INSTRUCTIONS
SA137A
DIGITAL TIMER

INDEX

McCURDY RADIO INDUSTRIES LIMITED
108 CARNFORTH ROAD, TORONTO, ONTARIO M4A 2L4
(416) 751-6262, TELEX 06-963533, TWX 610-492-1373

McCURDY RADIO INDUSTRIES INC.
1711 CARMEN DRIVE, ELK GROVE VILLAGE, ILLINOIS 60007,
(312) 640-7077, TWX 910-222-0436

DRAWINGS

SA137A-06, Control Panel

Schematic	C-137A-06/2-1
Component Layout	B-137A-06/8-1
Connector Wiring	A-137A-06/8-2

SA137A-07, Control Panel

Schematic	C-137A-07/2-1
Component Layout	B-137A-07/8-1
Connector Wiring	A-137A-07/8-2

Section 1 GENERAL DESCRIPTION

1.01 The SA137A timer is an all electronic unit designed for broadcast applications. The time is displayed on five, seven segment LED readouts, two each for minutes and seconds, and one for even tenths of seconds.

1.02 The SA137A is capable of driving a maximum of four remote displays. The remote displays may be located with up to 100 ft. (30 m.) of cable between them and the master unit.

1.03 The standard SA137A utilized the power line frequency as a time base but a more accurate 60Hz source may be utilized for the same purpose.

1.04 The control panel incorporates five pushbutton switches, one toggle switch, and thumbwheel switches are used for setting the timer to count either upward from zero or downward from a preset time.

1.05 The remote displays are connected to the master unit via standard 25-pin subminiature-D connectors. Either conventional wire or ribbon cable may be used for interconnections.

1.06 The SA137A master unit mounts in a standard 19" rack or pedestal and occupies only 3-1/2" of vertical space.

1.07 The remote displays mount in either standard VU meter or cue speaker size cutouts, depending on the display unit, used in the McCurdy range of audio consoles. These are normally mounted in the VU housing of the console.

1.08 The control panel mounts in the DC remote control tray, where supplied, or in module spaces of McCurdy audio consoles.

1.09 Power is provided by a built-in power supply which operates from a 117V, 60Hz supply.

Section 2 SPECIFICATIONS

2.01 Type:
All Electronic, digital.

2.02 Time Displays:
a) Type - 7 segment light-emitting diode.
b) Number - 4 maximum.

2.03 Cable Length Between Master and Remotes:
100 ft. (30m) maximum.

2.04 Time Base:
Power line or external source.

2.05 Accuracy:
Dependent on power line or external source.

2.06 A, B Contact Output:
30V, 300mA maximum.

2.07 Power Requirements:
117V, 60Hz single phase.

2.08 Overall Dimensions:
1) SA137A-01: 2-15/16 in. (73.43 mm) wide, 5 in. (127 mm) high, 1-7/8 in. (46.63 mm) deep (to connector mating face).
2) SA137A-02: 2-15/16 in. (73.43 mm) wide, 6-7/8 in. (174.63 mm) high, 1-7/8 in. (46.63 mm) deep (to connector mating face).
3) SA137A-06: 4-3/16 in. (116.36 mm) wide, 7-1/2 in. (190.5 mm) high, 2-1/2 in. (63.5 mm) deep (to connector mating face).
4) SA137A-07: 4-3/4 in. (120.65 mm) wide, 3-15/16 in. (100.01 mm) high, 2-1/2 in. (63.5 mm) deep.

2.09 Weight:
1) SA137A-01: 8-1/4 oz. (234 grams) approx.
2) SA137A-02: 10 oz. (284 grams) approx.
3) SA137A-06: 13 oz. (369 grams) approx.
4) SA137A-07: 11 oz. (312 grams) approx.

Section 3 INSTALLATION

3.01 On receipt of equipment, examine it for any damage that may have occured in transit. If any damage is found, report it in accordance with the enclosed Damage Claim Procedure Form.

3.02 Mounting, Master Timer Unit:
The SA137A occupies 3-1/2" of vertical space in a standard 19" rack. The unit generates very little heat and therefore may be mounted in any convenient location. However, avoid proximity to equipment that generates considerable heat.

3.03 Mounting, Remote Display Units:
The master timer unit can drive up to a maximum of four remote display units. The SA137A-01 remote display mounts in a standard McCurdy VU meter cutout and the SA137A-02 in a standard McCurdy cue speaker cutout. To mount, remove the applicable blocking plate from the console and the mounting clamp from the remote display. Insert the display into the cutout from the front of the panel, place the mounting clamp over the two studs on the display unit and tighten sufficiently to the display in the panel.

3.04 When installing remote displays in consoles without cutouts or those from another manufacturer, the following cutout sizes are required: SA137A-01, 2-15/16 in. (73.43 mm) X 5 in. (127 mm); SA137A-02, 2-15/16 in. (73.43 mm) X 6-7/8 in. (174.63 mm). Maximum panel thickness is 1/8".

3.05 Connecting Remote Displays:
The interconnect cables supplied by McCurdy Radio Industries are made from " 3M Scotchflex " 25-conductor ribbon cable with crimp-on connectors from the same manufacturer. Parts required to make these cables are listed in Section 7, parts list. However, if you do not have access to the proper assembly tooling for these connectors, it is recommended that you purchase these assembled from McCurdy Radio Industries or fabricate your own cables from conventional wire.

3.06 The maximum permissable cable length between the master unit and any remote display unit is 100 ft. (30 m).

3.07 When making interconnect cables from conventional wire, 9-conductor, 23 gauge, AWG, minimum, cable should be used. See Dwg. A-137A/8-2 for connector wiring. Although five connector pins are used for ground and five for power, only one pin, and wire, need be used for each one. Standard 25-pin subminiature-D connectors are used on the SA137A.

3.08 All interconnect cables should be equipped with locking screws to prevent them from accidentally being disconnected.

3.09 Mounting, Control Panel:
The SA137A-06 and SA137A-07 control panels mount in the DC remote control tray, where supplied, or in module spaces of McCurdy audio consoles.

3.10 AC Power:
Plug the power cord into a 117V, 60Hz source. When a 60Hz signal more accurate than line frequency is to be utilized, connect the 60Hz source to terminal 7 on connector J6, disconnect the jumper between A and B and connect A to C. Refer to Dwg. A-137A/8-4 for connector J6 wiring and Dwg. B-137A/8-1 for the component layout.

3.11 When two SA137A's are used together (slaving), schronization must be maintained by disconnecting the jumper between D and E (J1) and connect D to F (J2) (refer to Dwg. B-137A/8-1). Then connect terminal 16 on the master unit to terminal 17 on the slave unit and connect terminal 16 on the slave unit to terminal 17 on the master unit. Refer to Dwg. A-137A/8-4 for connector wiring.

3.12 Two terminals (terminal 1, A contact; terminal 2, B contact) are supplied for driving an external circuit, with an output of up to 30 Volts at 30mA maximum. Refer to Dwg. A-137A/8-4 for connector wiring.

Section 4 OPERATION INSTRUCTIONS

4.01 The following instructions outline the method of operating the control panel switches.

4.02 Up/Down: Set according to whether an upward count from zero or a preset downward count time interval is to be used.

4.03 Start: Starts the count from either zero, the beginning of a preset time interval or the time at which the count was stopped.

4.04 Stops: Stops the count.

4.05 Clear: Resets the timer and display to zero. The stop pushbutton must be depressed prior to depressing the hold button.

4.06 Hold: When depressed once, the display is held. However, the timer does not stop counting. Therefore, when the hold pushbutton is depressed a second time, the count present in the timer is displayed and continues counting.

4.07 When the preset time interval has reached zero (counting down), the display will flash off and on. To stop the display from flashing, depress the stop button.

Section 5 CIRCUIT DESCRIPTION

5.01 The schematic diagram of the SA137A timer master unit is shown on Dwg. F-137A/2-1, the timer display unit on Dwg. D-137A-01/2-1 and the control panel on Dwg. C-137A-06/2-1. Refer to these drawings in conjunction with the following circuit description.

5.02 When the load switch is depressed, the preset time from thumbwheel switches SW7 through SW10 is loaded into up/down counters IC1, IC5, IC4 via IC19 and IC3. The outputs of these integrated circuits are applied to multiplexing devices IC7 through IC10 which feed the address and real-time in binary coded decimal to decoder drivers IC1 through IC5 (see Dwg. D-137A-01/2-1) via nand-gates, inverters and the address via demultiplexing device IC9. The output of IC1 through IC5 is the real-time, displayed on LED display integrated circuits IC6, IC7 and IC8.

5.03 When the start switch is depressed, the counter begins counting either up or down at a frequency of 1Hz, which is determined by integrated circuits IC17 (divides source by 6) and IC2 (divides frequency again by 10).

5.04 When the counter reaches zero, when counting down, a signal is sent via IC14B and IC12B to IC3 and then to IC4 and IC5, which cause IC7 (tens and units seconds display) and IC8 (tens of seconds display) to flash on and off until the stop switch is depressed.

5.05 When the stop switch is depressed, frequency divided IC2 stops, which stops all the up/down counters.

5.06 When the hold switch is depressed, a 60Hz signal is sent to IC10 via IC16B and IC12A. One-shot monostable IC10 disables IC9 disallowing any addresses to be accepted, which in turn freezes the display time.

5.07 When the clear switch is depressed, up/down counters IC1, IC5, IC4, IC3 and frequency divider IC2 are reset to zero.

5.08 When time reaches zero, an output of up to 30 Volts at 300mA maximum is available at the "A" and "B" contact terminals via IC21A, IC21B, IC20B, IC22A and IC22B.

5.09 Power for the unit is derived from a 117V, 60Hz source which is filtered and regulated by transformer T1, integrated circuit IC31 and associated components to provide +8V and +5V for the integrated circuitry.

Section 6 MAINTENANCE

6.01 The SA137A should be inspected for damaged or deteriorated components and wiring during regular system maintenance periods. Any accumulated dust should be removed with a soft brush or light air pressure.

6.02 When removing or replacing components, be careful not to damage the printed circuit board, wiring or other components. Use a 25-Watt fine-point temperature-controlled soldering iron and resin-core solder only. Refer to the following drawings for the component layouts of SA137A master unit, timer display unit and control panels:

a) SA137A Timer, Master Unit: Dwg. B-137A/8-1.
b) Timer Display Unit: Dwg. B-137A-1/8-1 and Dwg. B-137A-1/8-2.
c) SA137-06 Control Panel: Dwg. B-137A-06/8-1.
d) SA137-07 Control Panel: Dwg. B-137A-07/8-1.

6.03 Once the SA137A has been completely installed, the following test procedure should be performed to ensure that the unit functions properly.

6.04 Test Procedure:

1) Press the Clear pushbutton to clear the display.
2) Set the thumbwheel switches for a time interval.
3) Press the Load pushbutton and check that the preset time appears on the display.
4) Set the Up/Down switch to the Down position.
5) Press the Start pushbutton and check that the time on the display begins counting down.
6) Depress the Hold pushbutton and check that the time on the display is held.
7) Press the Hold button again and check that the display time is correct and that the timer did not stop counting.
8) When time reaches zero, check that the tens of seconds, units of seconds and tenths of seconds display digits flash on and off. Depress the stop pushbutton and check that the three digits stop flashing.
9) Repeat steps 2 and 3.
10) Set the Up/Down switch to the Up position.
11) Set the thumbwheel switches for all zeros.
12) Press the Load pushbutton and check that zero time appears on the display.
13) Press the Start pushbutton and check that the time on the display begins counting up.
14) Press the Clear pushbutton and check that the display resets to zero.

Section 7 PARTS LIST

7.01 List of replaceable parts for the SA137A Digital Timer, Master Unit.
NOTE: The 1/4W, ±5% resistors are stock items, these are not listed.

REFERENCE DESIGNATION	SUPPLIER AND PART NUMBER	DESCRIPTION
C1, C16, C27	ITT TAG1M35	Capacitor, Tantalum, 1uf, 35V.
C2-C7, C14-C18, C20, C21	Philips 280AEA10K	Capacitor, Mylar, 0.01uf, 250V.
C8, C19	Siemens B41283	Capacitor, Electrolytic, 100uf, 16V.
C9, C12	Philips 280AEA47K	Capacitor, Mylar, 0.047uf, 250V.
C13	Siemens B41313	Capacitor, Electrolytic, 47uf, 10V.
C23-C25, C28-C40	Philips 280AEA100K	Capacitor, Mylar, 0.1uf, 250V.
C26A, C26B	Philips 431CRE4700	Capacitor, Electrolytic, 4700uf, 16V.
C41	ITT TAG1M35	Capacitor, Tantalum, 0.1uf, 35V.
XF	Cornell Dublier NF20968-3	Filter, Noise.
IC1-IC5	National DM74192N	Integrated Circuit.
IC6, IC25	National DM7410N	Integrated Circuit.
IC7, IC10	National DM74151N	Integrated Circuit.
IC11, IC17	National DM7490N	Integrated Circuit.
IC12	National DM7454N	Integrated Circuit.
IC13, IC26	National DM7413N	Integrated Circuit.
IC14-IC16	National DM7437N	Integrated Circuit.
IC18	National DM74132N	Integrated Circuit.

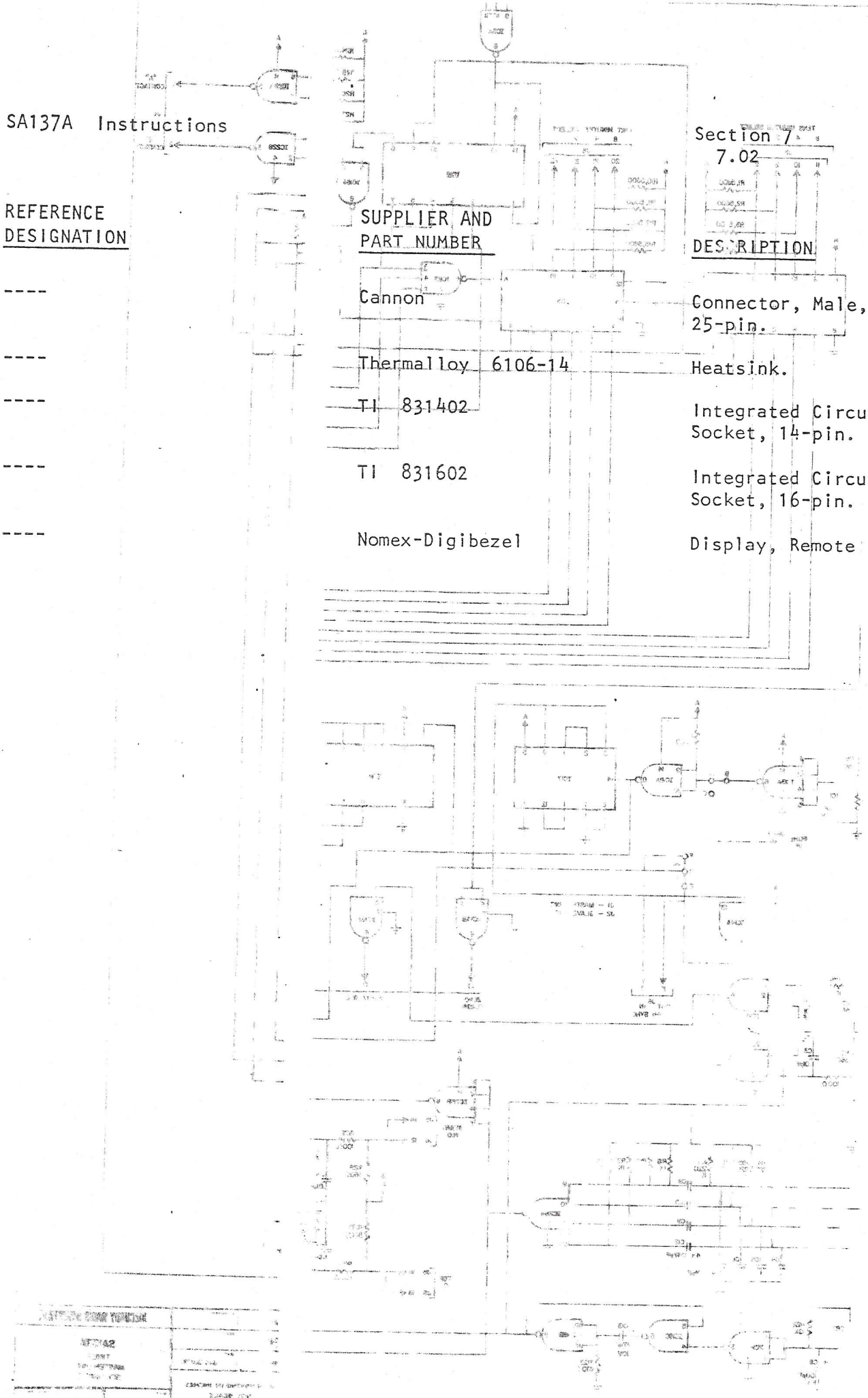
REFERENCE DESIGNATION	SUPPLIER AND PART NUMBER	DESCRIPTION
IC19	Signetics N8233B	Integrated Circuit.
IC20	Fairchild 9602PC	Integrated Circuit.
IC21, IC28	Signetics N74279B	Integrated Circuit.
IC22	National LM75452N	Integrated Circuit.
IC23, IC29	National DM7400N	Integrated Circuit.
IC24	National DM7402N	Integrated Circuit.
IC27	National DM7425N	Integrated Circuit.
IC30	National DM7420N	Integrated Circuit.
IC31	Fairchild uA7805KC	Integrated Circuit.
CR1, CR3, CR4	Philips 1N4148	Diode, Silicon.
CR2	Motorola 1N34A	Diode, Silicon.
CR5, CR6	Motorola MR504	Diode, Silicon.
T1	Hammond 112167	Transformer, Power.
SW1	Carling Switch 316B73	Switch, DPST.
F1	Littelfuse 342004	Fuse, Slow-blow, 1A.
PL1	Eldema CN01RCSN117	Lamp, Neon.
J1-J6	Amp 205858-1	Connector, Female, 25-pin, 90°.
----	Amp 205817-1	Locking Screws, Connectors.
----	Thermalloy 6016B	Heatsink.
----	TI 830802	Integrated Circuit Socket, 8-pin.
----	TI 831402	Integrated Circuit Socket, 14-pin.
----	TI 831602	Integrated Circuit Socket, 16-pin.

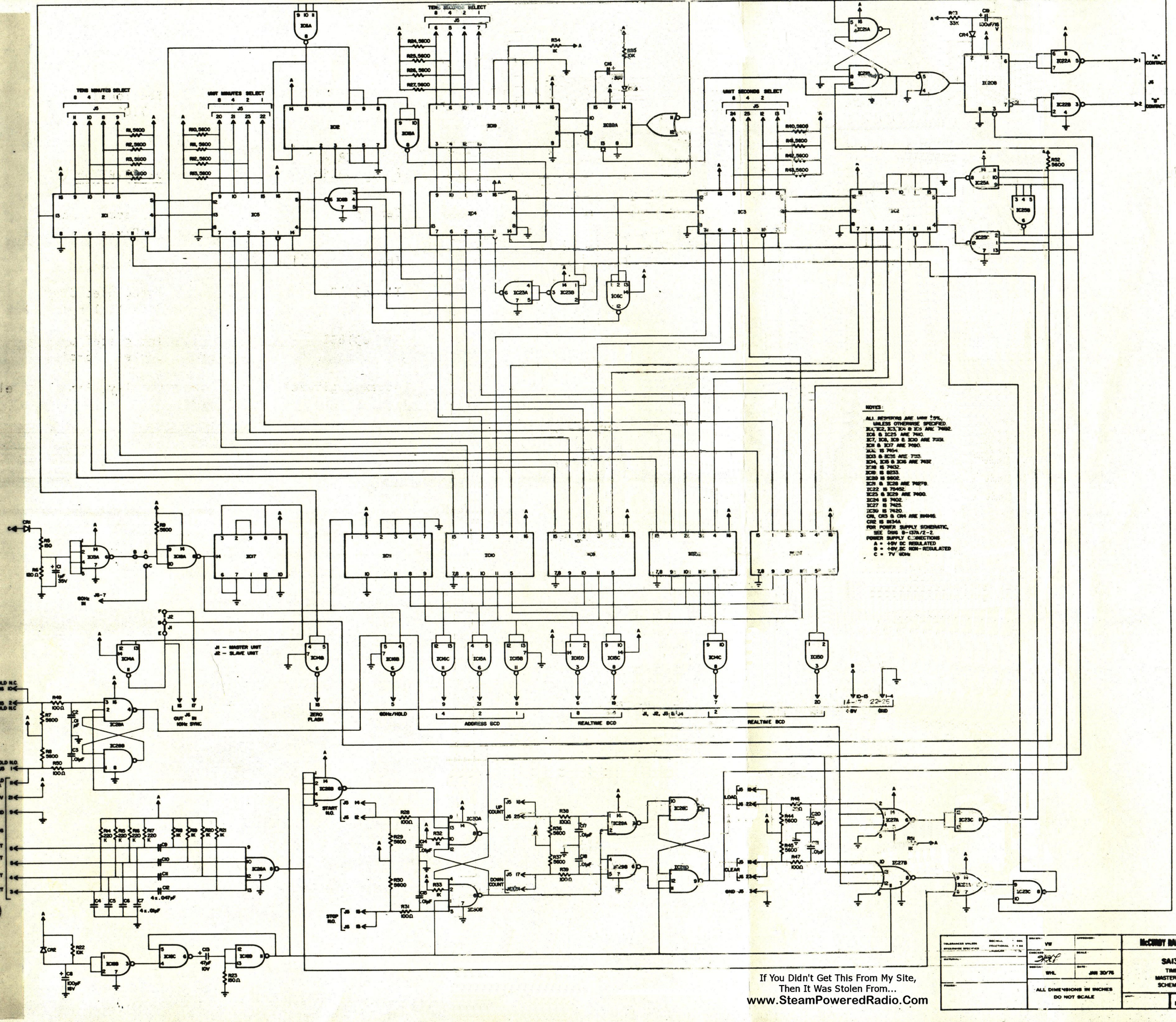
7.02 List of replaceable parts for the SA137A-01 and SA137-02 Remote Display Units.

NOTE: The 1/4W, ±5% resistors are stock items, these are not listed.

REFERENCE DESIGNATION	SUPPLIER AND PART NUMBER	DESCRIPTION
R3	Ohmite 4030	Resistor, 0.5 ohm, 1-1/2W, ±5%.
C1	ITT TAG1M35	Capacitor, Tantalum, 1uf, 35V.
C2	Siemens B32540	Capacitor, Mylar, 0.33uf, 100V.
C3-C6	Siemens B32540	Capacitor, Mylar, 0.1uf, 100V.
CR1, CR2	Motorola MZ2361	Diode, Silicon.
CR3	Philips 1N4148	Diode, Silicon.
CR4	Motorola 1N5338	Diode, Silicon.
IC1-IC5	Fairchild 9374PC	Integrated Circuit.
IC6, IC7	Litronix DL727	Display, LED, Dual.
IC8	Litronix DL707L	Display, LED.
IC9	National DM7442N	Integrated Circuit.
IC10	National DM74121N	Integrated Circuit.
IC11	Fairchild uA78M05UC	Integrated Circuit.
IC12, IC13	National DM7414N	Integrated Circuit.
Q1	Motorola MPSA56	Transistor.
Q2	RCA 2N6107	Transistor.
J1	Amp 205738-1	Connector, Female, 25-pin.
----	Amp 205817-1	Locking Screws, Connector.

REFERENCE DESIGNATION	SUPPLIER AND PART NUMBER	DESCRIPTION
----	Cannon	Connector, Male, 25-pin.
----	Thermalloy 6106-14	Heatsink.
----	TI 831402	Integrated Circuit Socket, 14-pin.
----	TI 831602	Integrated Circuit Socket, 16-pin.
----	Nomex-Digibezel	Display, Remote Bezel.

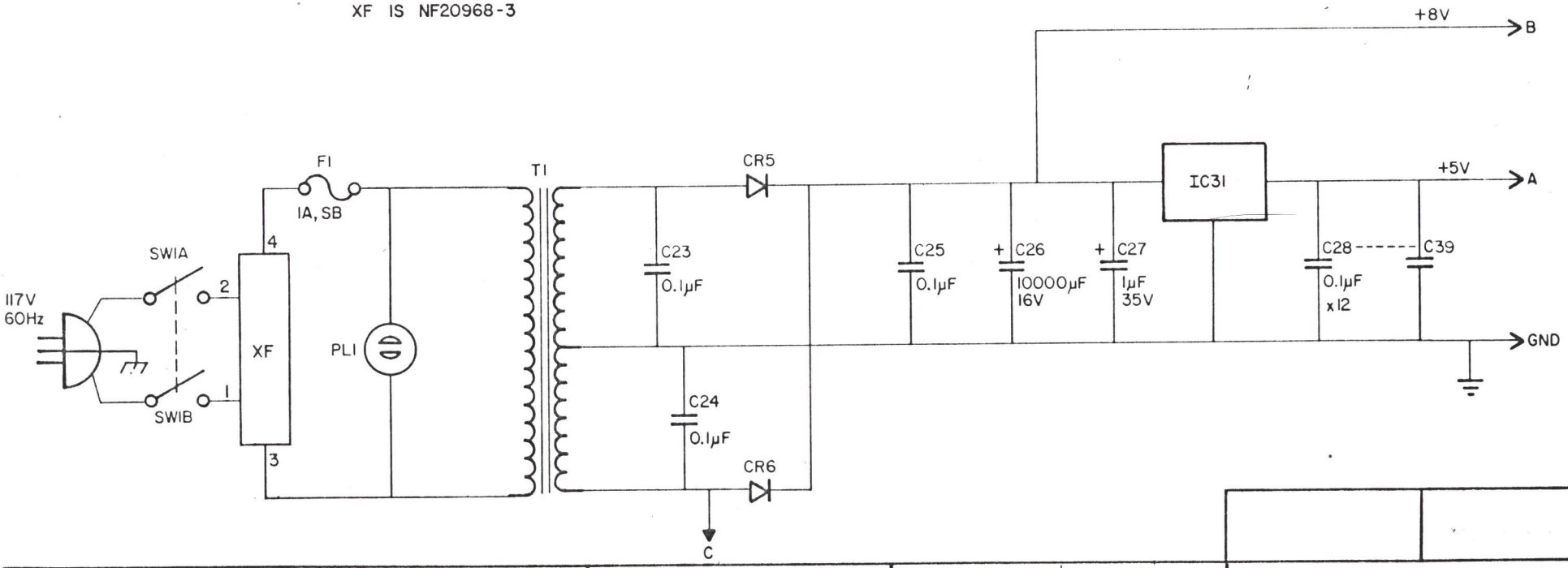



TENS MINUTES SELECT
UNIT MINUTES SELECT
TENS SECONDS SELECT
UNIT SECONDS SELECT
J5
R1, 5600
R2, 5600
R3, 5600
R4, 5600
R60, 5600
R61, 5600
R62, 5600
R63, 5600
R24, 5600
R25, 5600
R26, 5600
R27, 5600
R34 1K
R40, 5600
R41, 5600
R42, 5600
R43, 5600
R52 5600
C16 .33V
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC15
IC16
IC17
IC18
IC19
IC20
IC21
IC22
IC23
IC24
IC25
IC26
IC27
IC28
IC29
IC30
IC31
IC32
IC33
IC34
IC35
IC36
IC37
IC38
IC39
IC40

DO NOT SCALE

NOTES:

IC31 IS μA7805KC.
CR5 & CR6 ARE MR504.
XF IS NF20968-3



ISSUE			
2	L1, L2, C45 & C46 ADDED MAY 27/76 BB		
3	C22 WAS .045uF GROUND POINTS NOW SHOWEN BETWEEN C45, C46 & LINE CORD OCT 15/76 BB		
4	L1, L2, C22, C45 & C46 WERE DELETED & XF WAS ADDED JUNE 15/78 K.J.P.		

TOLERANCES UNLESS OTHERWISE SPECIFIED — DECIMAL ± .005, FRACTIONAL ± 1/64, ANGULAR ± ½°

MATERIAL

FINISH

DRAWN: VW	APPROVED:
CHECKED:	SCALE:
DESIGN: WHL	DATE: JAN 30/76

ALL DIMENSIONS IN INCHES
DO NOT SCALE

McCURDY RADIO INDUSTRIES

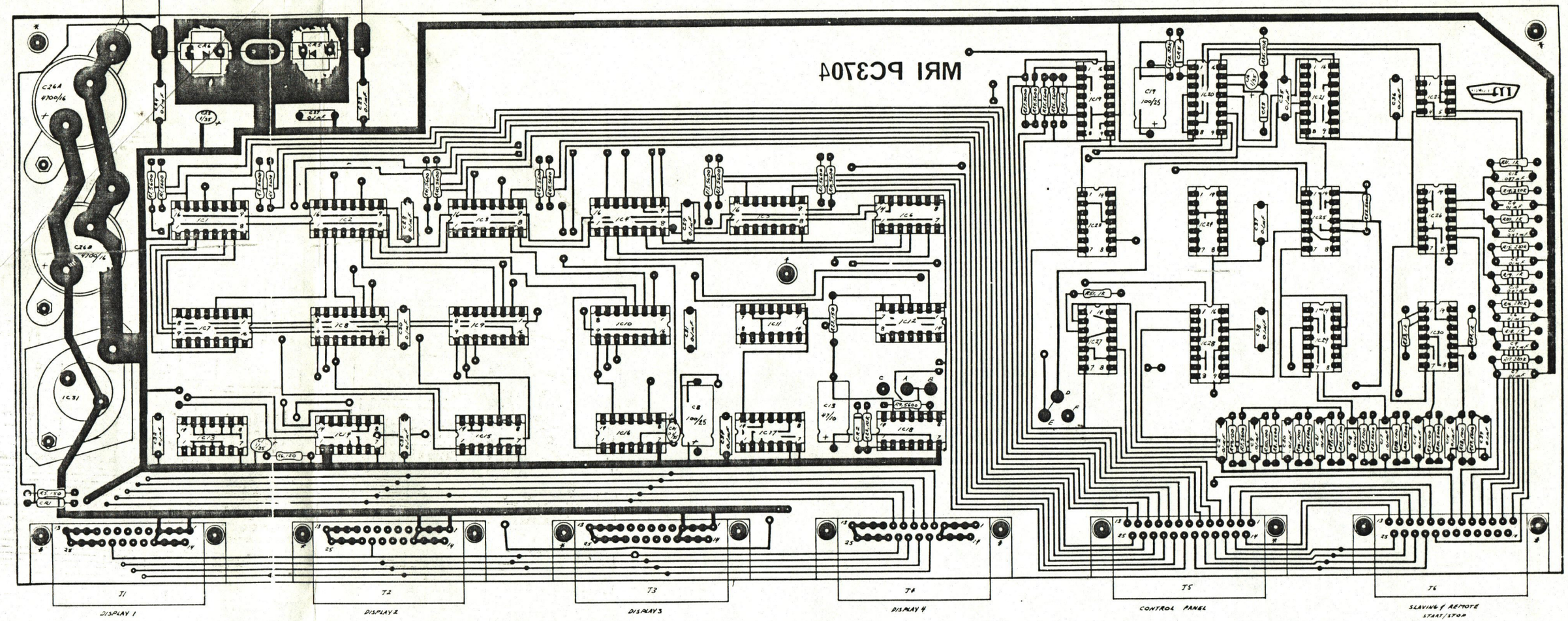
SA137A

TIMER
MASTER UNIT
SCHEMATIC

UNIT:

DRAWING No. B-137A/2-2

TRANSTEX 13 250-5-75



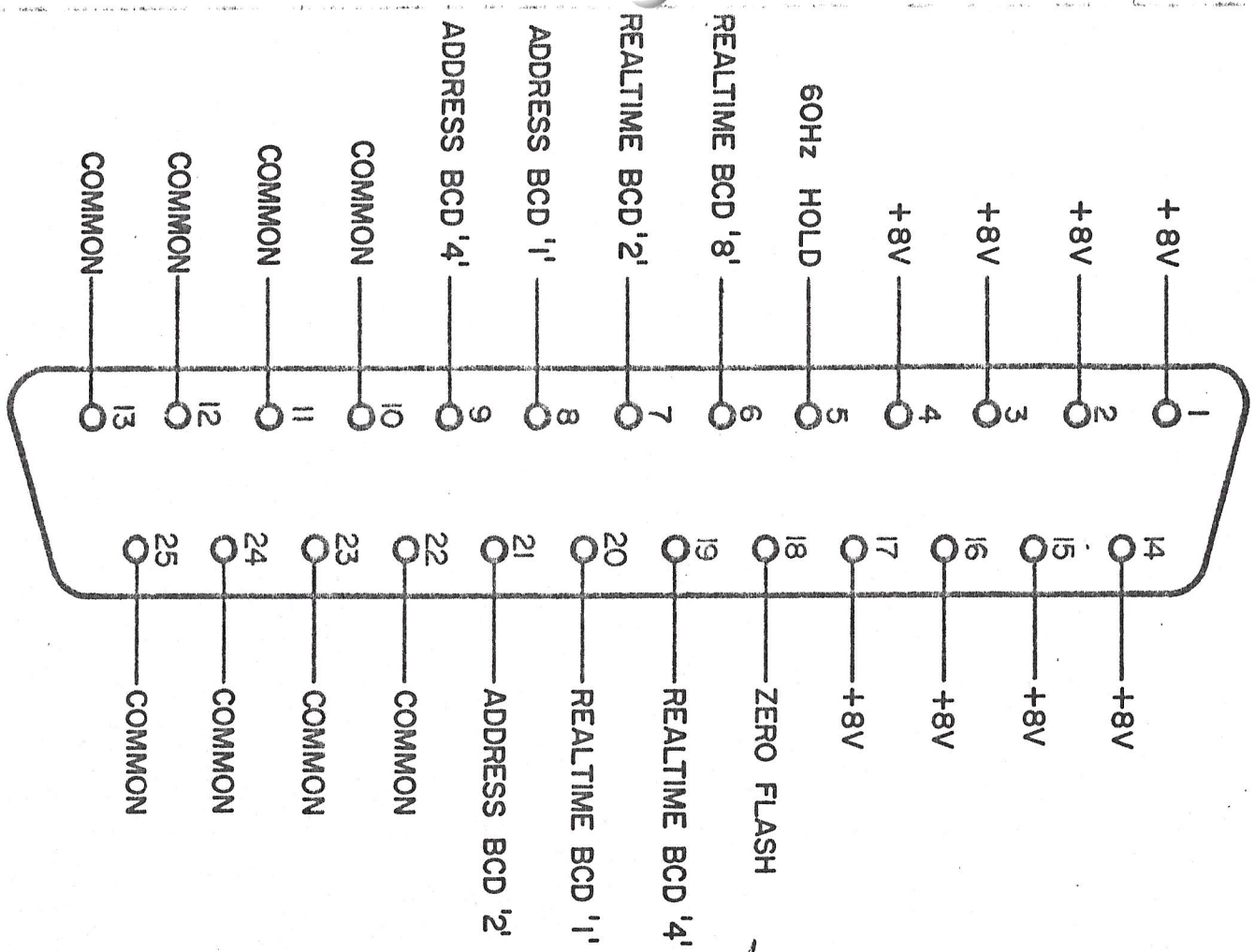
NOTE
ALL RESISTORS ARE 1/4W ±5% UNLESS OTHERWISE SPECIFIED.

IC1 - IC6 ARE 74192
IC6 / IC26 ARE 7410
IC7 - IC10 ARE 74151
IC11 & IC13 ARE 7490
IC12 IS 7493A
IC13 & IC26 ARE 7013
IC14 - IC16 ARE 7437
IC18 IS 74132
IC19 IS 8233
IC20 IS 9602
IC21 & IC28 ARE 78279
IC22 IS 75462
IC23 & IC29 ARE 7900
IC24 IS 7902
IC27 IS 74125
IC30 IS 7920
IC31 IS µA7805KC
CR1, CR3 & CR4 ARE IN4148
CR2 IS IN34A
CR5 & CR6 ARE MR608

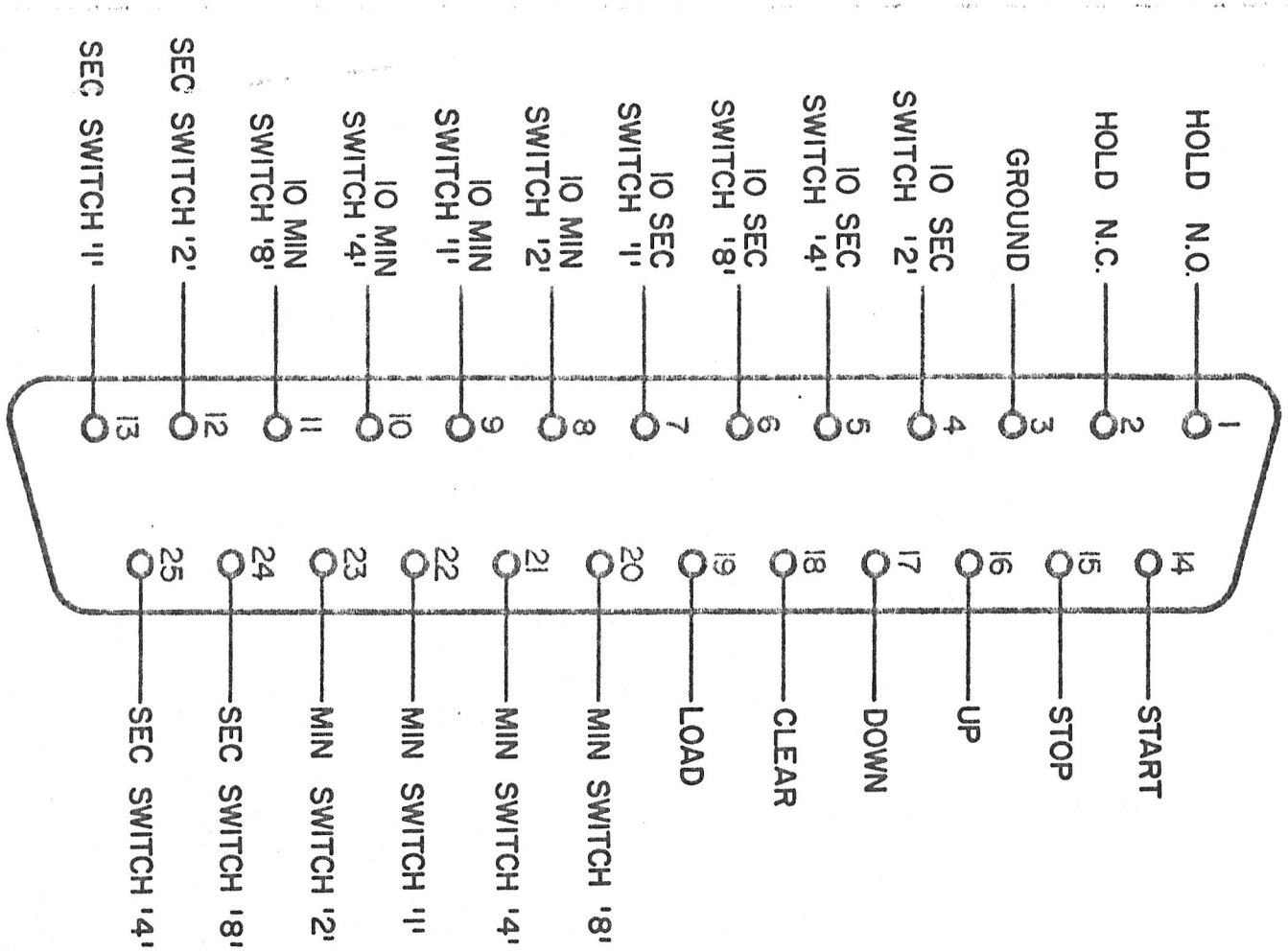
* THREADED SPACERS, FOR PC BOARD MOUNTING. THE SCREW ON THIS SIDE OF CONNECTOR IS REMOVED.

LOCKING HARDWARE

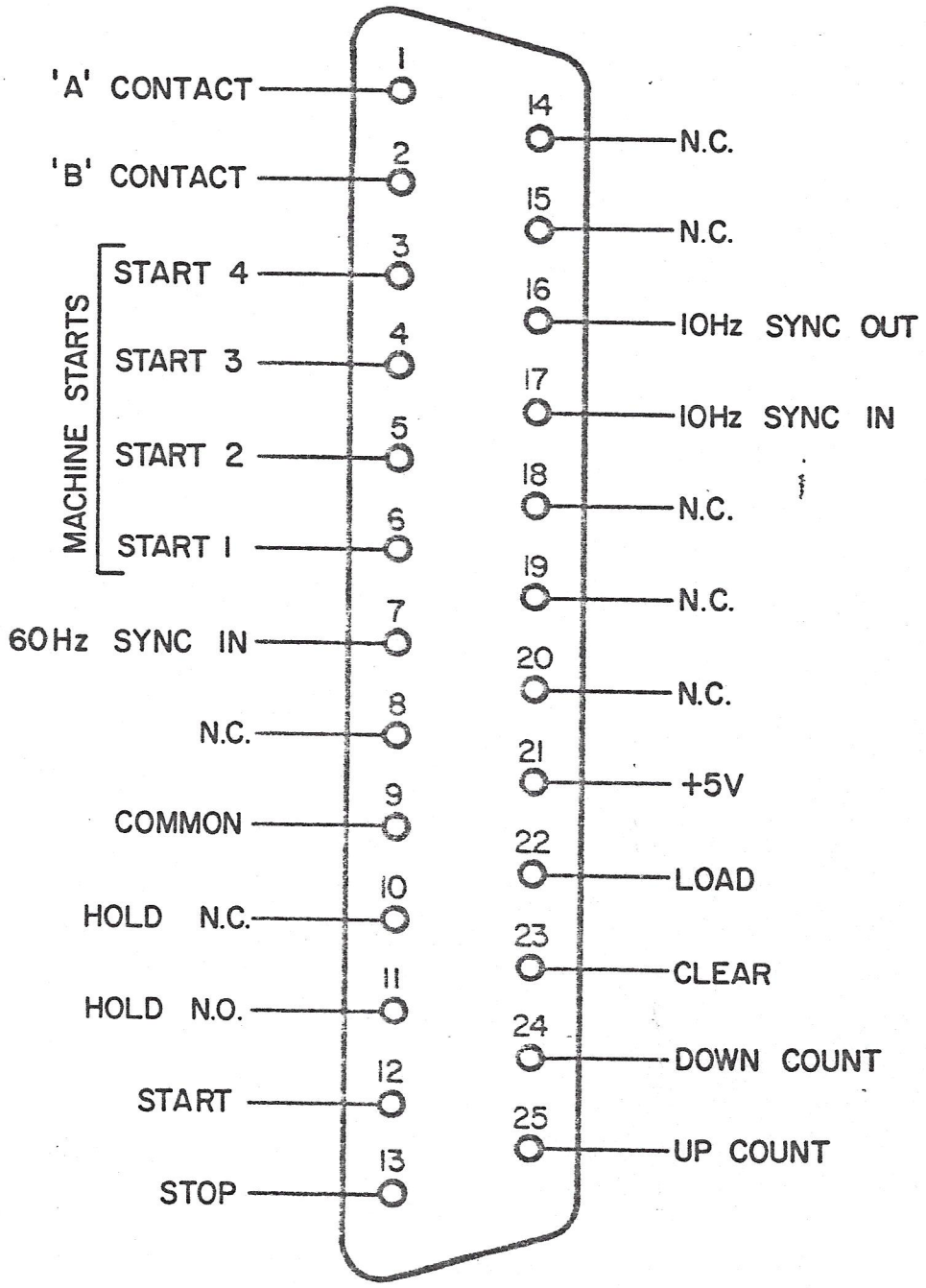
ISSUE		TOLERANCES UNLESS OTHERWISE SPECIFIED	DRAWN: ZP	APPROVED:	McCURDY RADIO INDUSTRIES
1 CR + CM MADE 10M/16K/RMD RV OCT 18/79		DECIMAL ± .005 FRACTIONAL ± 1/64 ANGULAR ± ½°	CHECKED:	SCALE: 2:1	SA 137A COMPONENT LAYOUT & ASSEMBLY TIMER MASTER UNIT
		MATERIAL:	DESIGN: L. HALL	DATE: 8/8/79	
		FINISH:	ALL DIMENSIONS IN INCHES DO NOT SCALE		UNITS: DRAWING NO. D-137A/8-1



TOLERANCES UNLESS OTHERWISE SPECIFIED DECIMAL ± .005 FRACTIONAL ± 1/64 ANGULAR ± ½°	DRAWN– VW	APPROVED–	McCURDY RADIO INDUSTRIES LIMITED TORONTO - ONTARIO
MATERIAL–	CHECKED–	SCALE– N.T.S.	SA137A REMOTE DISPLAY J1 – J4 CONNECTOR WIRING Master
FINISH–	DESIGN–	DATE– APR 8/76	
	ALL DIMENSIONS IN INCHES DO NOT SCALE		UNIT–
			DRAWING No. A-137A/8-2



TOLERANCES UNLESS OTHERWISE SPECIFIED DECIMAL ± .005 FRACTIONAL ± 1/64 ANGULAR ± ½°	DRAWN– VW	APPROVED–	McCURDY RADIO INDUSTRIES LIMITED TORONTO - ONTARIO
MATERIAL–	CHECKED–	SCALE– N.T.S.	SA137A CONTROL PANEL J5 CONNECTOR WIRING
	DESIGN–	DATE– APR 7/76	
FINISH–	ALL DIMENSIONS IN INCHES DO NOT SCALE		UNIT– DRAWING No. A-137A/8-3



McCURDY RADIO INDUSTRIES LIMITED
TORONTO - ONTARIO

SA137A

SLAVING MACHINE START
J6
CONNECTOR WIRING

DRAWING No. A-137A/R-4

UNIT-

APPROVED-

SCALE- N.T.S.

DATE- APR 8/76

DRAWN- VW

CHECKED-

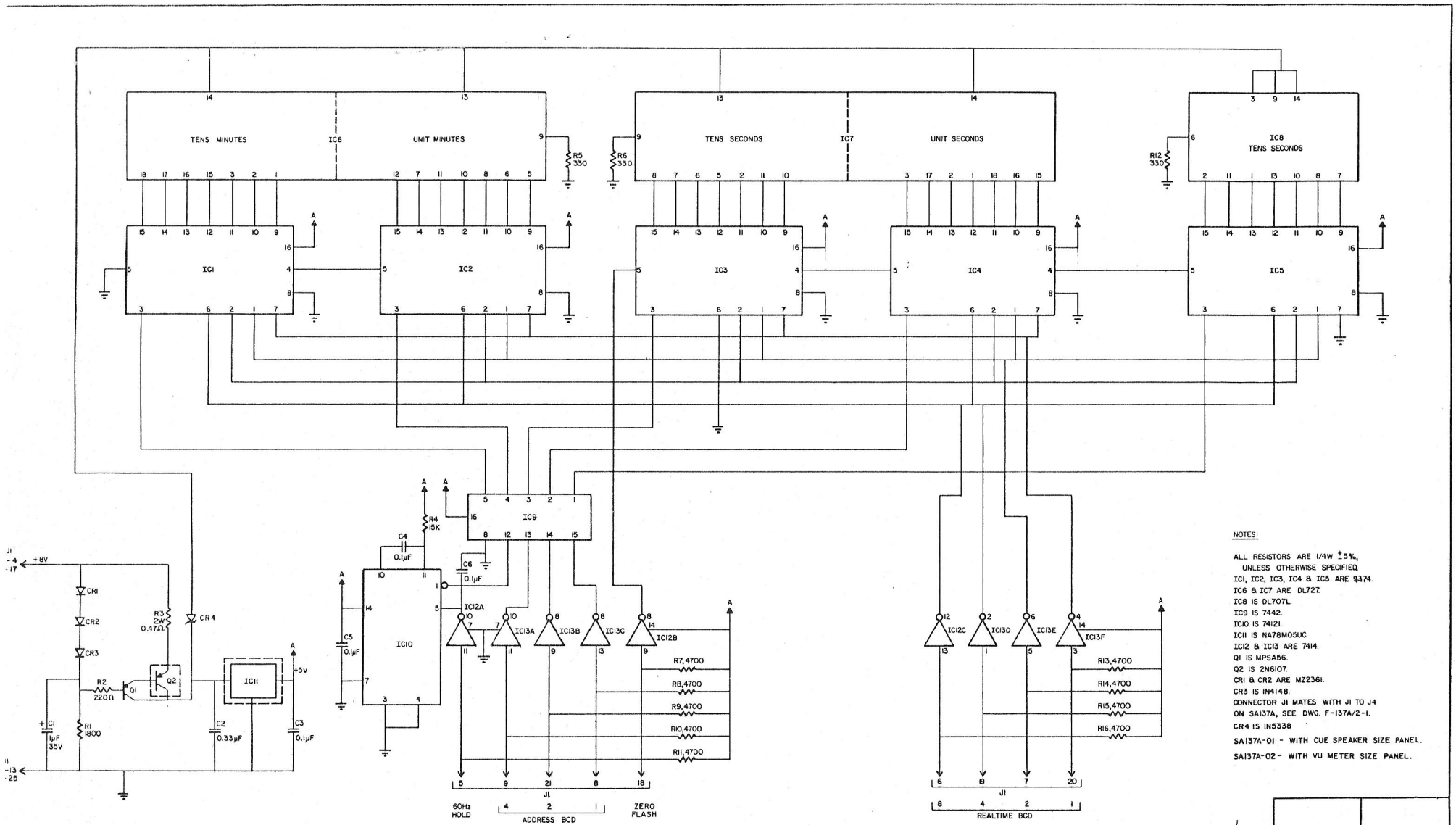
DESIGN-

ALL DIMENSIONS IN INCHES
DO NOT SCALE

TOLERANCES UNLESS OTHERWISE SPECIFIED
DECIMAL ± .005
FRACTIONAL ± 1/64
ANGULAR ± ½°

MATERIAL-

FINISH-



NOTES:

ALL RESISTORS ARE 1/4W ±5%, UNLESS OTHERWISE SPECIFIED.
IC1, IC2, IC3, IC4 & IC5 ARE 9374.
IC6 & IC7 ARE DL727.
IC8 IS DL707L.
IC9 IS 7442.
IC10 IS 74121.
IC11 IS NA78M05UC.
IC12 & IC13 ARE 7414.
Q1 IS MPSA56.
Q2 IS 2N6107.
CR1 & CR2 ARE MZ2361.
CR3 IS IN4148.
CONNECTOR J1 MATES WITH J1 TO J4 ON SA137A, SEE DWG. F-137A/2-1.
CR4 IS IN5338
SA137A-01 - WITH CUE SPEAKER SIZE PANEL.
SA137A-02 - WITH VU METER SIZE PANEL.

2	R5,R6 & R12 WERE 680Ω ADDED CR4 ADDED BB MAY 26/76		
3	C6 ADDED VW NOV 4/76		
4	R3 CHANGED WAS 1/2W, 0.5Ω DAB NOV 13/79		
5	SA137A-01,-02 NOTE ADDED DAB NOV 13/79		

TOLERANCES UNLESS OTHERWISE SPECIFIED: DECIMAL ± .005, FRACTIONAL ± 1/64, ANGULAR ± ½°

MATERIAL—

FINISH—

DRAWN— VW

CHECKED—

DESIGN— WHL

APPROVED—

SCALE—

DATE— FEB 9/76

ALL DIMENSIONS IN INCHES DO NOT SCALE

McCURDY RADIO INDUSTRIES

SA137A- 1
(SUB ASSEMBLY)

TIMER DISPLAY UNIT
SCHEMATIC

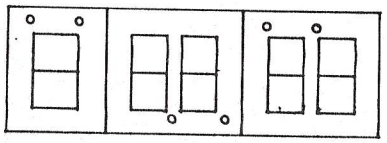
UNIT—

DRAWING No. D-137A- 1/2-1

ALL RESISTORS ARE 1/4W ±5%
IC1, IC2, IC3, IC4 & IC5 ARE 9374
IC6 & IC7 ARE DL727
IC8 IS DL707L
IC9 IS 7442
IC 10 IS 74121

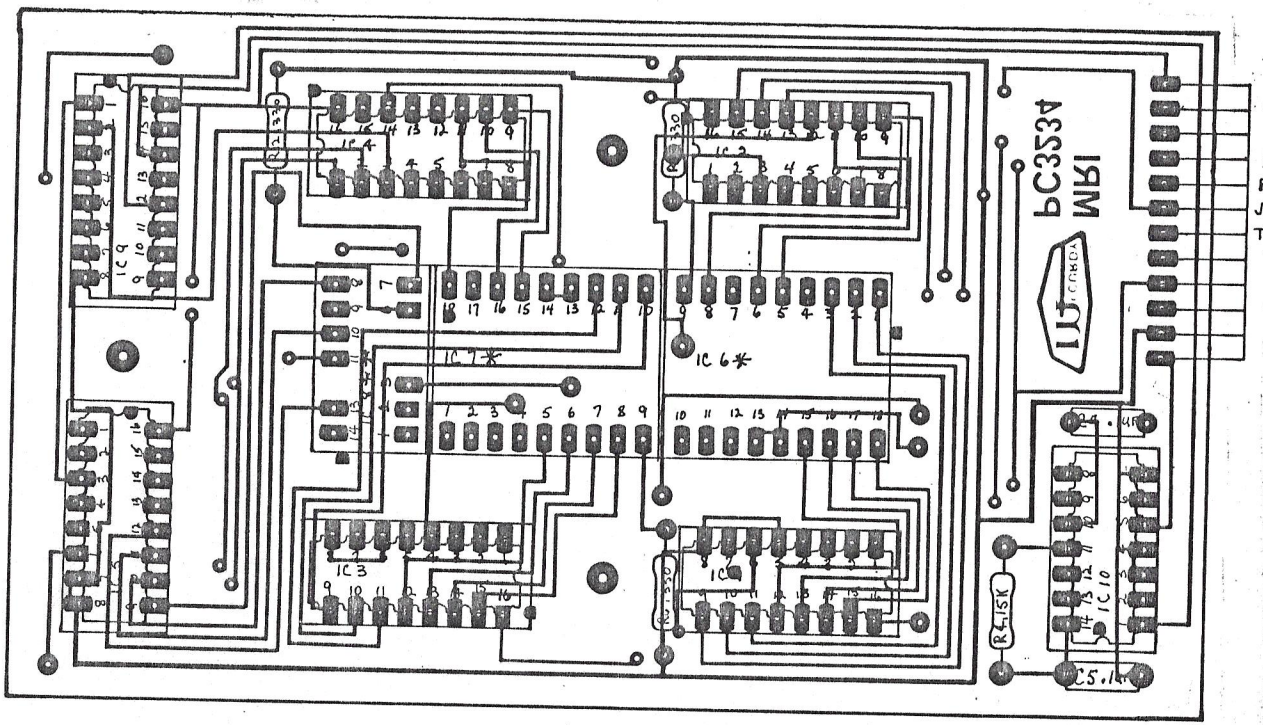
* IC6, IC7 MINIATURE SPRING SOCKETS TO BE INSTALLED

** IC8 REMOVE PINS 4, 5 & 12 FROM SOCKET



NOTE: COLOURED DOTS ON IC6, IC7 & IC8 ARE TO MATCH.

FRONT FACE OF THESE 3 IC'S ARE TO BE FLUSH WITH EACH OTHER



ISSUE	2	3
	R5, R6 & R12 WERE 680 88 May 24/76	IC 10 WAS 7421 SHOULD READ 74121 JUNE 17/76 88

TOLERANCES UNLESS OTHERWISE SPECIFIED — DECIMAL ± .005 — FRACTIONAL ± 1/64 — ANGULAR ± ½°

MATERIAL—

FINISH—

DRAWN— BB

APPROVED—

CHECKED—

SCALE— 2:1

DESIGN—

DATE— APRIL 20/76

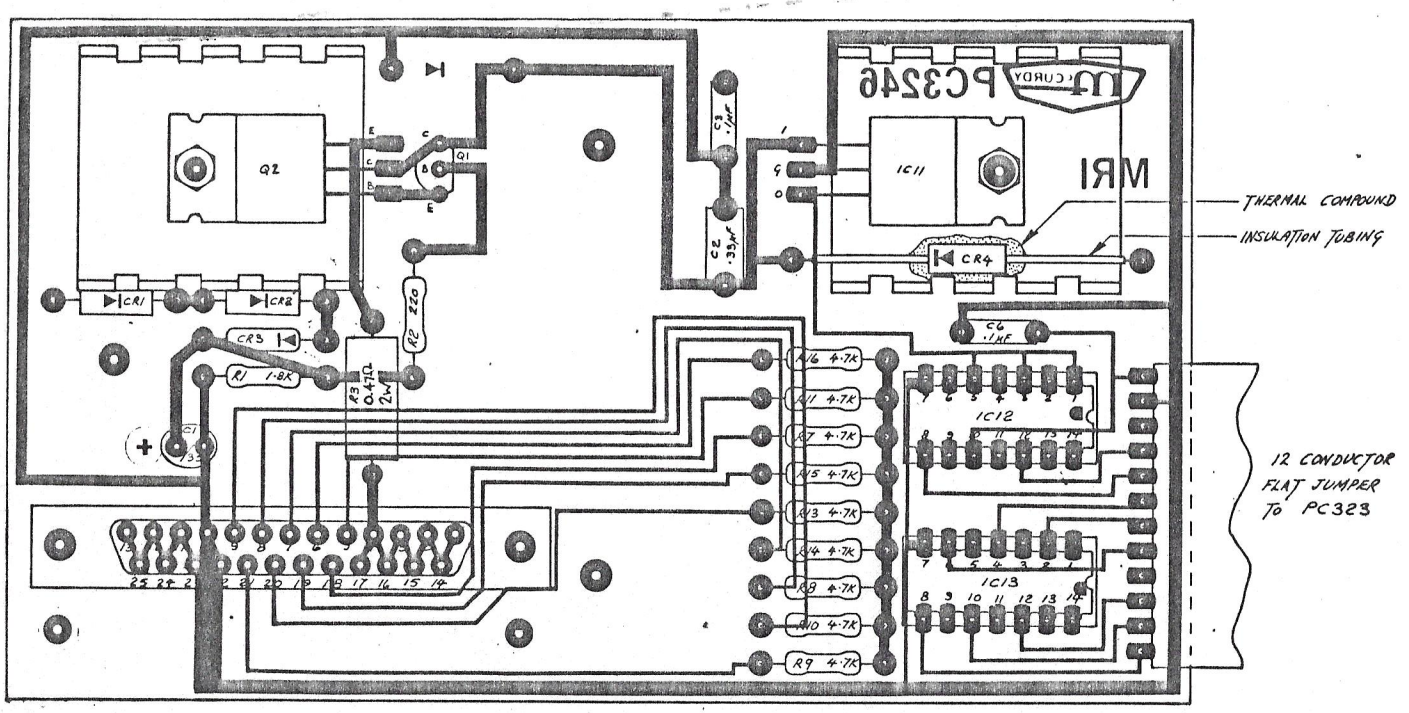
ALL DIMENSIONS IN INCHES
DO NOT SCALE

McCURDY RADIO INDUSTRIES LIMITED
TORONTO - ONTARIO

COMPONENT LAYOUT AND ASSEMBLY
SA137A-1
TIMER DISPLAY UNIT

UNIT—

DRAWING No. B-137A-1/8-1



CIRCUIT DESIGNATION	ITEM	DESCRIPTION
IC11	24	NA78M05UC
IC12, 13	20	7414
Q1	37	MPSA56
Q2	38	2N6107
CR1, 2	16	MZ2361
CR3	18	1N4148
CR4	17	1N5338

ALL RESISTORS ARE ¼W ±5% UNLESS OTHERWISE SPECIFIED.

ISSUE	
3	REDRAWN. TRACES REVISED. CG ADDED. Nov. 2.76 J.SIMS
4	CONNECTOR WAS ANGLED JUNE 16/78 R.Q.P.
5	R3 CHANGED WAS 1¼W, 0.5Ω NOV. 12/79 DAB

TOLERANCES UNLESS OTHERWISE SPECIFIED — DECIMAL ± .005, FRACTIONAL ± 1/64, ANGULAR ± ½°

MATERIAL—

FINISH—

ALL DIMENSIONS IN INCHES DO NOT SCALE

DRAWN— J.SIMS

APPROVED—

CHECKED—

SCALE— 2:1

DESIGN—

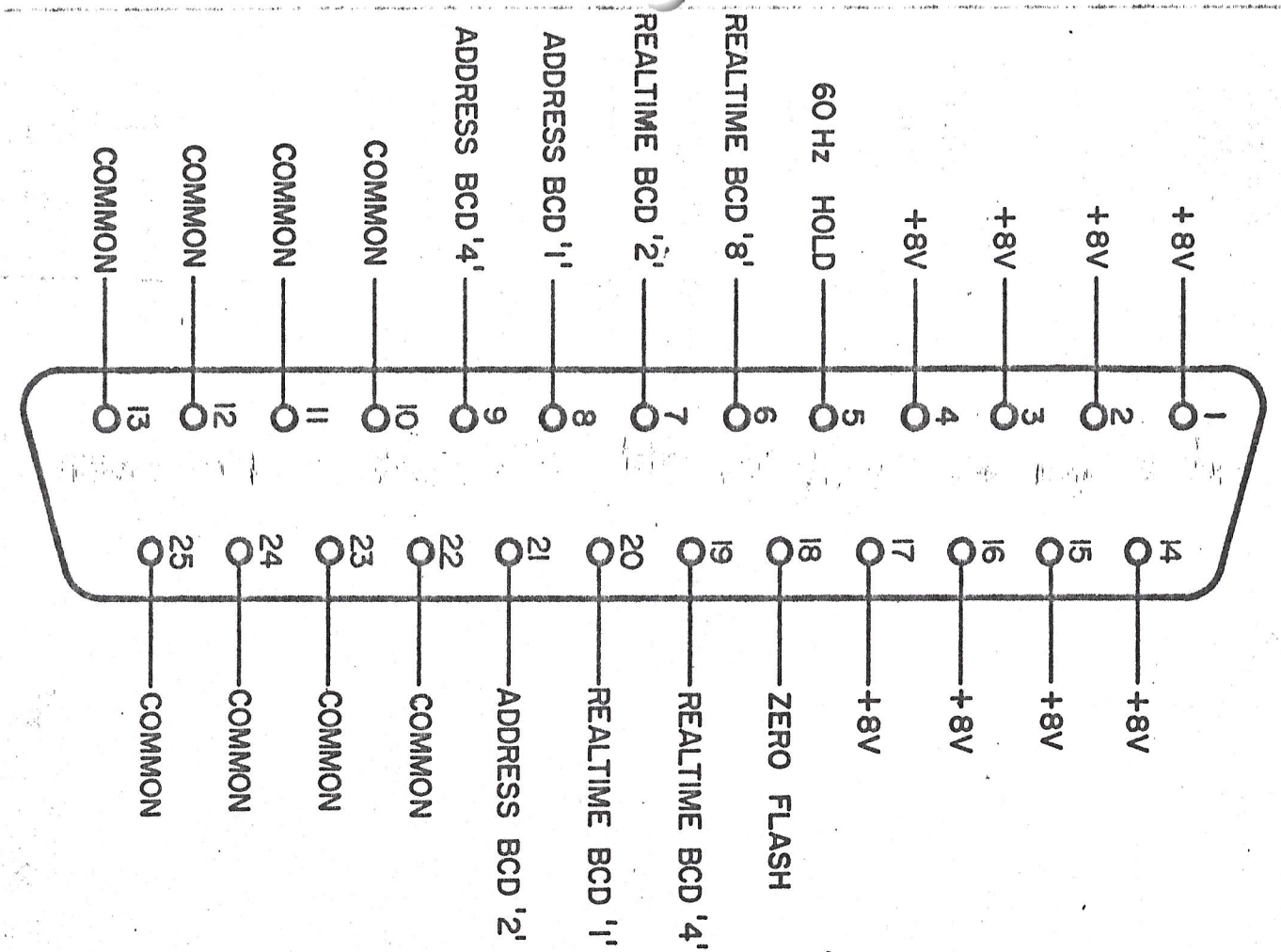
DATE— NOV. 2-76

McCURDY RADIO INDUSTRIES LIMITED
TORONTO - ONTARIO

COMPONENT LAYOUT AND ASSEMBLY SA137A-1 TIMER DISPLAY UNIT.

UNIT—

DRAWING No. B-137A-1/8-2



TOLERANCES UNLESS OTHERWISE SPECIFIED	DECIMAL ± .005 FRACTIONAL ± 1/64 ANGULAR ± ½°	DRAWN– VW	APPROVED–
		CHECKED–	SCALE– N.T.S.
MATERIAL–		DESIGN–	DATE– APR 8/76
FINISH–		ALL DIMENSIONS IN INCHES DO NOT SCALE	

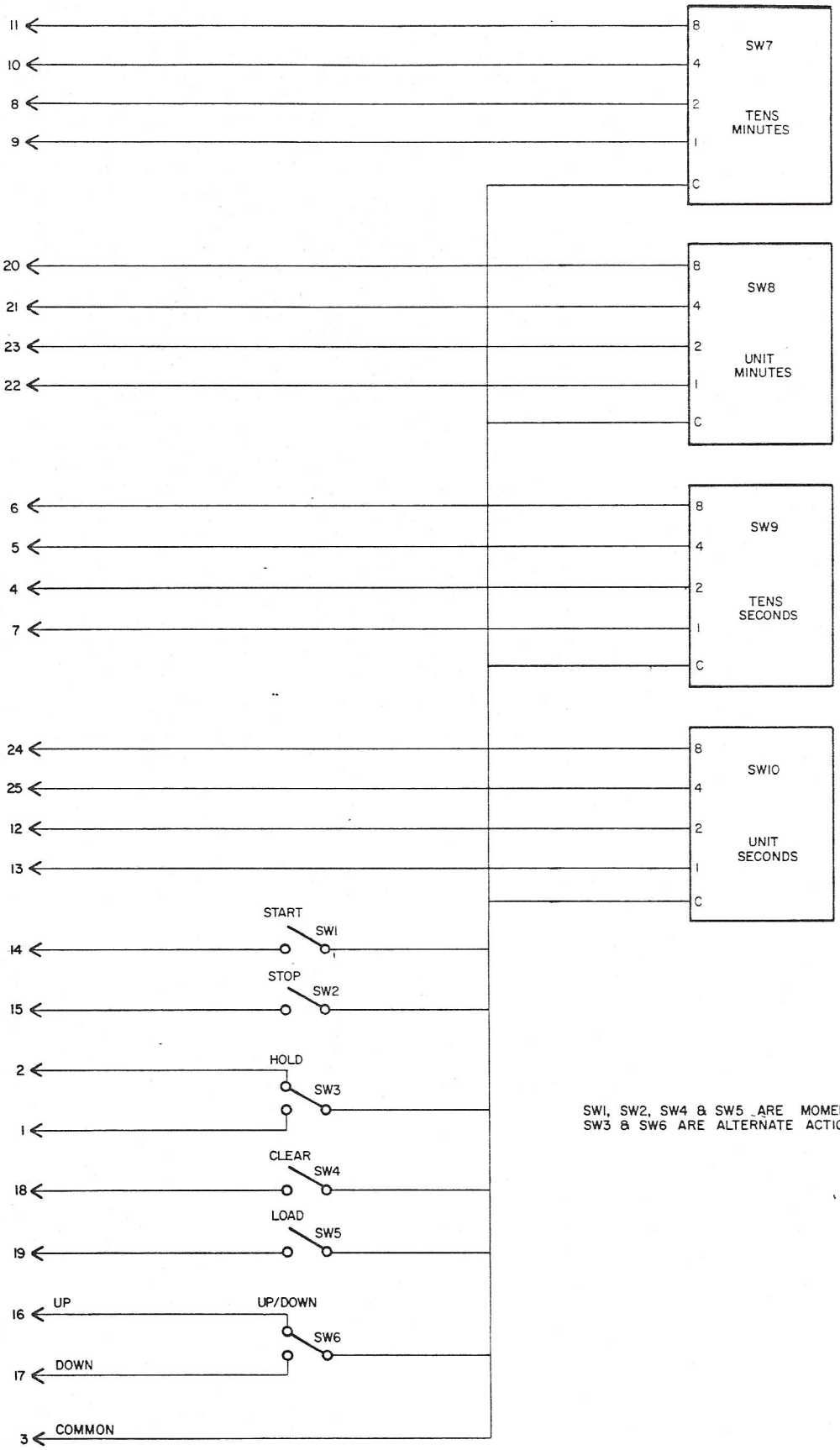
McCURDY RADIO INDUSTRIES LIMITED
TORONTO - ONTARIO

SA137A-01

REMOTE DISPLAY CONNECTOR WIRING

UNIT–	DRAWING No.
	A-137A-01/8-2

ISSUE



SW1, SW2, SW4 & SW5 ARE MOMENTARY, SW3 & SW6 ARE ALTERNATE ACTION.

TOLERANCES UNLESS OTHERWISE SPECIFIED
DECIMAL ± .005
FRACTIONAL ± 1/64
ANGULAR ± ½°

MATERIAL—

FINISH—

DRAWN— VW
CHECKED—
DESIGN—
APPROVED—
SCALE—
DATE— FEB 17/77

ALL DIMENSIONS IN INCHES
DO NOT SCALE

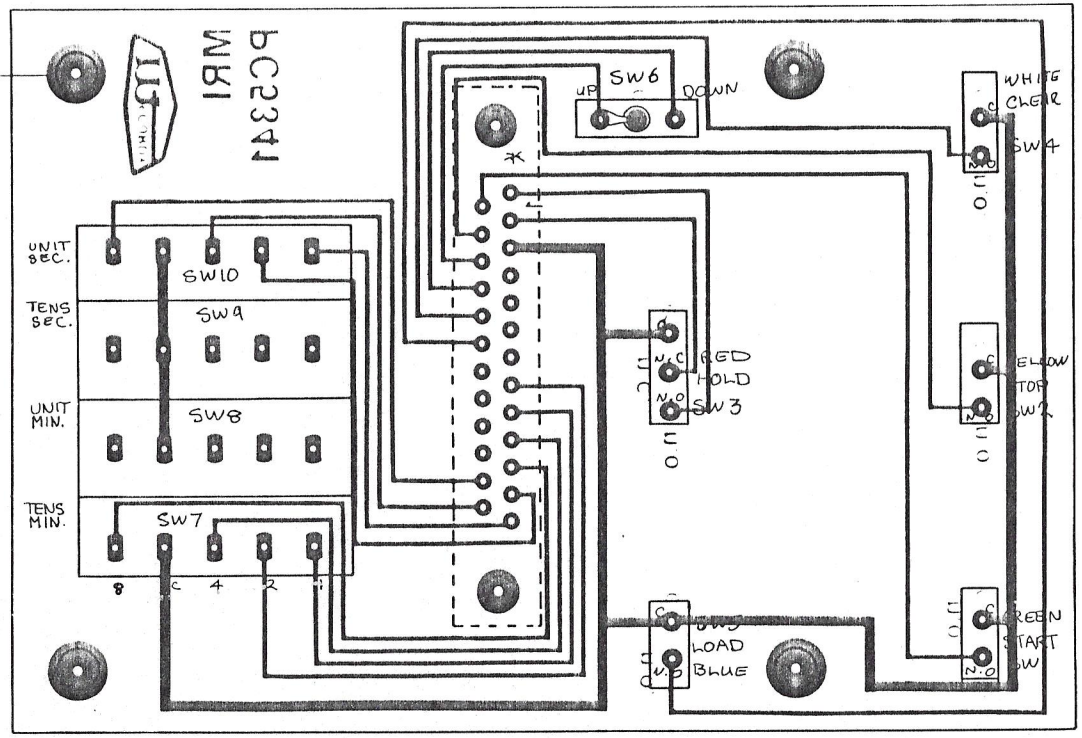
McCURDY RADIO INDUSTRIES

SA137A-06
CONTROL PANEL SCHEMATIC

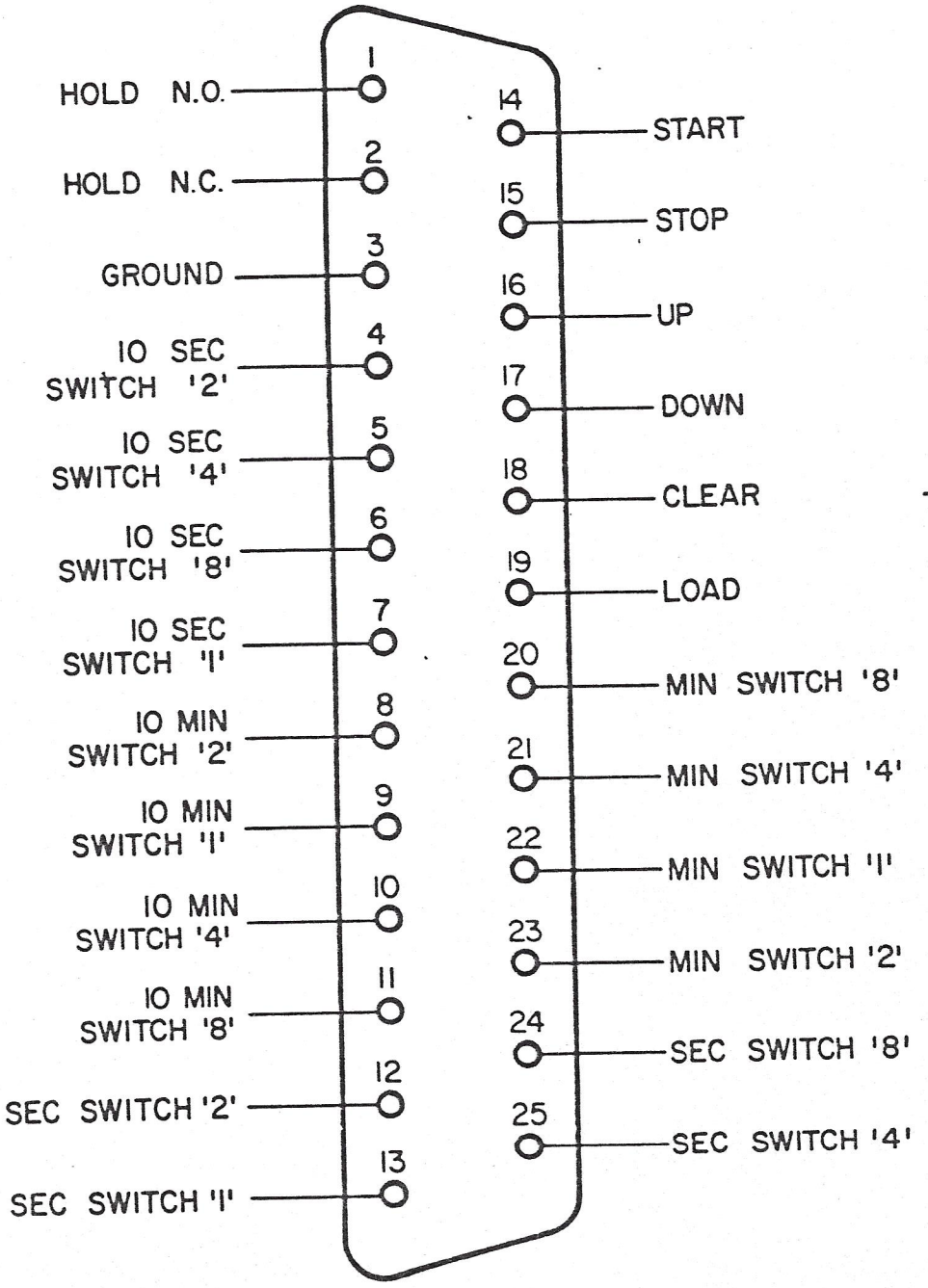
UNIT—

DRAWING No. C-137A-06/2-1

SPACER TYP. 4 PL.
* MOUNTED ON COPPER SIDE
SW1, SW2, SW4 AND SW5 ARE MOMENTARY
SW3 IS ALTERNATE ACTION



TOLERANCES UNLESS OTHERWISE SPECIFIED — DECIMAL ± .005, FRACTIONAL ± 1/64, ANGULAR ± ½°	DRAWN— ES	APPROVED—	McCURDY RADIO INDUSTRIES LIMITED TORONTO - ONTARIO
MATERIAL—	CHECKED—	SCALE— 2:1	COMPONENT LAYOUT AND ASSEMBLY SA137A-06 CONTROL PANEL
FINISH—	DESIGN—	DATE— MAR 15,77	UNIT—
	ALL DIMENSIONS IN INCHES DO NOT SCALE		DRAWING No. B137A-06/8-1



McCURDY RADIO INDUSTRIES LIMITED
TORONTO - ONTARIO

SA137A-06
CONTROL PANEL
J1
CONNECTOR WIRING

DRAWING No. A-137A-06/8-2

UNIT-

APPROVED-

DRAWN- VW

CHECKED-

DESIGN-

SCALE- N.T.S.

DATE- FEB 17/77

ALL DIMENSIONS IN INCHES
DO NOT SCALE

TOLERANCES UNLESS OTHERWISE SPECIFIED
DECIMAL ± .005
FRACTIONAL ± 1/64
ANGULAR ± ½°

MATERIAL-

FINISH-

Master

McCURDY RADIO INDUSTRIES

SA137A-07

CONTROL PANEL SCHEMATIC

UNIT-

DRAWING No. C-137A-07/2-1

APPROVED-

DRAWN- VW

CHECKED-

DESIGN-

SCALE-

DATE- FEB 17/77

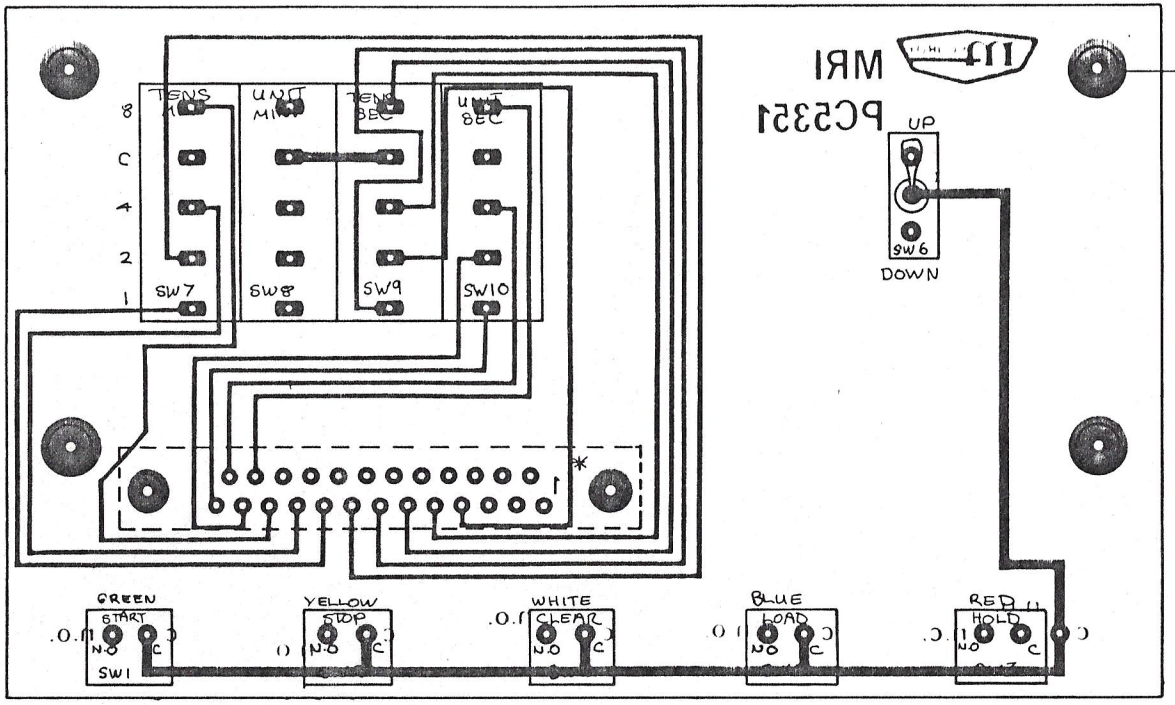
ALL DIMENSIONS IN INCHES
DO NOT SCALE

TOLERANCES UNLESS OTHERWISE SPECIFIED
DECIMAL ± .005
FRACTIONAL ± 1/64
ANGULAR ± ½°

MATERIAL-

FINISH-

ISSUE



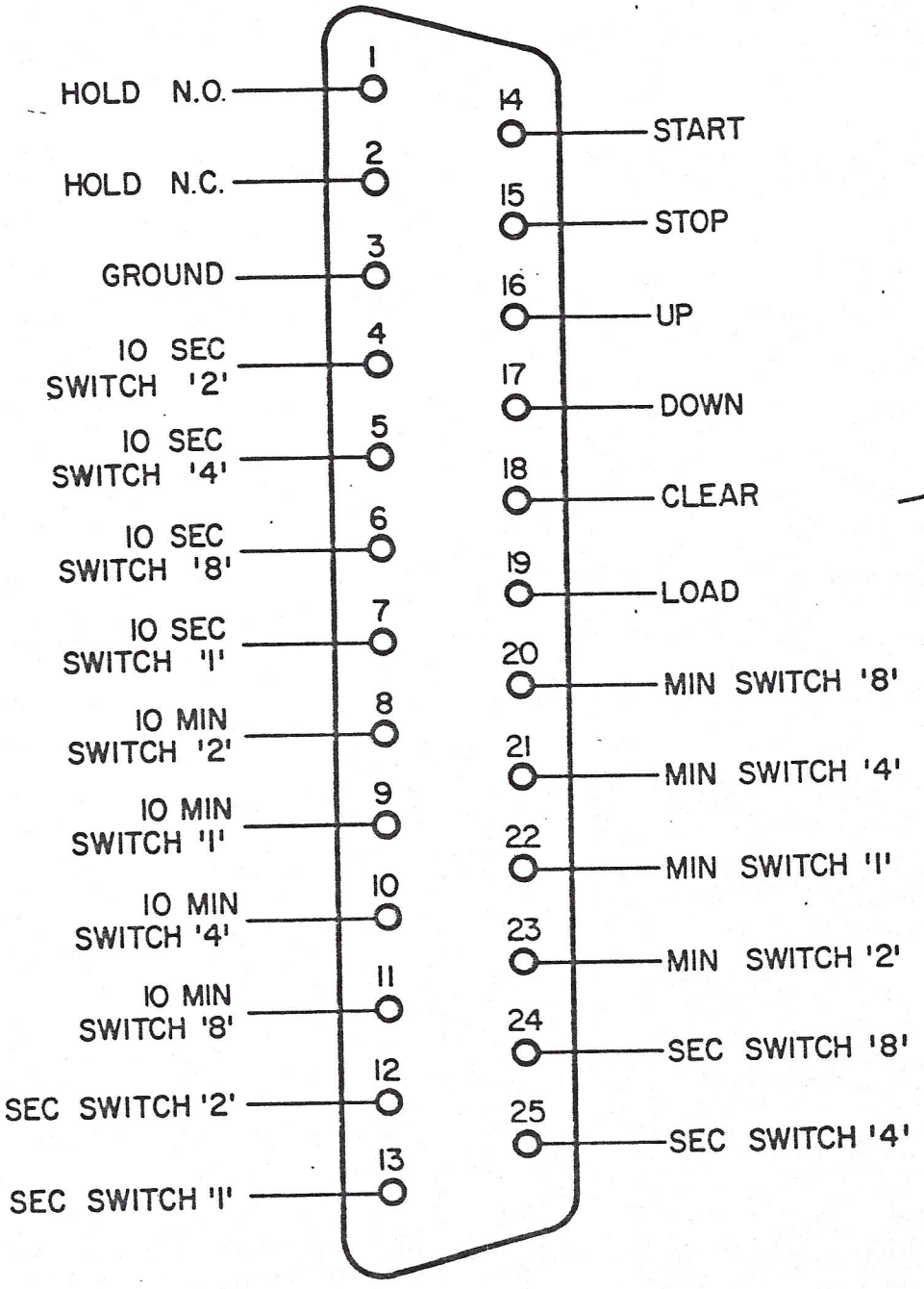
* MOUNTED ON COPPER SIDE

SPACER, TYP 4 PL

SW1, SW2, SW4, AND SW5 ARE MOMENTARY
SW3 IS ALTERNATE ACTION

Master

TOLERANCES UNLESS OTHERWISE SPECIFIED — DECIMAL ± .005, FRACTIONAL ± 1/64, ANGULAR ± ½°	DRAWN— ES	APPROVED—	McCURDY RADIO INDUSTRIES LIMITED TORONTO - ONTARIO
	CHECKED—	SCALE— 2:1	COMPONENT LAYOUT AND ASSEMBLY SA137A-07 CONTROL PANEL
MATERIAL—	DESIGN—	DATE— MAR 14,77	
FINISH—	ALL DIMENSIONS IN INCHES DO NOT SCALE		UNIT— / DRAWING No. B137A-07/8-1



McCURDY RADIO INDUSTRIES LIMITED
TORONTO - ONTARIO

SA137A-07
CONTROL PANEL
J1
CONNECTOR WIRING

DRAWING No. A-137A-07/8-2

UNIT-

APPROVED-

DRAWN- VW

CHECKED-

DESIGN-

SCALE- N.T.S.

DATE- FEB 17/77

ALL DIMENSIONS IN INCHES
DO NOT SCALE

TOLERANCES UNLESS OTHERWISE SPECIFIED
DECIMAL ± .005
FRACTIONAL ± 1/64
ANGULAR ' ± ½°

MATERIAL-

FINISH-