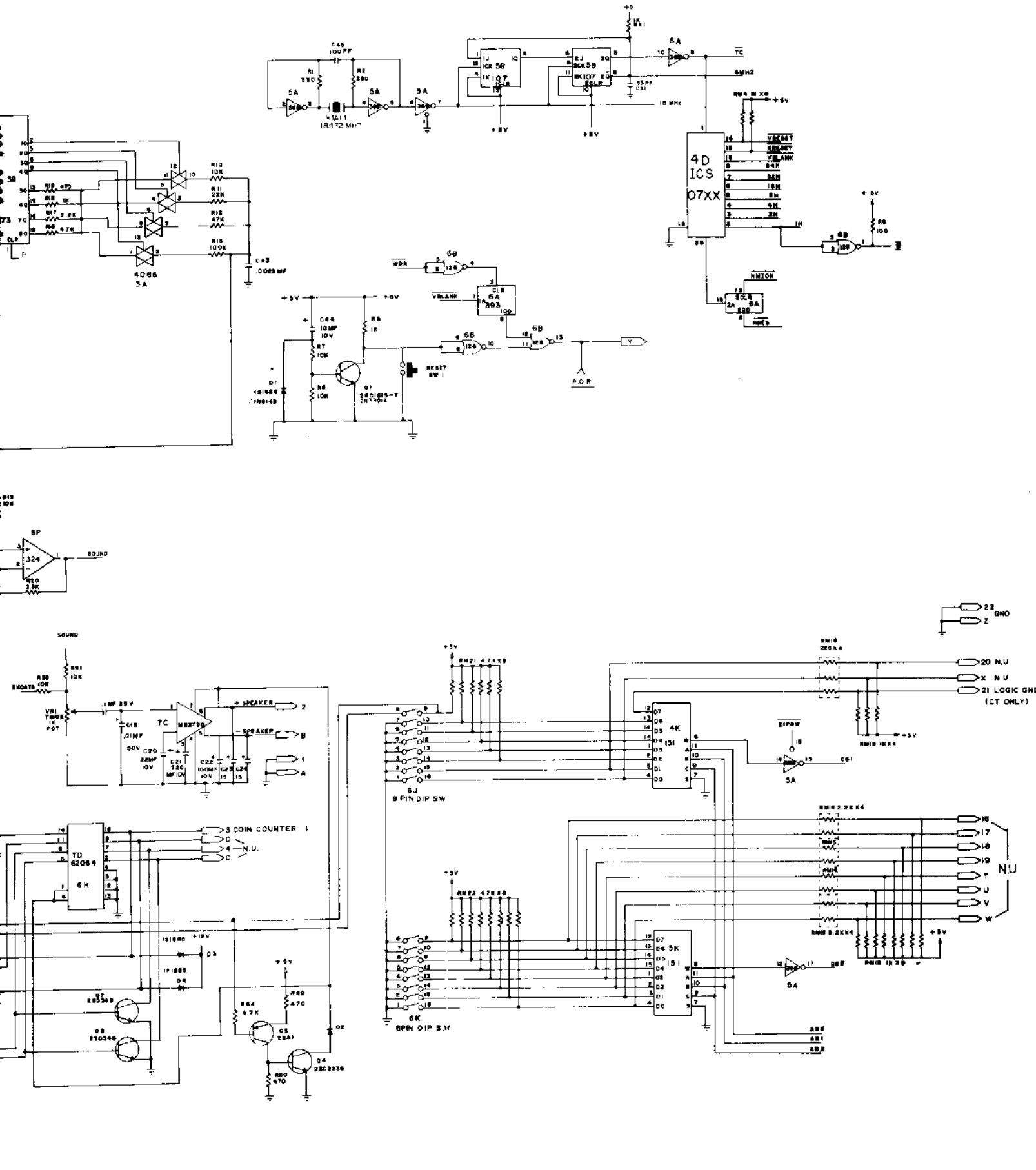

4M ICS Z 80A
4J ICS Z 80
4E ICS Z 80
3N ICS MB8532 GGI-1 2732 GG-A
3M ICS MB8532 GGI-2 2732 GG-B
3L ICS MB8532 GGI-3 2732 GG-C
3K ICS MB8532 GGI-4 2732 GG-D
3J ICS MB8532 GGI-5 2732 GG-E
3E ICS MB8532 GGI-7 2732 GG-G
ADDRESS BUS
DATA BUS
J1
GND
+5V
TC
HRESET
VRESET
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
AB0
AB1
AB2
AB3
AB4
AB5
AB6
AB7
AB8
AB9
AB10
AB11
AB12
AB13
AB14
AB15
R/W
CK
ALL DECOUPLING
CP46-CP63
1 MF
NOTE.
PARTS USED ON
A084-91404-C508
P.C.B.S
PROJECT ENG: JERRY BIERSZER
GALAGA
MIDWAY MFG. CO.
GALAGA CPU P.C.
A084 91404 C508



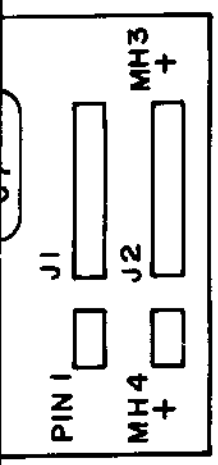
BUFFER CPU DATA BUS
ADDRESS BUS
BUFFER CPU ADDRESS BUS
BUFFER CPU ADDRESS BUS
BUFFER CPU DATA BUS
2J ICS Ø8XX
2H ICS Ø8XX
2E ICS Ø8XX
2L ICS Ø6XX
1L 367
1M
1N
1E
1J
1K
1F
1H
2P 138
1P 138
3C 259
2C 157
2D 157
4C
5C
TEST
SERVICE
COIN S.W. 2
COIN S.W. 1
2ND PLAY START
1ST PLAY START
2ND PLAY FIRE
1ST PLAY FIRE
2ND PLAY LEFT
N.U.
2ND PLAY RIGHT
N.U.
1ST PLAY LEFT
N.U.
1ST PLAY RIGHT
N.U.
RM20 1K X8
RM6 1K X8
RM7 1K X8
RM10 2.2K X 4P
RM4 1K X8
RESET
01MF X16



+5V
IRQ2
IRQ1
7489
MB7052
ICS
273
4066
3A
+12V
GND
SOUND
EXDATA
SPEAKER
6M
ICS
54XX
4H
ICS
51XX
TD
62064
6H
COIN COUNTER
N.U
6J
8 PIN DIP SW
6K
8PIN DIP S.W



4D
ICS
07XX
4066
3A
5A
5P
324
SOUND
+ SPEAKER
- SPEAKER
TD
62064
6H
3 COIN COUNTER 1
N.U.
6J
8 PIN DIP SW
6K
8PIN DIP SW
4K
151
5K
151
DIPSW
20 N.U
21 LOGIC GNI
(CT ONLY)
22 GND
N.U



CROSS REFERENCE LIST

DESCRIPTION	QUANTITY	DESIGNATION	PART #
.01MF 25VAXCER	5	C3-C7	0508-00800-0800
.1MF 100V 10% MYLAR	2	C1, C2	0508-00800-2300
68 OHM 1/4w 5% CRBN RES.	2	R6,R8	0062-098B3-1XXX
1K " " " " "	2	R5,R7	0062-179B3-1XXX
1MEG " " " " "	4	R1-R4	0062-323B3-1XXX
LM556	1	U1	0508-00803-5500
7400	1	U2	0508-00803-5600
KK.156 CON. (2-PIN)	2	J1,J2	3000-16335-0200
(6-PIN)	2	J1,J2	3000-16335-0600
MOUNTING HARDWARD SNAP BUSHING 1/4"	4	MH1-MH4	0017-00042-0014
RAPID FIRE P.C	1	A080-91410-A000	A080-91410-A000

ASS'Y M051-00114-A001

THIS DWG. IS CONFIDENTIAL & PROPERTY OF MIDWAY MFG. CO

N

AGA

09-30-81 | FULL

MIDWAY MFG. CO.
FRANKLIN PK., IL. 60131 A BALLY CO

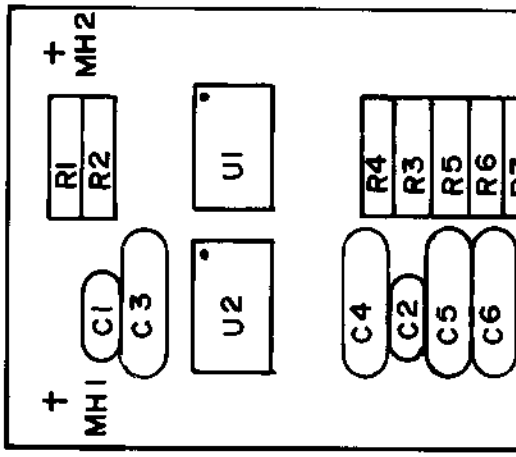
RAPID FIRE P.C.

REVISIONS

PART NO
A-08-2-9-1-4-1-0-A-00-0

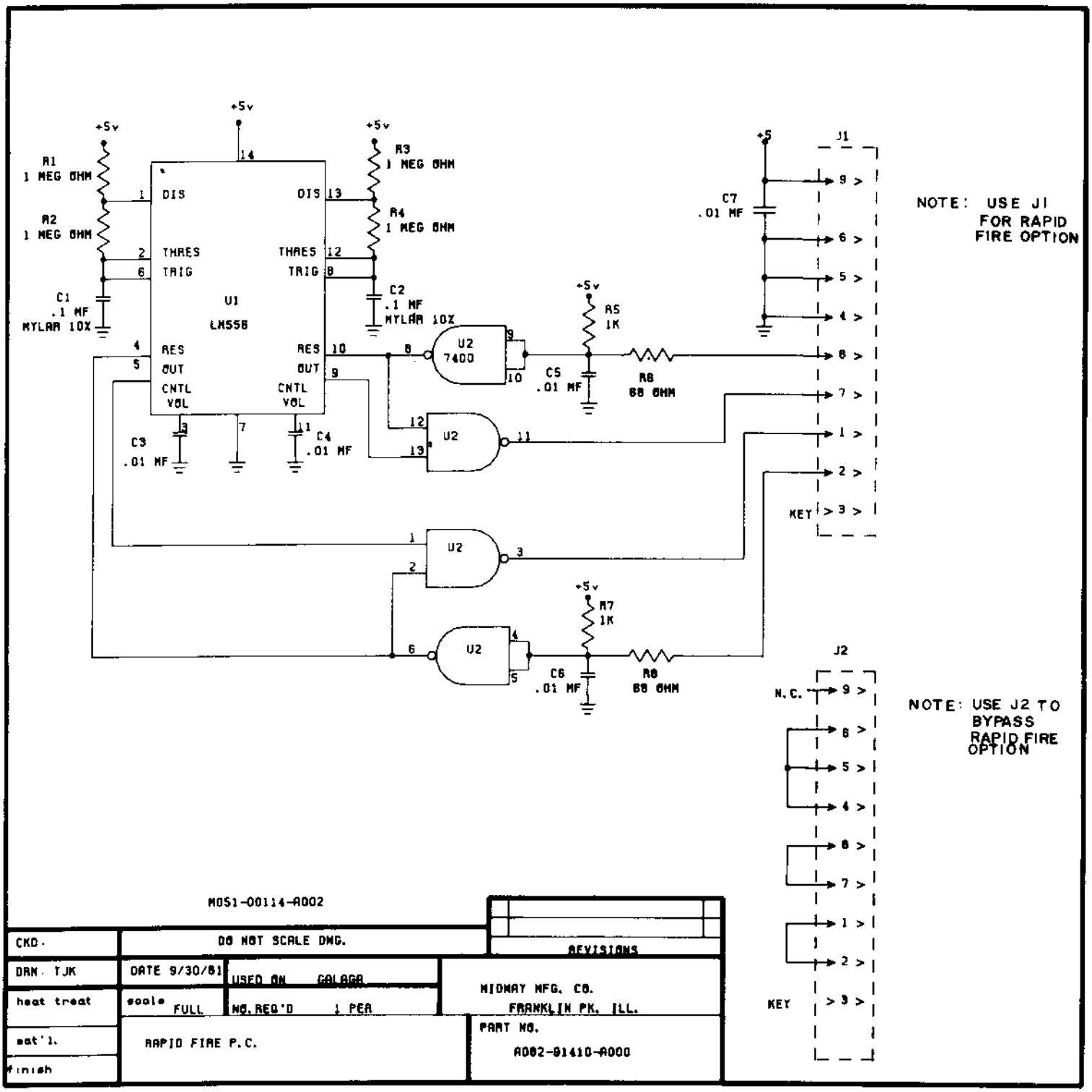
DESIGNATION LIST

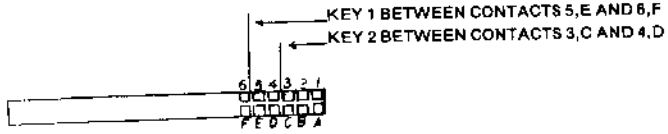
DESIGNATION	DESCRIPTION
C1, C2	.1MF 100V MYLAR
C3-C7	.01MF 25V AX CER
R1-R4	1MEG OHM 1/4w 5% CRBN RES
R5	1K " " " " "
R6	68 " " " " "
R7	1K " " " " "
R8	68 " " " " "
U1	LM556
U2	7400
J1, J2	KK.156 VERT 2(6-PIN) 2(2-PIN)
MH1-MH4	SNAP BUSHING 1/4"



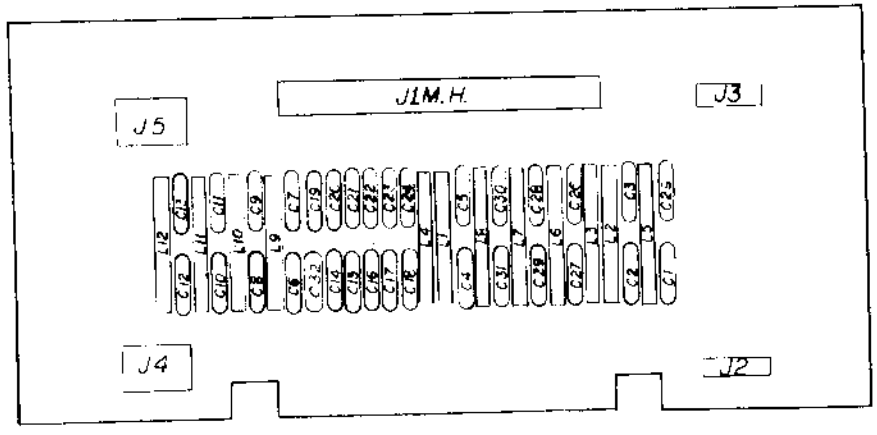
PROJECT ENG: JERRY SZERS

DIM. TOLERANCES UNLESS OTHERWISE SPEC	
CONCENTRICITY T I R	002
FRACTIONAL	± 1/64
DECIMAL	± 005
HOLE DIA	+ 002 - 000
ANGLE	± 1/2°
DO NOT SCALE DWG	


+5v
R1
1 MEG OHM
R2
1 MEG OHM
C1
.1 MF
MYLAR 10%
U1
LM558
DIS
THRES
TRIG
RES
OUT
CNTL
VOL
C3
.01 MF
C4
.01 MF
R3
1 MEG OHM
R4
1 MEG OHM
C2
.1 MF
MYLAR 10%
U2
7400
R5
1K
C5
.01 MF
R8
68 OHM
C7
.01 MF
J1
KEY
NOTE: USE J1 FOR RAPID FIRE OPTION
R7
1K
C6
.01 MF
R9
68 OHM
J2
N.C.
KEY
NOTE: USE J2 TO BYPASS RAPID FIRE OPTION
M0S1-00114-A002
CKD.
DO NOT SCALE DWG.
REVISIONS
DRN. TJK
DATE 9/30/81
USED ON GALAGA
heat treat
scale FULL
NO. REQ'D 1 PER
MIDWAY MFG. CO.
FRANKLIN PK, ILL.
sat'l.
RAPID FIRE P.C.
PART NO.
A002-91410-A000
finish



DESIGNATION	DESCRIPTION
C1	.1MF AXCER
C2-C5	47 PF AXCER
C6, C7	470 PF AXCER
C8-C13	100 PF AXCER
C14-C32	.01 MF AXCER
L1-L4	CHOKE 10 UH W.W. MILLER
L5-L8	CHOKE 10 UH W.W.
L9-L12	CHOKE ENCAP 10 UH
J1	P.C. EDGE CONN.
J2, J3	3 PIN HEADER
J4,J5	6 PIN HEADER
J1 M.H.	2 EDGE CONN. KEY
	(2) 6-32 x 10 SLOT PAN SCREW
	(2) WSH 6 145-.250-.032
	(1) BRKT.-CONN. FIN.



DESCRIPTION	QUANTITY	DESIGNATION	PHANTOM NUMBER
47PF 50V AXCER	4	C2-C5	0508-00800-1800
100PF 50V AXCER	6	C8-C13	0508-00800-1600
470PF 50V AXCER	2	C6, C7	0508-00800-1700
.01MF 25V AXCER	19	C14-C32	0508-00800-1800
.1MF 50V AXCER	1	C1	0508-00800-0900
10 UH W.W. RF CHOKE MILLER	4	L1-L4	0067-021XX-XXAX
10 UH W.W. PF CHOKE	4	L5-L8	0508-00804-2000
10 UH ENCAP PF CHOKE	4	L9-L12	0508-00804-2100
PC EDGE CONN.	1	J1	0017-00021-0418

DESCRIPTION	QUANTITY	DESIGNATION	PHANTOM NUMBER
3 PIN HEADER AMP 350429-1	2	J2-J3	0017-00021-0443
6 PIN HEADER AMP 350431-1	2	J4-J5	0017-0021-0424
PC EDGE CON KEY	2	J1MH	0017-00021-0396
6-32 x 10 SLOT PAN SCREW	2	J1MH	0017-00101-0574
WSH 6 145-.250-.032	2	J1MH	0017-00104-0002
BRKT-CONN. FIN	1	J1MH	0866-0018-00XF

PROJECT ENGINEER L. DEKKER

ASSY. DWG M051-00508-B014

THIS DWG IS CONFIDENTIAL & PROPERTY OF MIDWAY MFG. CO

DIM. TOLERANCES UNLESS OTHERWISE SPEC
CONCENTRICITY T I R .002
FRACTIONAL ± 1/64
DECIMAL ± .005
HOLE DIA + .002 — .000
ANGLE ± 1/2°
DO NOT SCALE DWG

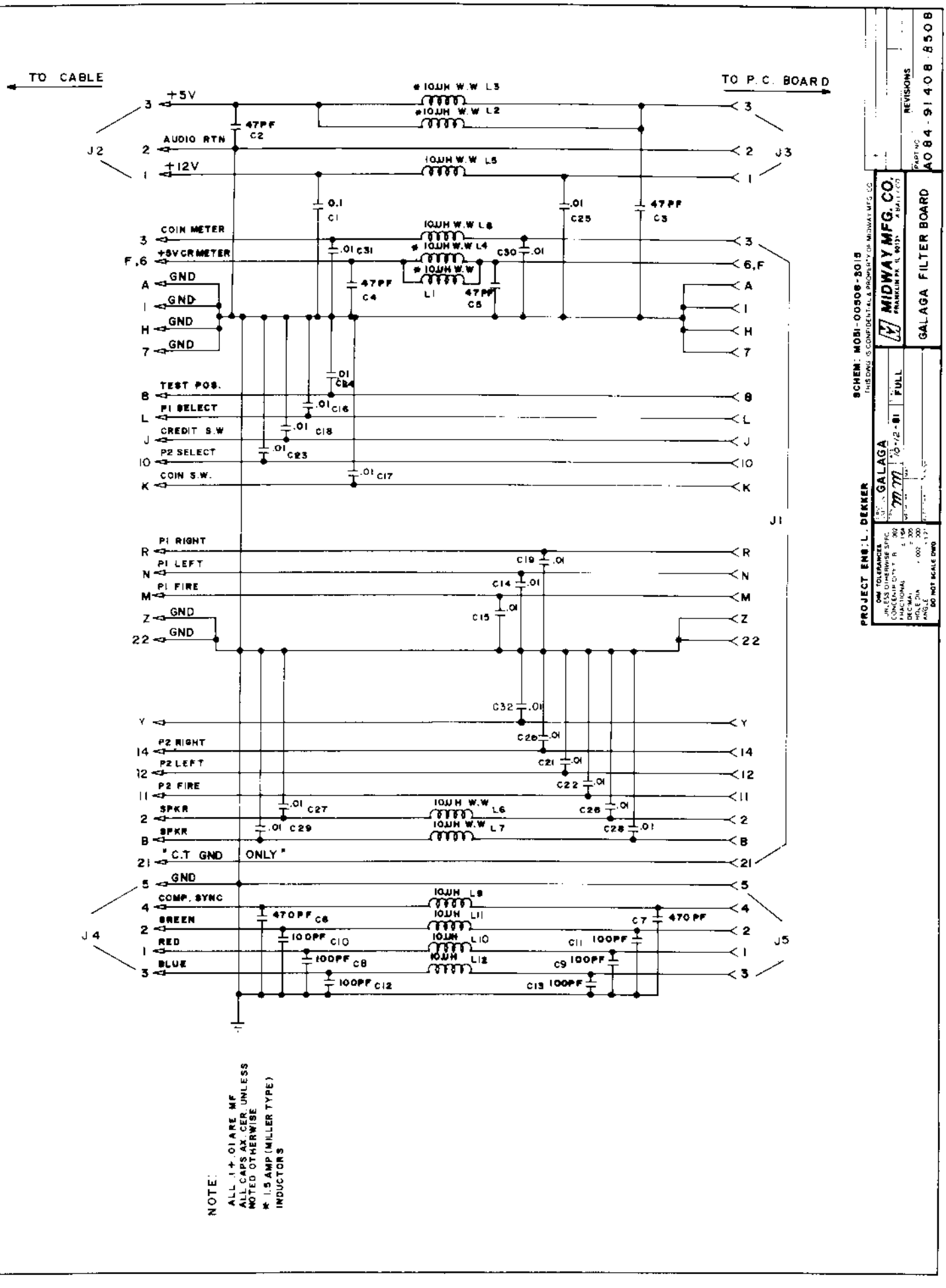
FIRST USED ON
DRN CKS DATE 10-12-81 SCALE FULL
MECH CHK MAT'L
ELEC CHK FINISH

MIDWAY MFG. CO.
FRANKLIN PK., IL. 60131 A BALLY CO

GALAGA FILTER PC

REVISIONS

PART NO A-08-4-9-1-4-0-8-B-S-C-8


TO CABLE
TO P.C. BOARD
J2
J3
J4
J5
J1
3 +5V
2 AUDIO RTN
1 +12V
47PF C2
#10UH W.W L3
#10UH W.W L2
10UH W.W L5
0.1 C1
.01 C25
47PF C3
COIN METER
+5V CR METER
GND
TEST POS.
P1 SELECT
CREDIT S.W
P2 SELECT
COIN S.W.
10UH W.W L8
#10UH W.W L4
#10UH W.W L1
.01 C31
47PF C4
.01 C30
47PF C5
.01 C24
.01 C16
.01 C18
.01 C23
.01 C17
P1 RIGHT
P1 LEFT
P1 FIRE
GND
.01 C19
.01 C14
.01 C15
C32 .01
C26 .01
C21 .01
C22 .01
P2 RIGHT
P2 LEFT
P2 FIRE
SPKR
SPKR
.01 C27
.01 C29
10UH W.W L6
10UH W.W L7
.01 C28
.01 C28
" C.T GND ONLY "
GND
COMP. SYNC
SREEN
RED
BLUE
10UH L9
10UH L11
10UH L10
10UH L12
470PF C6
100PF C10
100PF C8
100PF C12
470 PF C7
100PF C11
100PF C9
100PF C13
SCHEM: MOBI-00508-8018
THIS DWG IS CONFIDENTIAL & PROPERTY OF MIDWAY MFG. CO.
PROJECT ENG: L. DEKKER
GALAGA
10-12-81
FULL
MIDWAY MFG. CO.
FRANKLIN PK. IL 60131
GALAGA FILTER BOARD
REVISIONS
PART NO. A084-91408-8508
DIM TOLERANCES UNLESS OTHERWISE SPEC
CONCENTRICITY
FRACTIONAL
DECIMAL
ANGULAR
DO NOT SCALE DWG
NOTE:
ALL .1 & .01 ARE MF
ALL CAPS AX CER UNLESS NOTED OTHERWISE
* 1.5 AMP (MILLER TYPE) INDUCTORS