LBI-4615F

GE Mobile Communications

TRANSMITTER SELECT CONTROL SYSTEM

(OPTIONS 5266, 5267, 5268)
USED WITH VOTING SELECTOR PANEL

Maintenance Manual

TABLE OF CONTENTS

SPECIFICATIONS*

HOLD TIME	Adjustable to 30 seconds
LAMP DRIVER CAPABILITY	100 mA from up to 50 Volt Source (per channel)
AUTOMATIC INPUT VOLTAGE LEVEL	1.0 Vdc when selected 10.0 Vdc when not selected
MANUAL INPUT REQUIREMENT	Open to release Ground to select
PTT INPUT TRIGGER REQUIREMENT	3.0 Vdc
POWER SUPPLY	6.0 Vdc @ 1.1 Amperes 12.0 Vdc @ 100 mA
DIMENSIONS (HxWxD)	5¼″ x 19″ x 7½″

* These specifications are intended primarily for the use of the serviceman. Refer to the appropriate Specification Sheet for the complete specifications.

WARNING

No one should be permitted to handle any portion of the equipment that is supplied with high voltage; or to connect any external apparatus to the units while the units are supplied with power. KEEP AWAY FROM LIVE CIRCUITS.

TRANSMIT SELECTION CONTROL SYSTEM

DESCRIPTION

The Transmitter Select Control System consists of a control shelf accomodating up to seven plug-in modules for the purpose of automatically keying one or more transmitters associated with a voted receiver. The transmitter selection shelf interfaces with the Voting Selector Panel. The transmitter selection logic consists of a back plane with jacks for accepting the plug-in modules. Phone line connections are made to screw terminals located on the back plane, and connections to the Voting Selector Panel are made by means of a cabinet harness.

The Transmitter Selection Shelf also may interface with a console, but the console is not required for system operation. Manual select and lamp control leads from such a console may be connected to the shelf through a Molex connector.

The transmitter selection logic allows a dispatcher to automatically key on the transmitter associated with the last receiver voted. An automatic timer in the transmitter selection circuits "holds" the transmitter selected for up to 30 seconds, allowing the dispatcher time to transmit a message on the channel after the received signal disappears. This timing cycle is terminated when another automatic selection occurs or a manual selection is made by the dispatcher. A homing circuit is provided in the system to allow the dispatcher to key the primary transmitter if no selection has been made by the voting system within the 30-second timer interval.

Manual selection allows the dispatcher to select any transmitter in the system by depressing a push-button. Manual selection overrides all other means of selection and allows absolute control of the transmitter. These manual switches are provided by the customer. Refer to the typical Simplex Interconnection Diagram.

Actual transmitter keying is accomplished by operating a double pole-double throw relay. Operating the relay connects the control console to the telephone pair used to control the transmitter. The selection is interlocked with the PTT path so that a new selection cannot occur while the PTT switch is operated. The control circuits may be used to control one transmitter from several receivers. This is accomplished by strapping the desired receiver inputs to the transmitter control inputs on the back plane of the control shelf. Twelve receiver inputs are provided.

Option 5266 provides one basic control system which includes the control shelf, the back plane, the power supply and one Master Voter Control Board (19D417421G1). This basic system provides control for three transmitters. To expand the basic system to seven-transmitter control, Option 5268 is required. This option adds one 19D417272G1 Slave Voter Control Board. A second Option 5268 is required to expand the system to eleven-transmitter control.

Option 5267 adds a second Master Voter Control Board to form a second basic system. Adding two more 5268 options provides a complete second system capable of controlling up to eleven additional transmitters. These two systems are completely independent and the number of transmitters controlled by one system in no way affects the other system. The 19C320793G1 Power Supply provided with Option 5266 supplies all the power required for both systems.

INSTALLATION

The control shelf is mounted in the Voting Selector cabinet with #12-24 x 1/2-inch screws. The shelf is located directly below the Voting Selector Panel or below the 19C320687 Power Converter Panel if used. The power cable to the control shelf is supplied with a three-prong plug that connects to the 19B226175G1 receptacle mounted on the cabinet.

The interconnect harness for the system must be facricated by the customer for the particular system used. The typical installation diagrams provided with this manual should be used as a guide in the fabrication of the harness.

If one transmitter in the system is to be controlled by more than one receiver, it will be necessary to jumper the SELECT terminal on the Voting Selector Panel for each controlling receiver. For example, if RX1 and RX2 are both to control TX1, jumper TB1-4 to TB2-4 on the Voting Selector Panel and connect to TB4-1 on the Transmitter Control Shelf.

If a control console is used in the system, interlocked switches may be provided at the console to supply a ground for each channel when manual control is desired. The Typical Simplex Interconnection Diagram shows how these switches should be connected to J9 on the control shelf.

A separate lead is required for the PTT switch at the console. This switch must be independent of the interlocked switches used for manual control. This lead connects to J9-12. If a MASTR Controller is used for control of the system, Option 8559 is required for the Controller. This option provides a remote PTT lead which is connected to J9-12 on the control shelf.

A ground is provided at the output

of each channel via J10 at the control shelf for operating remote indicator lamps at the console. Molex connectors are provided for the manual control and lamp circuit leads for mating with the appropriate jacks on the control shelf back plane.

Wire size for assembling the Molex connector harness should be between 18 and 28 AWG. The wire is stripped approximately 1/8-inch and the 5496809 terminals are crimped to the wire. A special crimping tool is available for this operation (Molex Catalog No. HT1031C).

After the terminal has been crimped to the lead, the terminal is inserted in the appropriate hole in the 19B209288 plug shelf until the terminal wings snap into place, locking the terminal in the connector. If the terminal must be removed from the connector, a special extractor tool is recommended (Molex Catalog No. HT2038).

In the simplex operating system, the audio pair from each station is connected to TB1, TB3 and TB5 (for system 1), and to TB6, TB8 and TB10 (for system 2). Refer to the Typical Simplex Interconnection Diagram and the Control Shelf Interconnection Diagram (see Table of Contents).

In the duplex operating system, the receive audio leads from the stations connect to TB8 and TB9 on the Voting Selector Panel and the transmit audio leads to the stations connect to TB1, TB3 and TB5 (for system 1) and to TB6, TB8 and TB10 (for system 2). Refer to the Typical Duplex Interconnection Diagram and the Control Shelf Interconnection Diagram (see Table of Contents).

The control pair from the MASTR Controller or control console connects to TB1-9 & 10 (for system 1) and to TB6-9 & 10 (for system 2) at the back plane of the control shelf. 19B209260P108 spade terminals are recommended for this connection.

ADJUSTMENT

HOLD TIMER ADJUST CONTROL

The HOLD TIMER ADJUST control R17 on the Master Voter Control Board should be adjusted for the desired hold time after a receiver has voted to allow the dispatcher to initiate his transmission.

1. Connect a Triplett Model 630 Voltmeter (or equivalent) to the TIMER OUTPUT terminal C1 or TP4.
2. Turn HOLD TIMER ADJUST control R17 fully clockwise.
3. Ground AUTO IN 3 terminal D8.
4. Unground the AUTO IN 3 terminal. The meter should read at least 3.5 Volts DC.
5. Adjust the HOLD TIMER ADJUST control for the desired hold time.

MAINTENANCE

The Transmitter Selection Control Shelf is designed for ease of servicing and minimum maintenance. All circuit modules plug into card-edge connectors on the back plane and can be easily removed for routine inspection and maintenance. An Extender Board is supplied with Option 5266 for servicing any of the modules out of the shelf while maintaining circuit connections.

The Master Voter Control Board is provided with four metering points. TP1, TP2, TP3 provide metering points for measuring a high (2.5 V) when each respective channel is selected. TP4 allows checking the Timer. A high will be metered at this point when the Timer is activated.

The Slave Voter Control Board also contains four metering points. A high should be read at each point when that channel is selected. Light Emitting Diodes are also provided for each transmitter channel to indicate when that channel is selected.

CIRCUIT ANALYSIS

(Refer to System Block Diagram)

SIMPLEX OPERATION

Audio from the satellite receivers connect to the input terminals at the control shelf back plane. For example, the audio leads from Station No. 1 connect to TB1-1 & 2. This audio pair is connected in turn to terminals A3 and A5 on the Master Voter Control Board. These terminals are connected through the normally-closed contacts of relay K1. One of the audio leads is then connected via terminal A6 to J8-1 on the back plane and the other lead is connected via terminal A14 to J8-2. Refer to the Master Voter Control Board and Control Shelf Schematic Diagrams (see Table of Contents).

The audio is then connected from J8 to the receiver module inputs on the Voting Selector Panel at TB8 and TB9. For example, J8-1 and J8-2 (Station No. 1 audio) is connected to TB9-17 and 20. Refer to the Typical Simplex Interconnection Diagram.

The voted receiver applies a ground to the SELECT output of that particular receiver module. If the receiver at Station No. 1 votes, the SELECT ground appears at TB1-4 of the Voting Selector. This ground is applied to TB4-1 (AUTO IN) of the Transmit Select Control Shelf.

The AUTO 1 IN ground is then applied to terminal D7 of the Master Voter Control Board and subsequently to pin 12 of NAND gate U13B. All inputs to NAND gate U13B are normally high, resulting in a low at pin 8. The AUTO 1 IN ground at pin 12 causes the output to go high. This high is applied to Pin 11 of NOR gate U3D, and to pin 5 of inverter U7B. The resultant low at pin 6 of U7B is applied to the input of U7A. This causes the flip-flop (U7A-U7D) to set Timer U12.

The high output at pin 3 of Timer U12 is applied to TIMER OUTPUT terminal C1 to control the Slave Voter Control Boards if used in the system. This high is also connected to NAND gates U5C and U6C at pin 10. Transistors Q15 and Q16 are normally turned off, resulting in a low at pin 12 of U5D and U6D. All MANUAL inputs are high and are applied to the inputs of NAND gate U13A. The low at pin 6 of U13A is inverted by U14D and the high at pin 8 is applied to pin 13 of U5D and U6D. This results in a high to pin 2 of U5A and pin 2 of U6A. The two high inputs of U5A and U6A are NANDed, resulting in a low output of both gates. This low is inverted by U14 (and U14B), preventing the Channel 2 flip-flop (U5B-U5C) and the Channel 3 flip-flop (U6B-U6C) from latching.

All five inputs to NAND gate U10B are high, resulting in a low at pin 8. This low is applied to pin 4 of NAND gate U4B and to pin 5 of NOR gate U1B.

When the PTT switch at the control unit is operated, a ground is applied to terminal D12 of the Master Voter Control Board. This ground turns on Q14 and the conduction of Q14 turns on Q13. The low at the collector of Q13 is applied to pin 6 of U1B resulting in a high at pin 4. The output of NOR gate U1A becomes low and this low is applied to pin 5 of U4B and pin 9 of U9D. The two lows at the input of U4B are NANDed and the high at the output turns on Q3. Conduction of Q3 forward biases the Light Emitting Diode (LED) CR6 and also operates Q4. Conduction of Q4 provides a ground at terminal A13 for operating a light at the control console (if used).

The low at pin 9 of U9D is inverted and the resulting high turns on Q1. Conduction of Q1 turns on Q2 and the conduction of these transistors picks up relay K1. Operation of relay K1 transfers terminals A3 and A5 to the control pair connected to terminals A2 and A7. This allows the dispatcher to transmit on Channel 1.

If MANUAL 1 is selected at the control console (when used), a ground is applied to pin 2 of NAND gate U13A. The resulting high output is inverted by U14E which, in turn, resets the Timer. The output of U13A also overrides the AUTO INPUT circuits and allows the dispatcher to have manual priority control over the selected transmitter.

If receiver No. 2 votes, a ground from the SELECT output of the Voting Selector for that receiver is applied to AUTO 2 INPUT terminal D9. This ground turns on Q15. The resulting high at pin 12 of U5D is NANDed with the high at pin 13 and the low output is connected to pin 1 of U5A. The high output of U5A is inverted by U14C and the resulting low is applied to pin 4 of U5B. Since pin 5 of U5B is high, a high results at pin 6 of U5B (TP2), latching the flip-flop and locking up Channel 2.

The low at pin 11 of U5D is applied to pin 10 of U13B, setting the Timer. When the receiver is no longer voted, the Timer continues to hold the flip-flop (U5A-UB5) latched for up to 30 seconds, allowing the dispatcher to transmit over the same path connected to terminals A9 and A10. As long as Channel 2 is locked up, the high output at pin 6 of U5B causes a low at pin 6 of U10A. This low is connected to pin 12 of U4D, resulting in a high at pin 11 of U4D. A low results at pin 10 of U3C which, when applied to pin 9 of U10B, prevents Channel 1 from being selected. Pin 2 of NAND U11A is low and the resulting high on pin 6 is inverted by U9A to provide a low at terminal D4 to lock out the Slave Voter Control Boards if present.

If the transmit control system is expanded by adding one or two Slave Voter Control Boards, then selection of a voted receiver SELECT output applied to one of the AUTO INPUT terminals of that board will select that path just as described for the Channel 2 select in the Master Voter Control Board. For example, if receiver No. 4 votes, a ground is applied to J3-D7 to operate Q17. Conduction of Q17 applies a high to pin 9 of U11C. Since a high is present at pin 10 of U11C, the output at pin 8 will go low. This low is applied to pin 4 of U7B, resulting in a high at pin 1 of U14A. This high is inverted by U14A and the resulting low latches flip-flop U2B-U2C to lock up Channel 1 on the Slave Board. Thus relay K1 as well as the Channel 1 light of the Slave Board are operated.

The low at pin 8 of U11C is applied to pin 13 of U12B, resulting in a high output at pin 8. This high is inverted by U15E to provide a low to terminal D5 (EXPANDED AUTO INPUT). This low is, in turn, connected to pin 13 of U13B on the Master Voter Control Bpard which starts the Timer. The high output of the Timer is connected via terminal C1 to pin 2 of U2B on the Slave Voter Control Board. This completes the lock-up path of the Channel 1 flip-flop.

All inputs to NAND gate U5A are normally high, resulting in a low at pin 6. This low is inverted by U13F to provide a high at terminal A11.

When any one of the channels on the Slave Voter Control Board is selected, a

low will be applied to one of the inputs of U5A. The resulting high is inverted by U13F and a low is then connected to terminal A11 to lock out all other channels in the system.

When the Timer times out, all channels will be unlatched and the system will revert back to Channel 1 on the Master Voter Control Board.

Duplex Operation

When the transmit control system is operated in duplex, the transmitters are selected in the same manner as described for simplex operation. However, the transmit audio is connected over separate telephone pairs directly to the individual transmitter inputs.

Power Supply

The Transmitter Selection Control Power Supply (19C320793) is composed of the Rectifier and Filter Board A1, the Switch and Fuse Panel A2, and the 6.0 Volt Regulator A3.

Operating the power switch S1 to the ON position applies the 117 VAC to transformer T1. The voltage is rectified by full-wave bridge CR1-CR4 and filtered by C1. The unregulated 12 VDC output is applied to terminal D2.

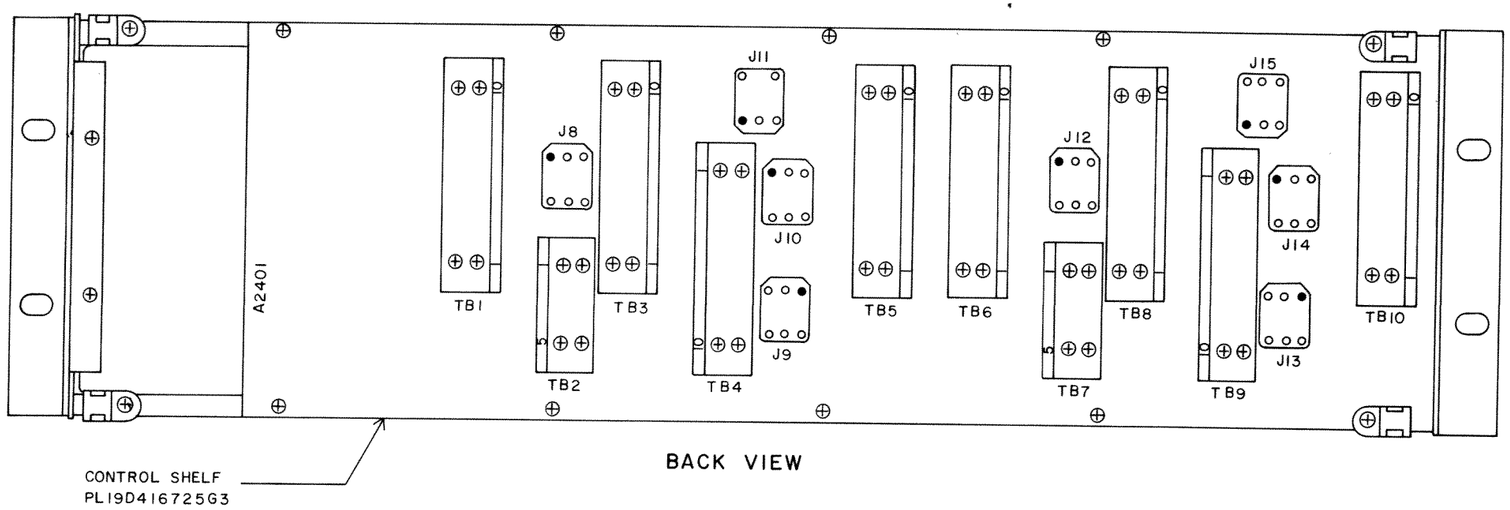
The 12 VDC is further filtered by C2-C6 and connected to Voltage Regulator Board A3. The 6.0 VDC regulated output of A3 is connected to terminal D11.

Battery standby is provided with the Power Supply. A diode (CR5) is connected in series with terminal A7. A 2-Ampere fast blow fuse is provided for protection. The diode is normally back biased, but if the supply voltage fails the diode will become forward biased and an auxiliary battery supply connected to TB1-8 will be automatically substituted for the power source. When the supply voltage is restored, the diode is again reverse biased, automatically disconnecting the battery.

GE Mobile Communications

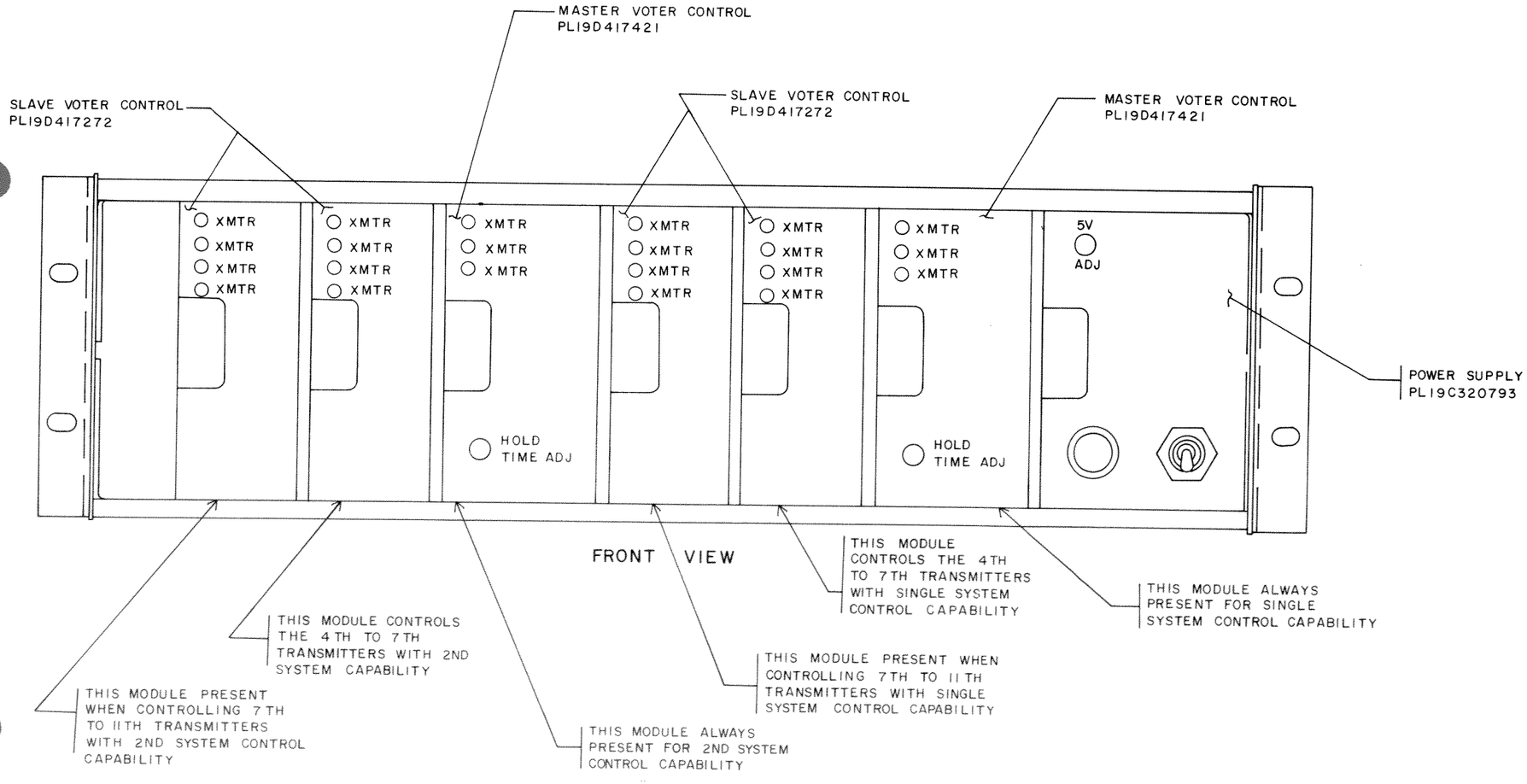
General Electric Company
Lynchburg, Virginia 24502

Printed in U.S.A.



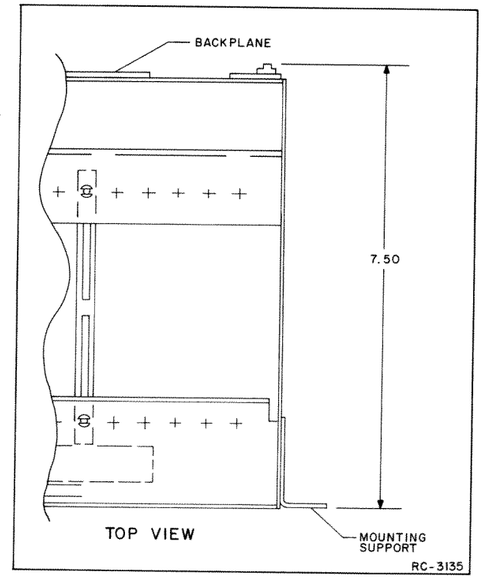
BACK VIEW

CONTROL SHELF
PL19D41672563



FRONT VIEW

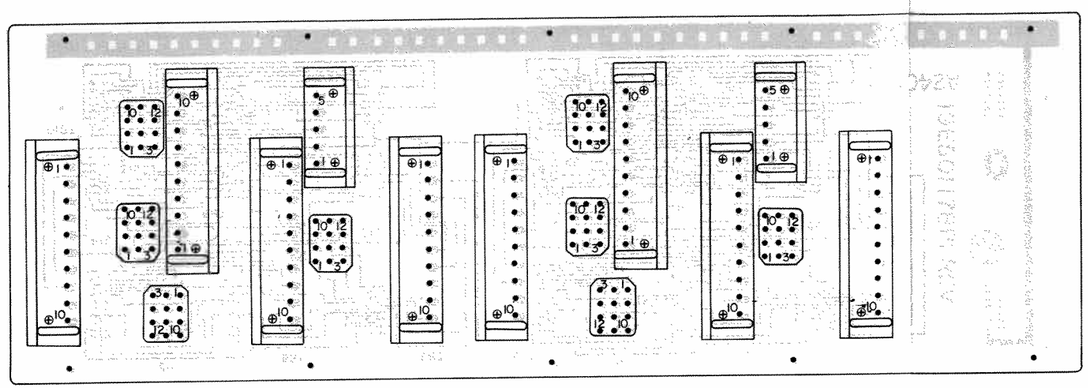
NOTES:
1. SYSTEM ONE AND SYSTEM TWO ARE COMPLETELY INDEPENDENT, AND THEREFORE THE NUMBER OF TRANSMITTERS CONTROLLED BY EITHER SYSTEM, IN NO WAY AFFECTS THE OTHER SYSTEM.



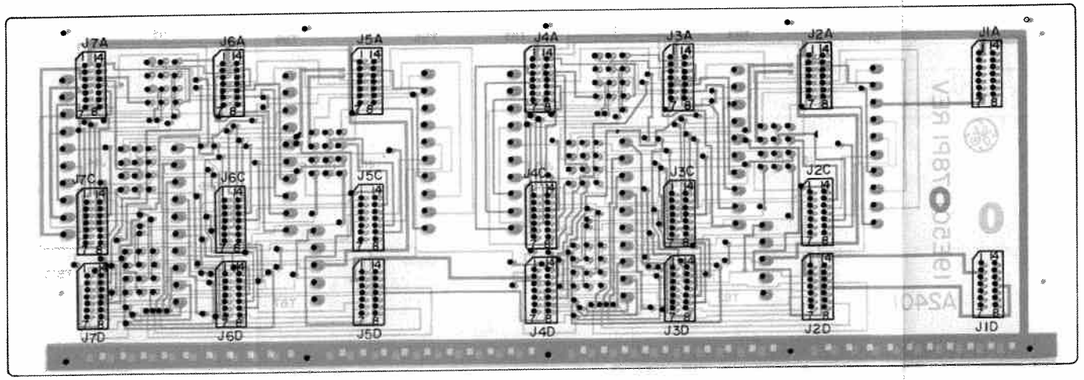
OUTLINE DIAGRAM

TRANSMITTER SELECT CONTROL
SHELF 19D416725G3

SOLDER SIDE



COMPONENT SIDE



(19D417714, Rev. 0)
(19E501178, Sh. 2, Rev. 0)
(19E501178, Sh. 3, Rev. 0)

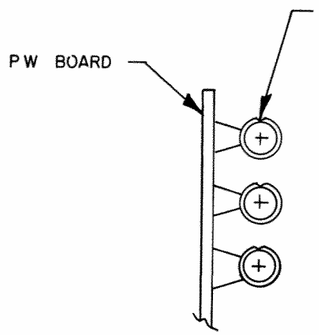
RUNS ON SOLDER SIDE

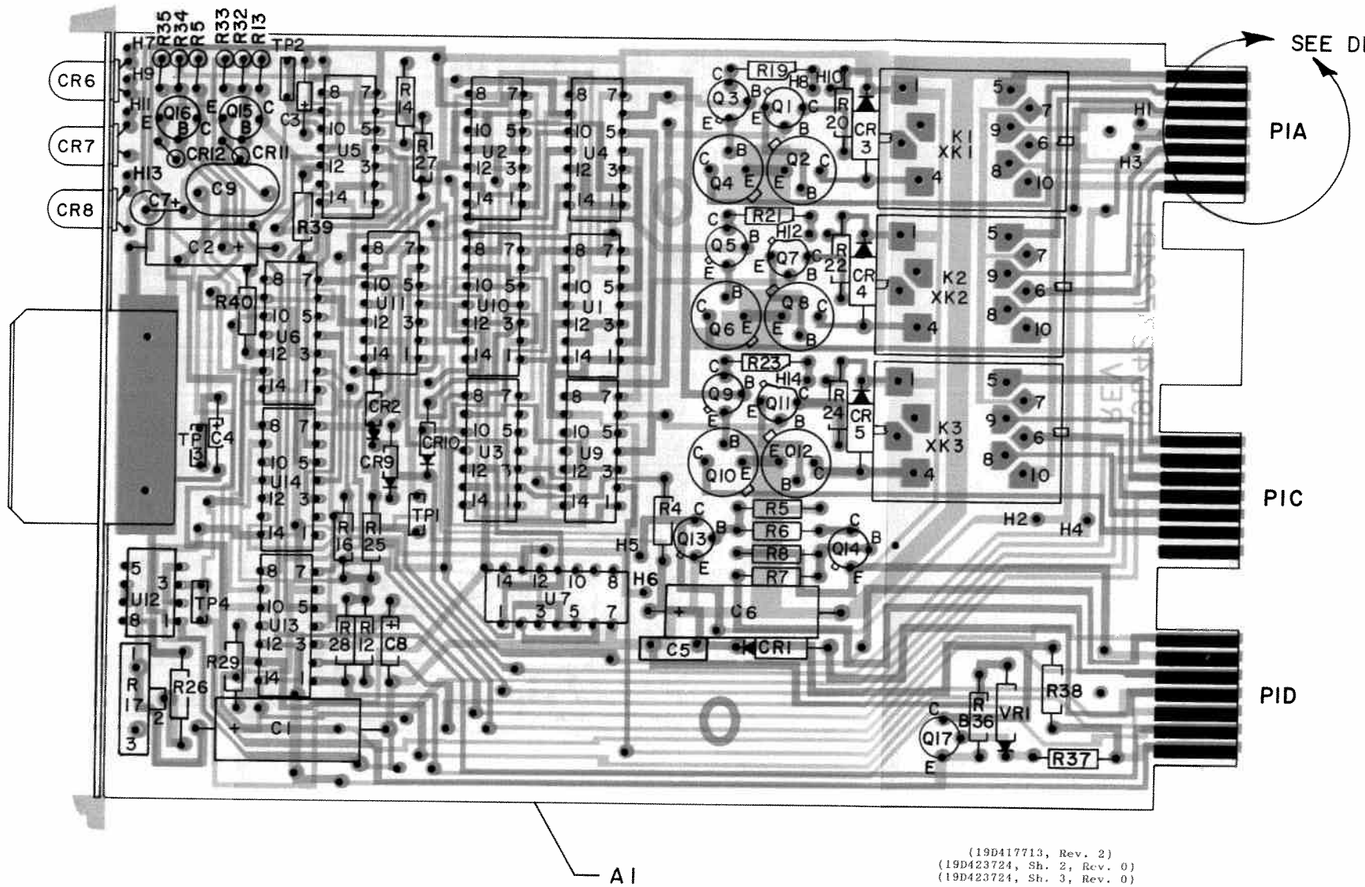
RUNS ON BOTH SIDES

RUNS ON COMPONENT SIDE

OUTLINE DIAGRAM

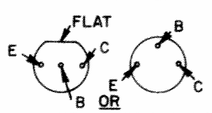
CONTROL SHELF BACK PLANE 19D417404G1





(19D417713, Rev. 2)
(19D423724, Sh. 2, Rev. 0)
(19D423724, Sh. 3, Rev. 0)

LEAD IDENTIFICATION
FOR Q1 - Q16

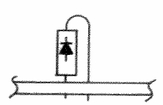


IN-LINE TRIANGULAR
VIEW FROM LEAD END

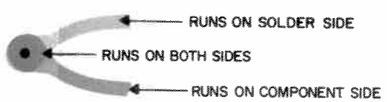
NOTE: LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.

8 9 10 11 12 13 14
7 6 5 4 3 2 1
SOLDER SIDE

DETAIL "A"
TYP. NUMBERING OF CONT. FINGERS

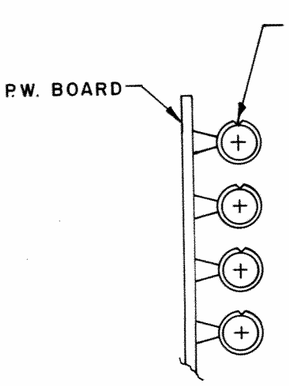


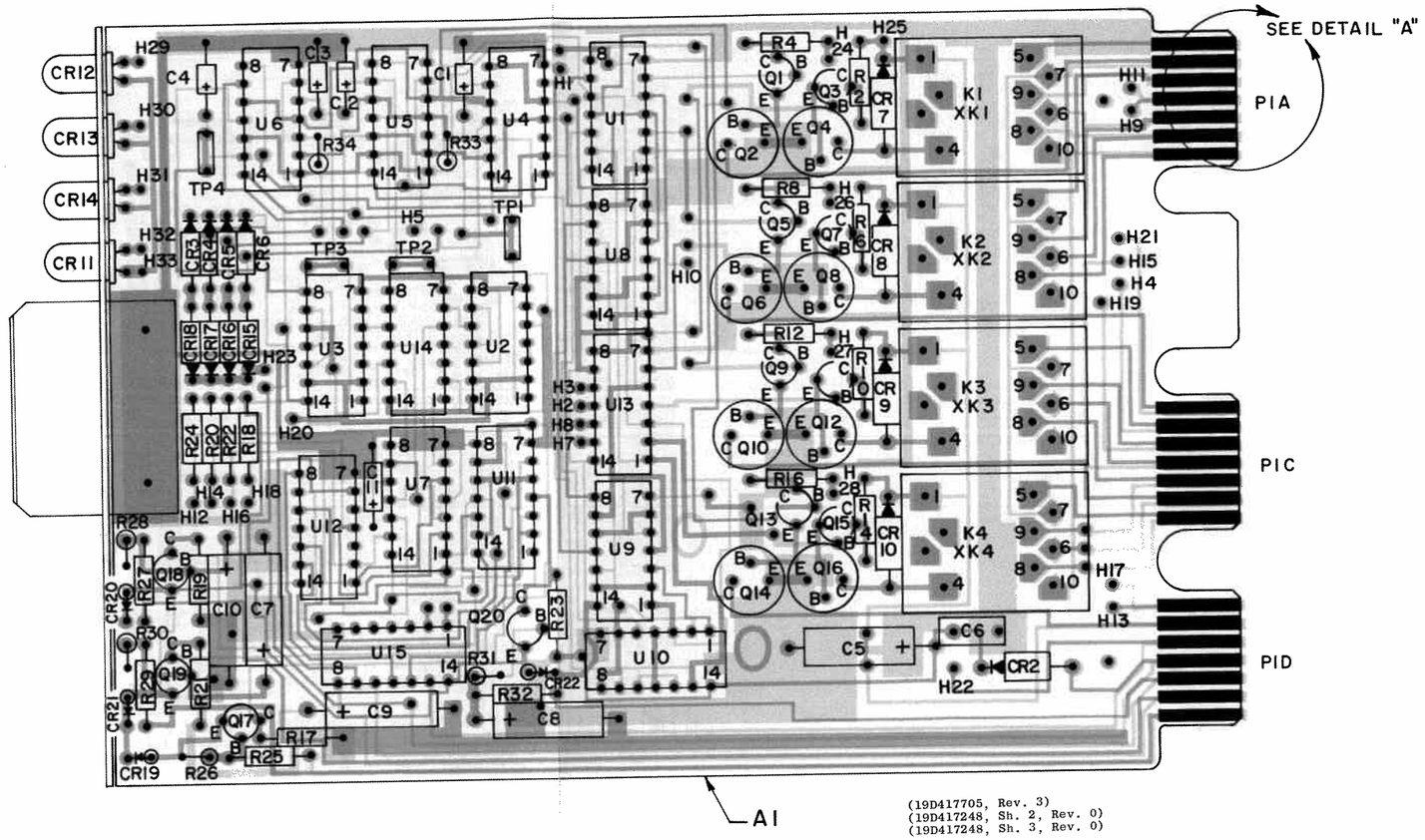
POLARITY FOR CR11 & CR12



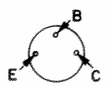
OUTLINE DIAGRAM

MASTER VOTER CONTROL BOARD
19D417421G1





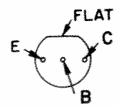
LEAD IDENTIFICATION FOR
Q2,Q4,Q6,Q8,Q10,Q12,Q14 & Q16



TRIANGULAR
VIEW FROM LEAD END

NOTE: LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.

LEAD IDENTIFICATION FOR
Q1,Q3,Q5,Q7,Q9,Q11,Q13,Q15 & Q17-Q20



IN-LINE
VIEW FROM LEAD END

NOTE: LEAD ARRANGEMENT, AND NOT CASE SHAPE, IS DETERMINING FACTOR FOR LEAD IDENTIFICATION.

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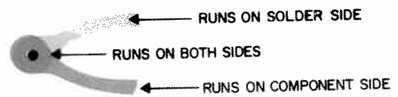
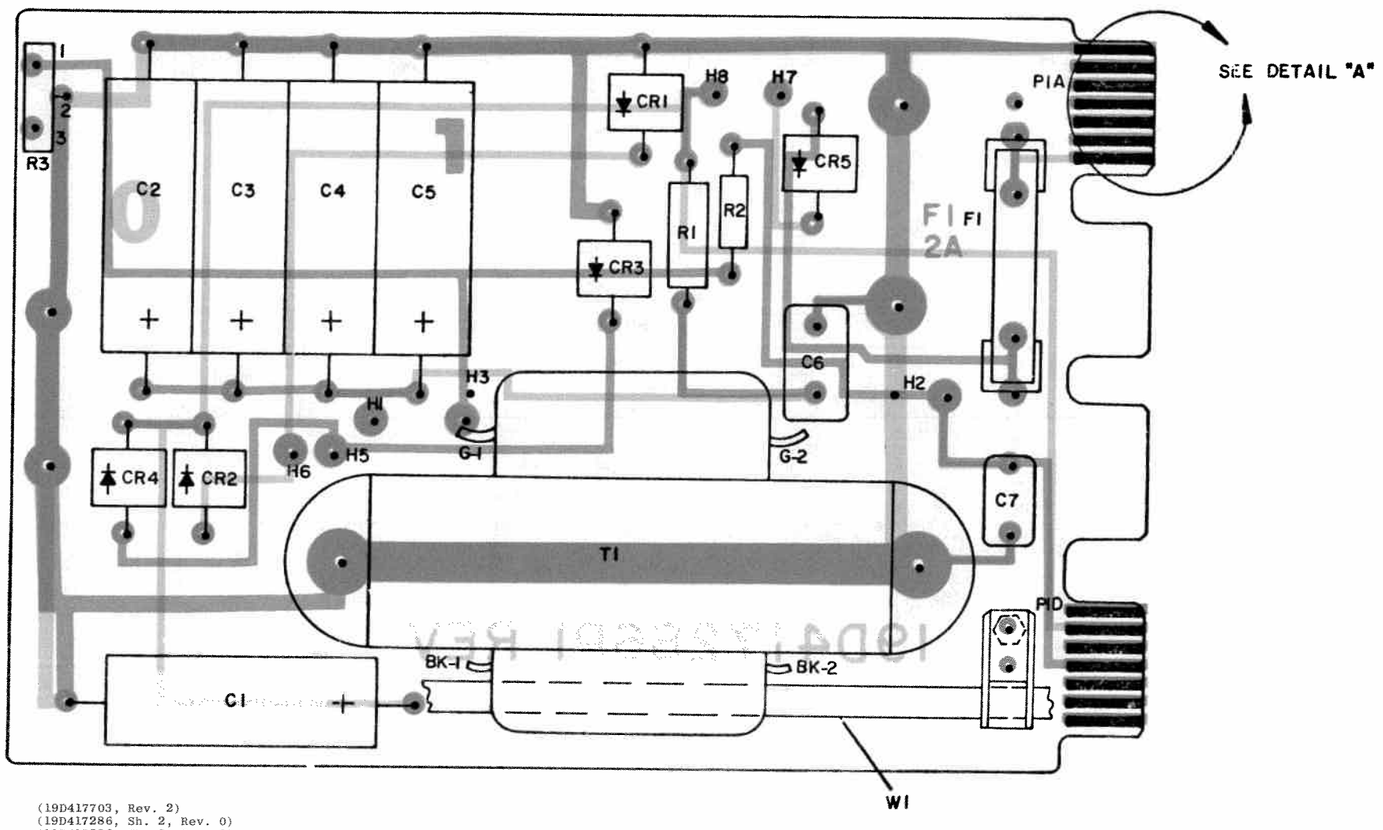
7 6 5 4 3 2 1
SOLDER SIDE
DETAIL "A"
TYP. NUMBERING OF CONT. FINGERS



OUTLINE DIAGRAM

SLAVE VOTER CONTROL BOARD 19D417272G1

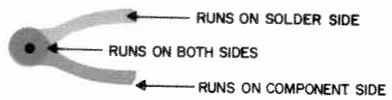
RECTIFIER & FILTER BOARD A1



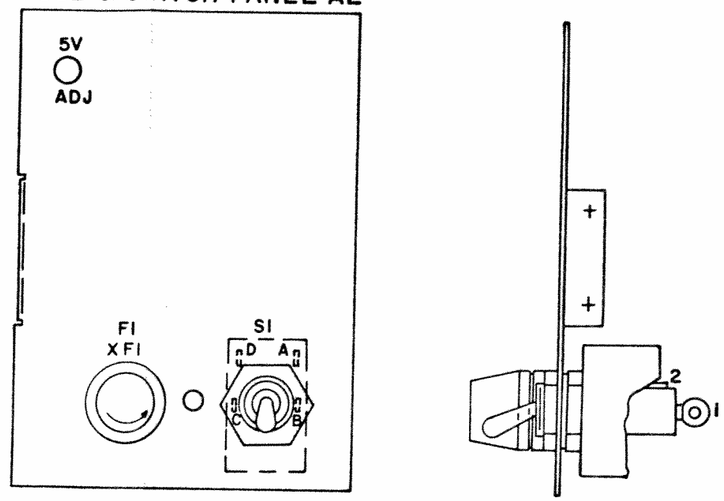
(19D417703, Rev. 2)
(19D417286, Sh. 2, Rev. 0)
(19D417286, Sh. 3, Rev. 1)

DETAIL "A"

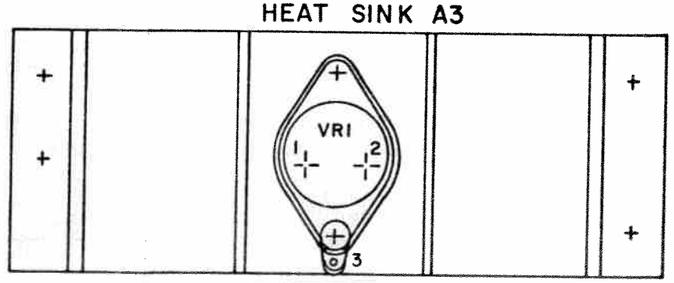
DETAIL "A"
TYP. NUMBERING OF CONT. FINGERS



FUSE & SWITCH PANEL A2



HEAT SINK A3



OUTLINE DIAGRAM

POWER SUPPLY 19C320793G1

10
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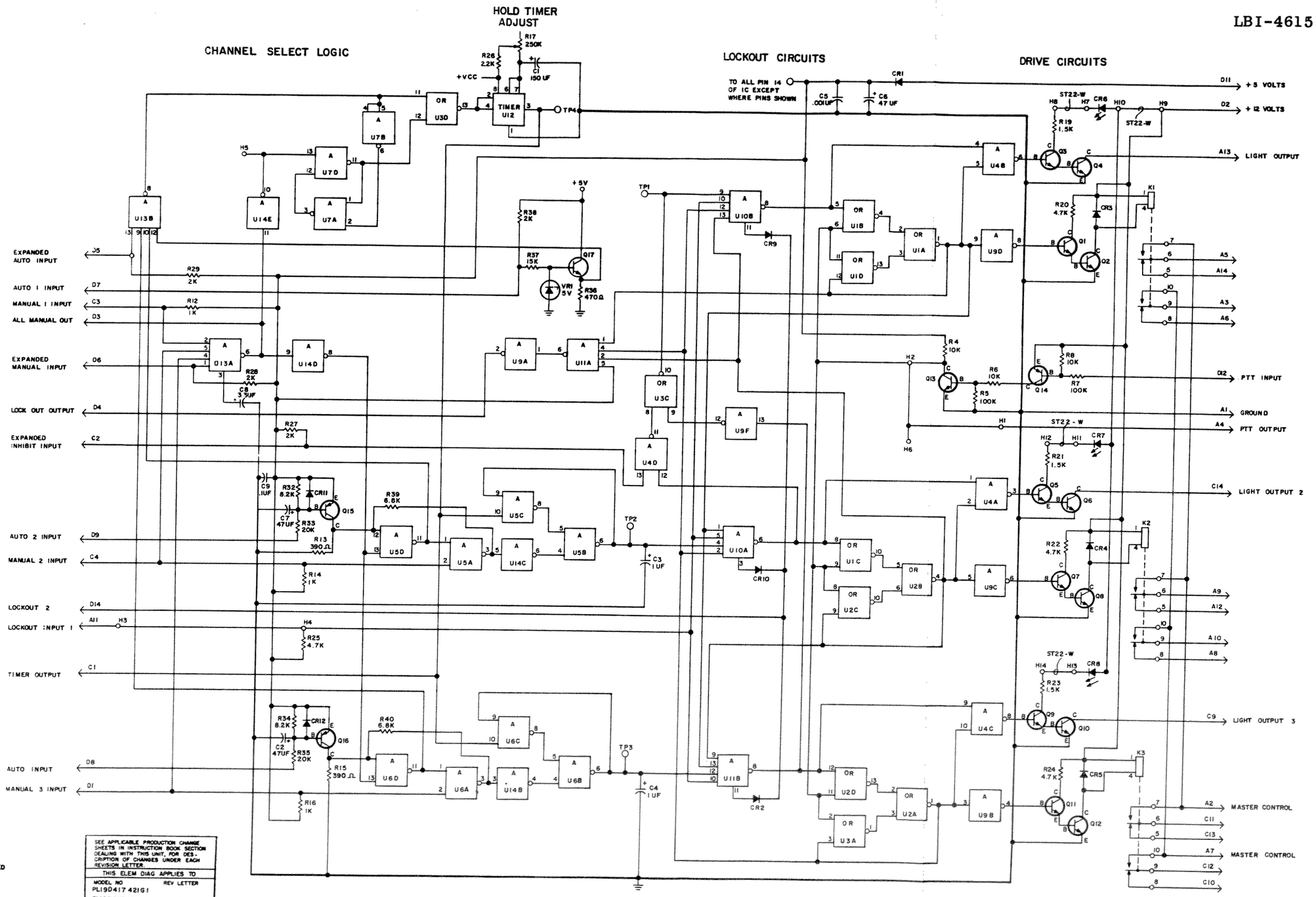


ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED. KΩ RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS.

IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION DEALING WITH THIS UNIT, FOR DESCRIPTION OF CHANGES UNDER EACH REVISION LETTER.

THIS ELEM DIAG APPLIES TO	
MODEL NO	REV LETTER
PLI9D417421G1	
PLI9D417420G1	B

(19E501183, Rev. 4)

SCHEMATIC DIAGRAM

MASTER VOTER CONTROL BOARD
19D417421G1
11

PARTS LIST

MASTER VOTER CONTROL BOARD
19D417421G1

ISSUE 3

SYMBOL	GE PART NO.	DESCRIPTION
A1		COMPONENT BOARD 19D417420G1
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1	19B200240P3	Tantalum: 150 uF +20%, 15 VDCW.
C2	5496267P2	Tantalum: 47 uF +20%, 6 VDCW; sim to Sprague Type 150D.
C3 and C4	19B800650P13	Tantalum: 1 uF -20+40%, 10 VDCW.
C5	5494481P111	Ceramic disc: 1000 pF +20%, 1000 VDCW; sim to RMC Type JF Discap.
C6	5496267P15	Tantalum: 47 uF +20%, 20 VDCW; sim to Sprague Type 150D.
C7	5496267P2	Tantalum: 47 uF +20%, 6 VDCW; sim to Sprague Type 150D.
C8 *	5491674P36	Tantalum: 3.3 uF +20%, 10 VDCW; sim to Sprague Type 162D.
C9 *	19A116080P107	Polyester: 0.1 uF +10%, 50 VDCW.
		- - - - - - - - - - RECTIFIERS - - - - - - - - - -
CR1	T324ADP1041	Silicon: General purpose.
CR2	19A115250P1	Silicon: Fast recovery, 225 mA, 50 PIV.
CR3 thru CR5	T324ADP1041	Silicon: General purpose.
CR6 thru CR8	162B3011P0002	Diode, Optoelectronic: red; sim to Hew. Packard 5082-4650.
CR9 * thru CR12	19A115250P1	Silicon, Fast recovery, 225 mA, 50 PIV.
		- - - - - - - - - - RELAYS - - - - - - - - - -
K1 thru K3	5491595P12	Armature: 12 VDC nominal, 1.5 w operating, 520 ohms +15% coil res, 2 form C contacts rated 2 amps at 24 VDC; sim to Allied Control T154-X-186.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P1		Part of Printed Wire Board.
		- - - - - - - - - - TRANSISTORS - - - - - - - - - -
Q1	19A700023P1	Silicon, NPN: sim to Type 2N3904.
Q2	19A115300P2	Silicon, NPN: sim to Type 2N3053.
Q3	19A700023P1	Silicon, NPN: sim to Type 2N3904.
Q4	19A115300P2	Silicon, NPN: sim to Type 2N3053.
Q5	19A700023P1	Silicon, NPN: sim to Type 2N3904.
Q6	19A115300P2	Silicon, NPN: sim to Type 2N3053.
Q7	19A700023P1	Silicon, NPN: sim to Type 2N3904.
Q8	19A115300P2	Silicon, NPN: sim to Type 2N3053.
Q9	19A700023P1	Silicon, NPN: sim to Type 2N3904.
Q10	19A115300P2	Silicon, NPN: sim to Type 2N3053.
Q11	19A700023P1	Silicon, NPN: sim to Type 2N3904.
Q12	19A115300P2	Silicon, NPN: sim to Type 2N3053.
Q13	19A700023P1	Silicon, NPN: sim to Type 2N3904.
Q14 thru Q16	19A700022P1	Silicon, PNP: sim to Type 2N3906.
Q17 *	19A700023P1	Silicon, NPN: sim to Type 2N3904.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R4	19A700106P87	Composition: 10K ohms ±5%, 1/4 w.
R5	19A700106P111	Composition: 100K ohms ±5%, 1/4 w.
R6	19A700106P87	Composition: 10K ohms ±5%, 1/4 w.
R7	19A700106P111	Composition: 100K ohms ±5%, 1/4 w.
R8	19A700106P87	Composition: 10K ohms ±5%, 1/4 w.
R12	19A700106P63	Composition: 1K ohms ±5%, 1/4 w.
R13 *	19A700106P53	Composition: 390 ohms ±5%, 1/4 w.
R14	19A700106P63	Composition: 1K ohms ±5%, 1/4 w.
R15 *	19A700106P53	Composition: 390 ohms ±5%, 1/4 w.
R16	19A700106P63	Composition: 1K ohms ±5%, 1/4 w.
R17	19B209358P110	Variable: 250K ohms.
R19	19A700106P67	Composition: 1.5K ohms ±5%, 1/4 w.
R20	19A700106P79	Composition: 4.7K ohms ±5%, 1/4 w.
R21	19A700106P67	Composition: 1.5K ohms ±5%, 1/4 w.
R22	19A700106P79	Composition: 4.7K ohms ±5%, 1/4 w.
R23	19A700106P67	Composition: 1.5K ohms ±5%, 1/4 w.
R24 and R25	19A700106P79	Composition: 4.7K ohms ±5%, 1/4 w.
R26	19A700106P71	Composition: 2.2K ohms ±5%, 1/4 w.
R27 thru R29	3R152P202J	Composition: 2K ohms ±5%, 1/4 w.
R32	19A700106P85	Composition: 8.2K ohms ±5%, 1/4 w.
R33	3R152P203J	Composition: 20K ohms ±5%, 1/4 w.
R34	19A700106P85	Composition: 8.2K ohms ±5%, 1/4 w.
R35	3R152P203J	Composition: 20K ohms ±5%, 1/4 w.
R36 *	19A700106P55	Composition: 470 ohms ±5%, 1/4 w.
R37 *	19A700106P91	Composition: 15K ohms ±5%, 1/4 w.
R38 *	3R152P202J	Composition: 2K ohms ±5%, 1/4 w.
R39 * and R40	19A700106P83	Composition: 6.8K ohms ±5%, 1/4 w.
		- - - - - - - - - - TEST POINTS - - - - - - - - - -
TP1 thru TP4	19B211379P1	Spring.
		- - - - - - - - INTEGRATED CIRCUITS - - - - - - - -
U1 * thru U3	19A700037P303	Digital: Quad 2-Input NOR gate; sim to 74LS02.
U4 * thru U7	19A700037P301	Digital: Quad 2-Input NAND gate; sim to 74LS00.
U9 *	19A700037P305	Digital: Hex Inverter; sim to 74LS04.
U10 and U11	19A115913P1	Digital: Dual 4-Input Expandable NAND gate.
U12	19A116968P1	Linear: Timer; sim to Signetics SA555N.
U13	19A115913P1	Digital: Dual 4-Input Expandable NAND gate.
U14 *	19A700037P305	Digital: Hex Inverter; sim to 74LS04.
		- - - - - - - - VOLTAGE REGULATORS - - - - - - - -
VR1 *	4036887P56	Zener: 500 mW, 5.0 v. nominal.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XK1 thru XK3	5491595P6	Relay: 10 contacts; sim to Allied Control 30054-3.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
	5491595P8	Retainer: spring; sim to Allied Control 30040-1. (Used with relays).
	19A701332P4	Insulator, washer: nylon. (Used with Q2, Q4, Q6, Q8, Q10 and Q12).
	19B219690G1	Handle assembly.
	19C320817P5	Panel.
	N404P11B6	Lockwasher; internal: No. 4.
	7141225P2	Hex nut: No. 4-40.

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

PRODUCTION CHANGES

Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for the descriptions of parts affected by these revisions.

REV. A - COMPONENT BOARD 19D417420G1
To improve operation by eliminating false triggering due to transients, added C8, C9, CR11, CR12, Q17, R36-R40 and VR1. Also changed R13 and R15.

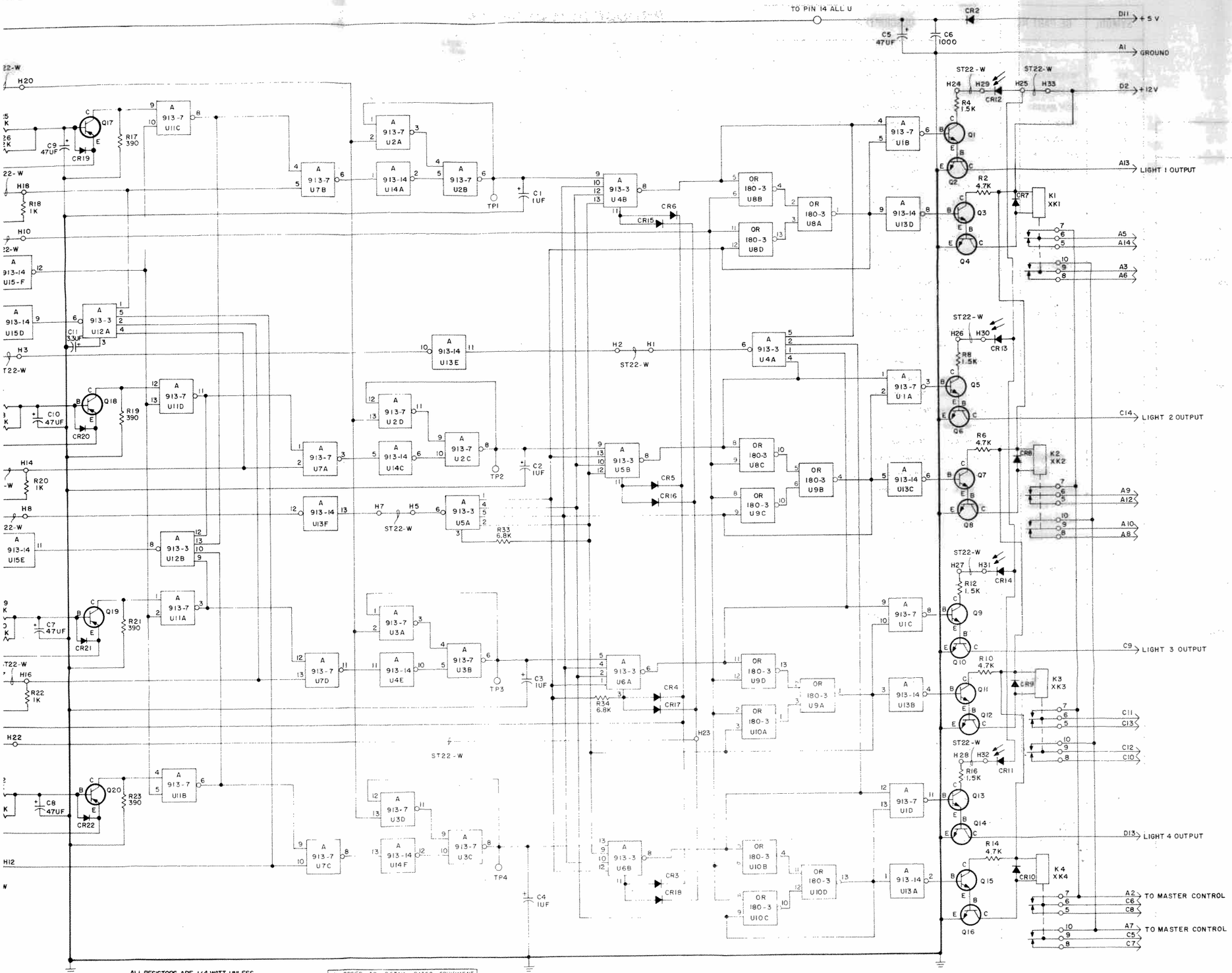
REV. B - COMPONENT BOARD 19D417420G1
To replace DTL integrated circuits with more available TTL devices, changed U1-U7, U9 and U14.
Old U1-U3 was: 19A116180P3 Digital: Quad NOR gate.
Old U4-U7 was: 19A115913P7 Digital: Quad NAND gate.
Old U9,U14 was: 19A115913P14 Digital: Hex Inverter.

CHANNEL SELECT LOGIC

CHANNEL LOCK-UP CIRCUITS

LOCKOUT CIRCUITS

DRIVE CIRCUITS



ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS.

IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

(19E501182, Rev. 5)

SCHEMATIC DIAGRAM

SLAVE VOTER CONTROL BOARD 19D417272G1

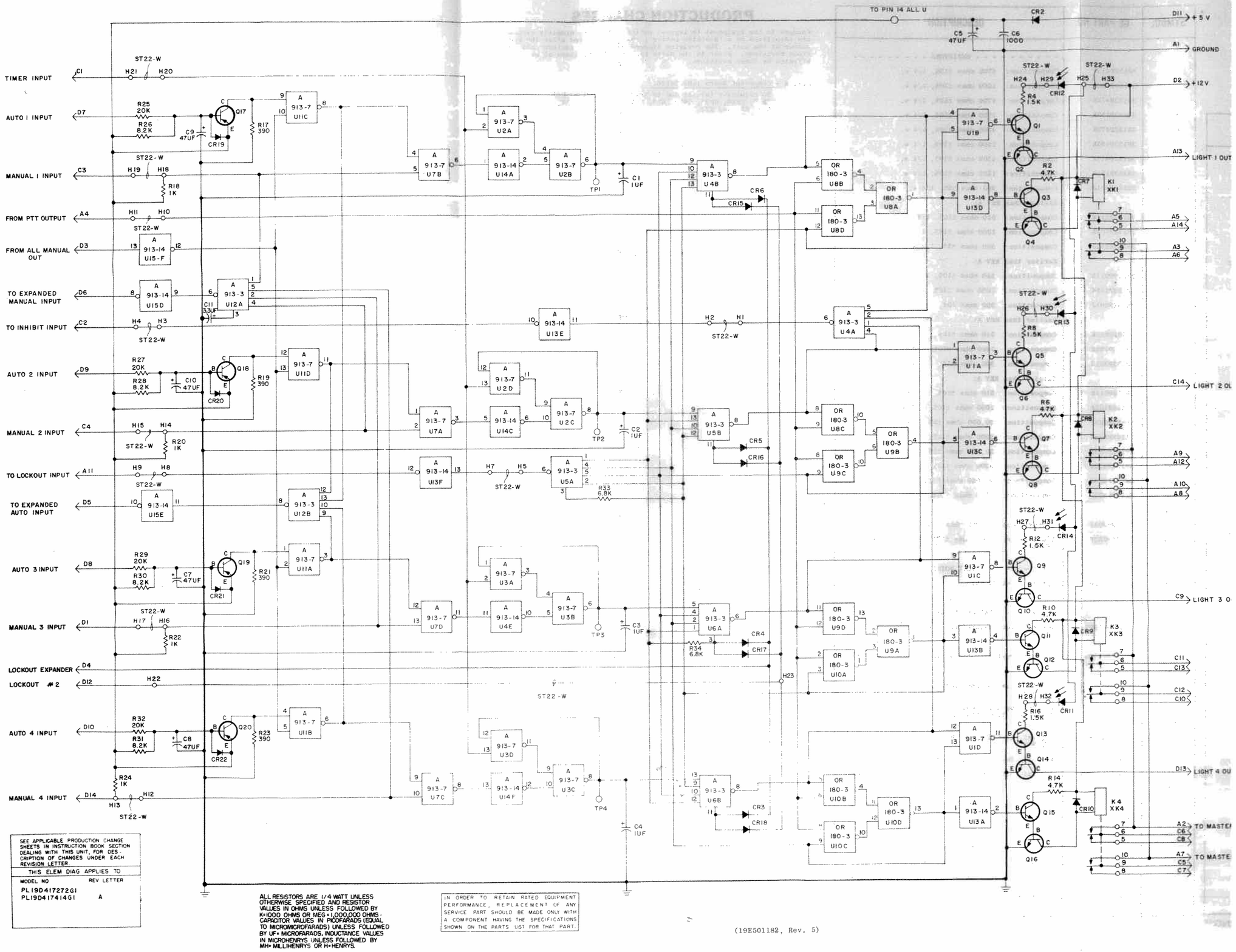
Issue 2

CHANNEL SELECT LOGIC

CHANNEL LOCK-UP CIRCUITS

LOCKOUT CIRCUITS

DRIVE CIRCUITS



SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION DEALING WITH THIS UNIT, FOR DESCRIPTION OF CHANGES UNDER EACH REVISION LETTER.

THIS ELEM DIAG APPLIES TO

MODEL NO	REV LETTER
PLI9D417272G1	A
PLI9D417414G1	

ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS.

IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

PARTS LIST

LBI-4630A

SLAVE VOTER CONTROL BOARD
19D417272G1

SYMBOL	GE PART NO.	DESCRIPTION
A1		COMPONENT BOARD 19D417414G1
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1 thru C4	5491674P1	Tantalum: 1.0 µf +40-20%, 10 VDCW; sim to Sprague Type 162D.
C5	5496267P2	Tantalum: 47 µf ±20%, 6 VDCW; sim to Sprague Type 150D.
C6	5494481P111	Ceramic disc: 1000 pf ±20%, 1000 VDCW; sim to RMC Type JF Discap.
C7 thru C10	5496267P2	Tantalum: 47 µf ±20%, 6 VDCW; sim to Sprague Type 150D.
C11*	5491674P36	Tantalum: 3.3 µf ±20%, 10 VDCW; sim to Sprague Type 162D. Added by REV A.
		- - - - - - - - DIODES AND RECTIFIERS - - - - - - - -
CR2	4037822P1	Silicon.
CR3 thru CR6	19A115250P1	Silicon.
CR7 thru CR10	4037822P1	Silicon.
CR11 thru CR14	19A129291P1	Diode, red light emitting.
CR15 thru CR18	19A115250P1	Silicon.
CR19* thru CR22*	19A115250P1	Silicon. Added by REV A.
		- - - - - - - - - - RELAYS - - - - - - - - - -
K1 thru K4	5491595P12	Armature: 1.5 w operating, 520 ohms ±15% coil res, 2 form C contacts; sim to Allied Control T154-X-186.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P1		(Part of printed wiring board 19D423723P1).
		- - - - - - - - - - TRANSISTORS - - - - - - - -
Q1	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q2	19A115300P2	Silicon, NPN; sim to Type 2N3053.
Q3	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q4	19A115300P2	Silicon, NPN; sim to Type 2N3053.
Q5	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q6	19A115300P2	Silicon, NPN; sim to Type 2N3053.
Q7	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q8	19A115300P2	Silicon, NPN; sim to Type 2N3053.
Q9	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q10	19A115300P2	Silicon, NPN; sim to Type 2N3053.
Q11	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q12	19A115300P2	Silicon, NPN; sim to Type 2N3053.
Q13	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q14	19A115300P2	Silicon, NPN; sim to Type 2N3053.
Q15	19A115910P1	Silicon, NPN; sim to Type 2N3904.
Q16	19A115300P2	Silicon, NPN; sim to Type 2N3053.
Q17 thru Q20	19A115852P1	Silicon, PNP; sim to Type 2N3906.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R2	3R152P472K	Composition: 4700 ohms ±10%, 1/4 w.
R4	3R152P152K	Composition: 1500 ohms ±10%, 1/4 w.
R6	3R152P472K	Composition: 4700 ohms ±10%, 1/4 w.
R8	3R152P152K	Composition: 1500 ohms ±10%, 1/4 w.
R10	3R152P472K	Composition: 4700 ohms ±10%, 1/4 w.
R12	3R152P152K	Composition: 1500 ohms ±10%, 1/4 w.
R14	3R152P472K	Composition: 4700 ohms ±10%, 1/4 w.
R16	3R152P152K	Composition: 1500 ohms ±10%, 1/4 w.
R17*	3R152P391J	Composition: 390 ohms ±5%, 1/4 w.
		Earlier than REV A:
	3R152P511K	Composition: 510 ohms ±10%, 1/4 w.
R18	3R152P102K	Composition: 1000 ohms ±10%, 1/4 w.
R19*	3R152P391J	Composition: 390 ohms ±5%, 1/4 w.
		Earlier than REV A:
	3R152P511K	Composition: 510 ohms ±10%, 1/4 w.
R20	3R152P102K	Composition: 1000 ohms ±10%, 1/4 w.
R21*	3R152P391J	Composition: 390 ohms ±5%, 1/4 w.
		Earlier than REV A:
	3R152P511K	Composition: 510 ohms ±10%, 1/4 w.
R22	3R152P102K	Composition: 1000 ohms ±10%, 1/4 w.
R23*	3R152P391J	Composition: 390 ohms ±5%, 1/4 w.
		Earlier than REV A:
	3R152P511K	Composition: 510 ohms ±10%, 1/4 w.
R24	3R152P102K	Composition: 1000 ohms ±10%, 1/4 w.
R25	3R152P203J	Composition: 20,000 ohms ±5%, 1/4 w.
R26	3R152P822K	Composition: 8200 ohms ±10%, 1/4 w.
R27	3R152P203J	Composition: 20,000 ohms ±5%, 1/4 w.
R28	3R152P822K	Composition: 8200 ohms ±10%, 1/4 w.
R29	3R152P203J	Composition: 20,000 ohms ±5%, 1/4 w.
R30 and R31	3R152P822K	Composition: 8200 ohms ±10%, 1/4 w.
R32	3R152P203J	Composition: 20,000 ohms ±5%, 1/4 w.
R33* and R34*	3R152P682K	Composition: 6800 ohms ±10%, 1/4 w. Added by REV A.
		- - - - - - - - - - TEST POINTS - - - - - - - - - -
TP1 thru TP4	19B211379P1	Spring (Test Point).
		- - - - - - - - INTEGRATED CIRCUITS - - - - - - - -
U1 thru U3	19A115913P7	Digital, Quad 2-Input Gate; sim to Fairchild DTL 946.
U4 thru U6	19A115913P3	Digital, Dual Buffer; sim to Fairchild DTL 932.
U7	19A115913P7	Digital, Quad 2-Input Gate; sim to Fairchild DTL 946.
U8 thru U10	19A116180P3	Digital, Quad 2-Input Nor Gate; sim to Texas Instrument Type SN7402N.
U11	19A115913P7	Digital, Quad 2-Input Gate; sim to Fairchild DTL 946.
U12	19A115913P3	Digital, Dual Buffer; sim to Fairchild DTL 932.
U13 thru U15	19A115913P14	Digital, Hex Inverter; sim to Fairchild DTL 936.
		- - - - - - - - - - SOCKETS - - - - - - - - - -
XK1 thru XK4	5491595P6	Relay: 10 contacts; sim to Allied Control 30054-3.
		- - - - - - - - - - MISCELLANEOUS - - - - - - - -
	5491595P8	Retainer: spring. (Used with K1-K4).
	4036555P1	Insulator, disc. (Used with Q2, Q4, Q6, Q8, Q10, Q12, Q14, Q16).
	19B219690G1	Handle Assembly.
	19C320817P6	Panel.

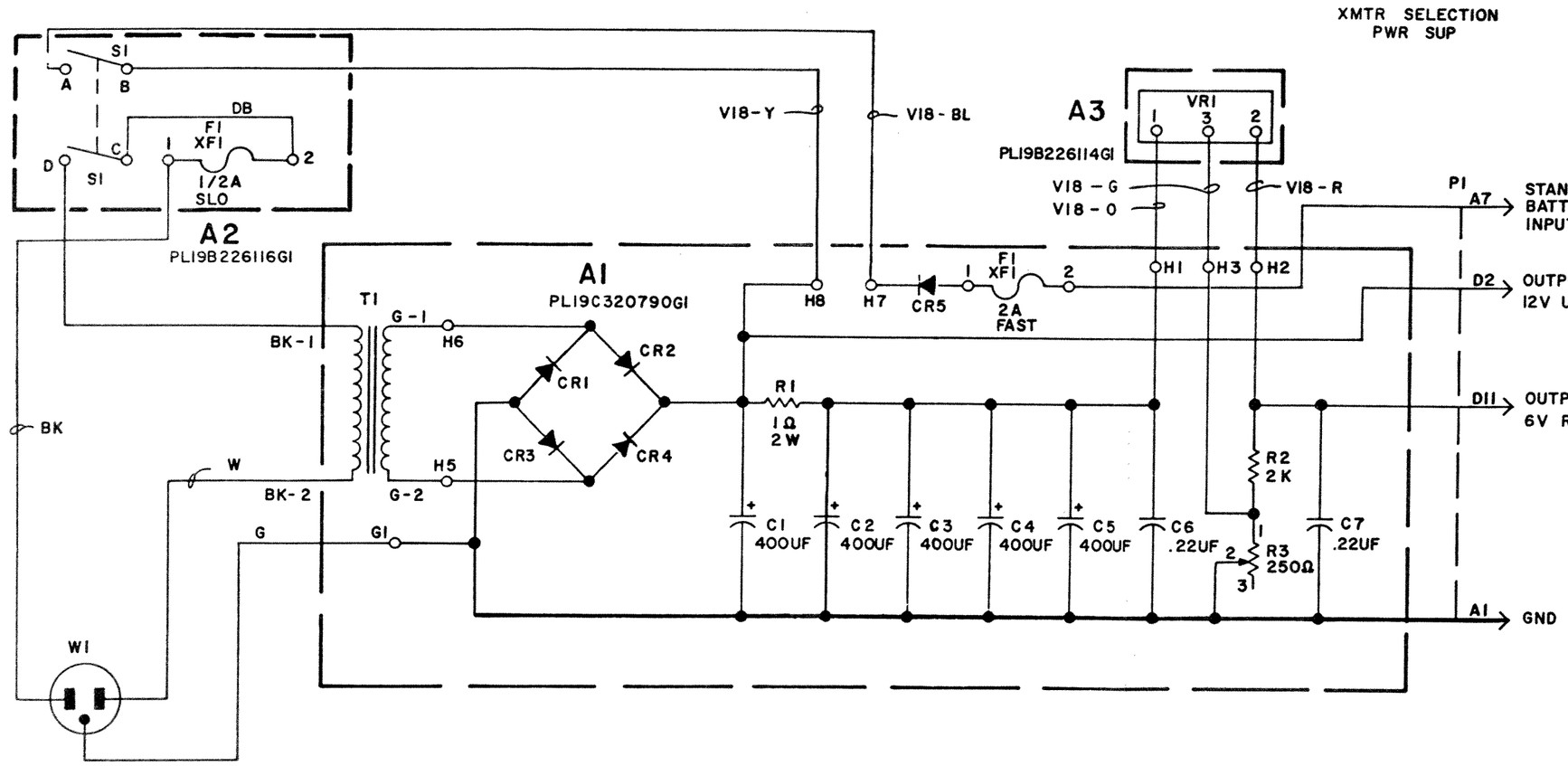
*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

PRODUCTION CHANGES

Changes in the equipment to improve performance or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

REV. A - Component Board 19D417414G1

To eliminate falsing due to transients. Added C11, CR19, CR20, CR21, CR22, R33, R34 and changed R17, R19, R21 and R23.



(19C320794, Rev. 2)

ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE SPECIFIED AND RESISTOR VALUES IN OHMS UNLESS FOLLOWED BY K=1000 OHMS OR MEG=1,000,000 OHMS. CAPACITOR VALUES IN PICOFARADS (EQUAL TO MICROMICROFARADS) UNLESS FOLLOWED BY UF= MICROFARADS. INDUCTANCE VALUES IN MICROHENRYS UNLESS FOLLOWED BY MH= MILLIHENRYS OR H=HENRYS.

IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION DEALING WITH THIS UNIT, FOR DESCRIPTION OF CHANGES UNDEP EACH REVISION LETTER

THIS ELEM DIAG APPLIES TO

MODEL NO	REV LETTER
19C320793G1	A

SCHEMATIC DIAGRAM

POWER SUPPLY 19C320793G1

PARTS LIST

LBI-4631

TRANSMITTER CONTROL SHELF
POWER SUPPLY
19C320793G1

SYMBOL	GE PART NO.	DESCRIPTION
A1		RECTIFIER AND FILTER BOARD 19C320790G1
		- - - - - - - - - - CAPACITORS - - - - - - - - - -
C1 thru C5	19A115680P24	Electrolytic: 100 µf +150% -10%, 18 VDCW; sim to Mallory Type TT.
C6 and C7	19A116080P109	Polyester: 0.22 µf ±10%, 50 VDCW.
		- - - - - - - - - DIODES AND RECTIFIERS - - - - - -
CR1 thru CR5	19A116783P1	Silicon.
		- - - - - - - - - - - FUSES - - - - - - - - - -
F1	1R16P5	Quick blowing, cartridge: 2 amp 250 v; sim to Littelfuse 312002 or Bussmann AGC -2.
		- - - - - - - - - - - PLUGS - - - - - - - - - -
P1		(Part of printed wiring board 19D417286P1).
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1	19B209022P115	Wirewound: 1.0 ohms ±10%, 2 w; sim to IRC Type BWH.
R2	3R152P202J	Composition: 2000 ohms ±5%, 1/4 w.
R3	19B209358P101	Variable, carbon film: approx 25 to 250 ohms ±10%, 0.2 w; sim to CTS Type X-201.
		- - - - - - - - - - TRANSFORMERS - - - - - - - -
T1	5493743P1	Power, step-down: Pri: 117 v, 50/60 Hz, Sec 1: 12.6 v ±3%, 2 amps.
A2		FUSE AND SWITCH PANEL 19B226116G1
		- - - - - - - - - - - FUSES - - - - - - - - - -
F1	7487942P3	Slow blowing: 1/2 amp at 250 v; sim to Bussmann MDL-1/2.
		- - - - - - - - - - - SWITCHES - - - - - - - - -
S1	5491899P2	Toggle: DPST, 6 amps at 125 VAC/VDC; sim to Cutler-Hammer 8370K3.
		- - - - - - - - - - - SOCKETS - - - - - - - - - -
XF1	19B209005P1	Fuseholder: 15 amps at 250 v; sim to Littelfuse 342012.
A3		HEAT SINK 19B226114G1
		- - - - - - - INTEGRATED CIRCUITS - - - - - - -
VR1	19A116834P1	Voltage regulator, integrated circuit: linear; sim to µA209K.
		- - - - - - - - - - - CABLES - - - - - - - - - -
W1	19A116740P1	Power: 3 conductor, approx 8 feet long; sim to Belden 17238.
		- - - - - - - - - - MISCELLANEOUS - - - - - - - -
	19B219690G1	Handle.
	4029851P5	Clip loop, nylon: sim to Weckesser 1/4-4-128. (Used with W1).
	5491541P102	Spacer, threaded: No. 6-32 x 1/4. (Used with W1 clip loop).
	19B209260P107	Terminal, solderless: wire No. 22-16 AWG; sim to AMP 34107. (Used with W1).
	5491541P307	Spacer, threaded: No. 6-32. (Located under A3).
	19A129977G1	Support. (Secures one end of A3).
	19A116688P1	Clip electrical: sim to Littelfuse 10268. (Used to secure F1 on A1).
	19B226013P1	Heat sink. (Used with VR1 on A3).
	4029974P1	Insulator, plate. (Used with VR1 on A3).
	19A121882P1	Washer, shoulder. (Used with VR1 on A3).
	4036994P1	Terminal, solderless; sim to Zierick Mfg Corp 505. (Used with VR1 on A3).

PRODUCTION CHANGES

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REV. A - To comply with Canadian standards. Rewired Power Supply.

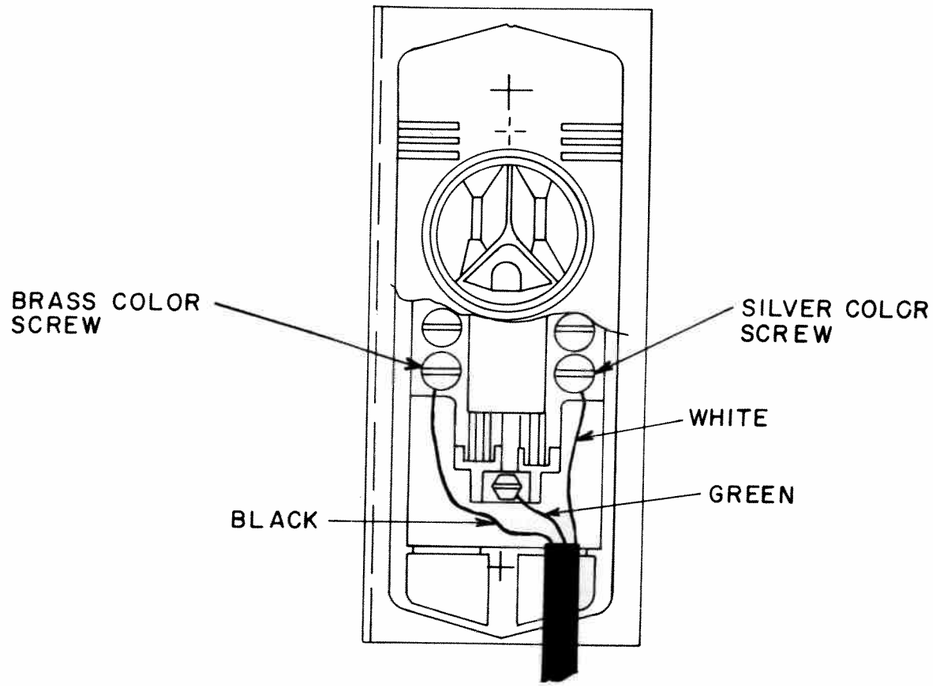
PARTS LIST

LBI-4632

POWER RECEPTACLE
19B226175G1

SYMBOL	GE PART NO.	DESCRIPTION
	19A129927G1	Enclosure.
	19B209343P1	Receptacle, power: 15 amps at 125 v; sim to GE 7503-1.
	19B209260P102	Solderless terminal: No. 20-16 wire size; sim to Amp 40763.
	19B226175G2	Harness Assembly.

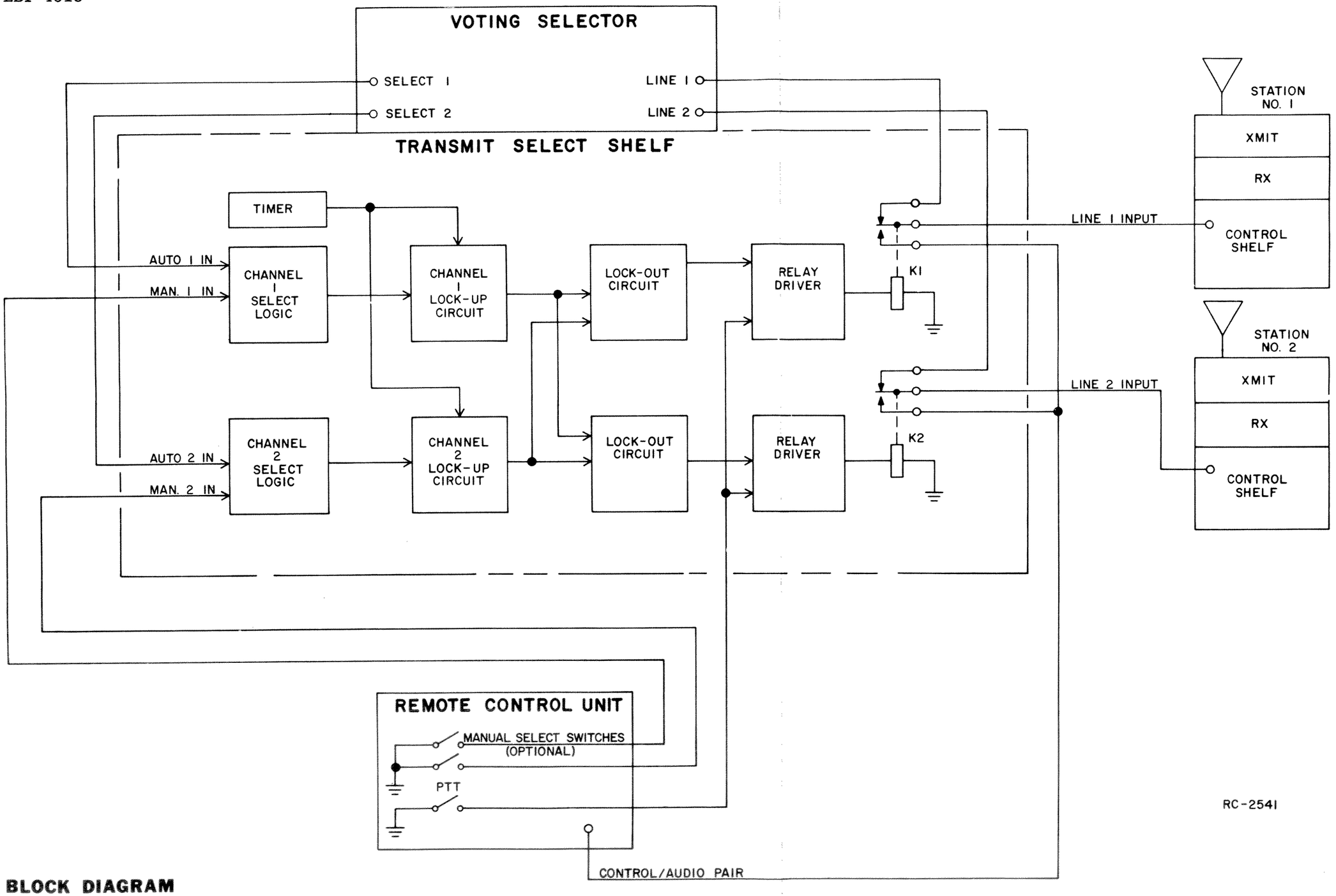
*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



(19B226455, Rev. 0)

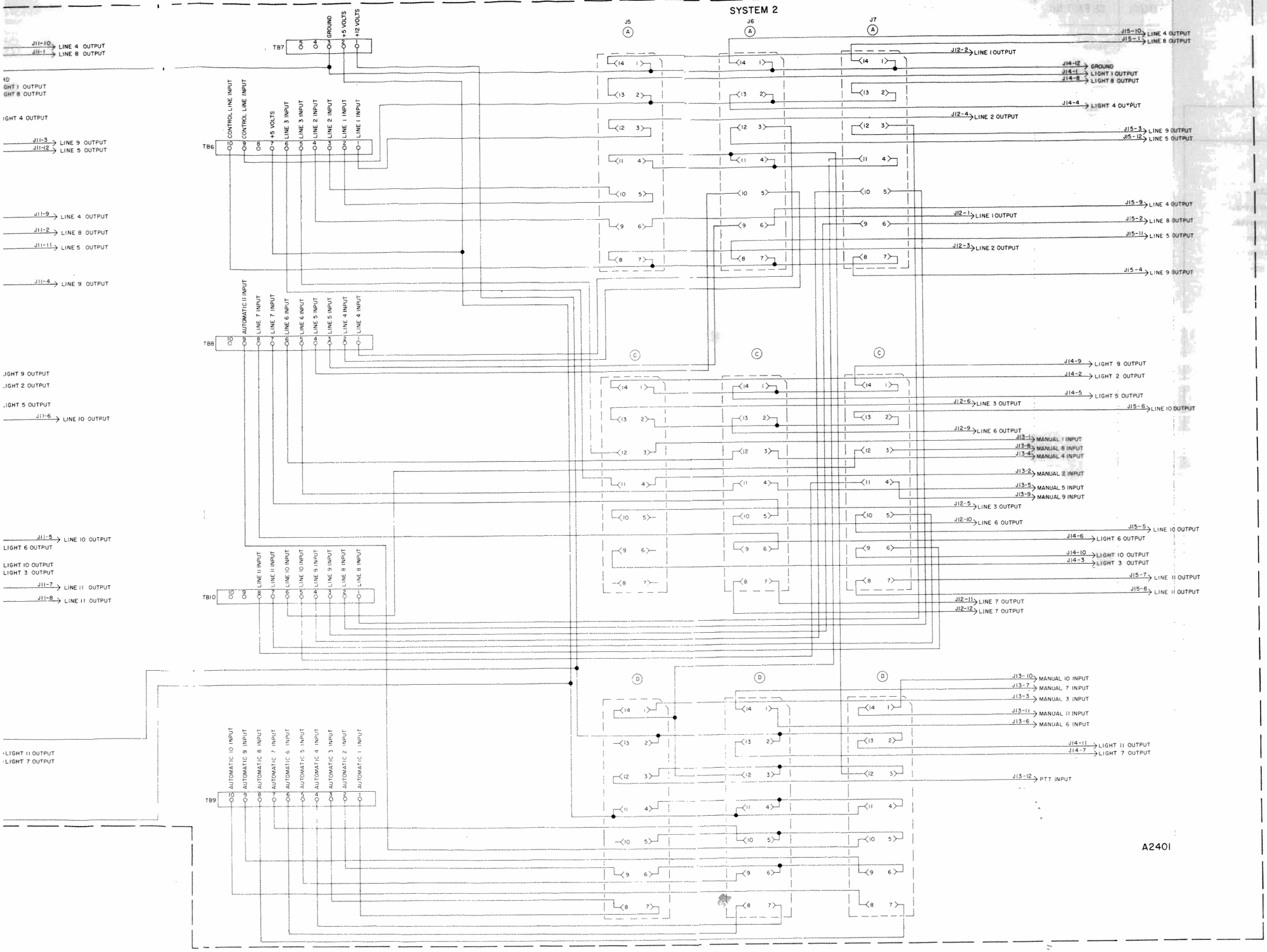
SERVICE SHEET

RECEPTACLE 19B226175G1



BLOCK DIAGRAM

TRANSMITTER SELECT SYSTEM



SEE APPLICABLE PRODUCTION CHANGE SHEETS IN INSTRUCTION BOOK SECTION DEALING WITH THIS UNIT, FOR DESCRIPTION OF CHANGES UNDER EACH REVISION LETTER.

THIS ELEM DIAG APPLIES TO

MODEL NO	REV LETTER
PLI9041672G3	

IN ORDER TO RETAIN RATED EQUIPMENT PERFORMANCE, REPLACEMENT OF ANY SERVICE PART SHOULD BE MADE ONLY WITH A COMPONENT HAVING THE SPECIFICATIONS SHOWN ON THE PARTS LIST FOR THAT PART.

INTERCONNECTION DIAGRAM

CONTROL SHELF

(19R640929, Rev. 2)

SYSTEM I

TB2
GROUND
+12 VOLTS

TB1
CONTROL LINE INPUT
CONTROL LINE INPUT
+13.8V BATTERY STANDBY
+5V
LINE 3 INPUT
LINE 3 INPUT
LINE 2 INPUT
LINE 2 INPUT
LINE 1 INPUT
LINE 1 INPUT

TB3
AUTOMATIC 11 INPUT
LINE 7 INPUT
LINE 7 INPUT
LINE 6 INPUT
LINE 6 INPUT
LINE 5 INPUT
LINE 5 INPUT
LINE 4 INPUT
LINE 4 INPUT

TB5
LINE 11 INPUT
LINE 11 INPUT
LINE 10 INPUT
LINE 10 INPUT
LINE 9 INPUT
LINE 9 INPUT
LINE 8 INPUT
LINE 8 INPUT

TB4
AUTOMATIC 10 INPUT
AUTOMATIC 9 INPUT
AUTOMATIC 8 INPUT
AUTOMATIC 7 INPUT
AUTOMATIC 6 INPUT
AUTOMATIC 5 INPUT
AUTOMATIC 4 INPUT
AUTOMATIC 3 INPUT
AUTOMATIC 2 INPUT
AUTOMATIC 1 INPUT

J1 (A) — 14 13 12 11 10 9 8 / 1 2 3 4 5 6 7
J2 (A) — 14 13 12 11 10 9 8 / 1 2 3 4 5 6 7
J3 (A) — 14 13 12 11 10 9 8 / 1 2 3 4 5 6 7
J4 (A) — 14 13 12 11 10 9 8 / 1 2 3 4 5 6 7
J1 (C) — 14 13 12 11 10 9 8 / 1 2 3 4 5 6 7
J2 (C) — 14 13 12 11 10 9 8 / 1 2 3 4 5 6 7
J3 (C) — 14 13 12 11 10 9 8 / 1 2 3 4 5 6 7
J4 (C) — 14 13 12 11 10 9 8 / 1 2 3 4 5 6 7
J1 (D) — 14 13 12 11 10 9 8 / 1 2 3 4 5 6 7
J2 (D) — 14 13 12 11 10 9 8 / 1 2 3 4 5 6 7
J3 (D) — 14 13 12 11 10 9 8 / 1 2 3 4 5 6 7
J4 (D) — 14 13 12 11 10 9 8 / 1 2 3 4 5 6 7

J11-10 → LINE 4 OUTPUT
J11-1 → LINE 8 OUTPUT
J8-2 → LINE 1 OUTPUT
J10-12 → GRD
J10-7 → LIGHT 1 OUTPUT
J10-8 → LIGHT 8 OUTPUT
J10-4 → LIGHT 4 OUTPUT
J8-4 → LINE 2 OUTPUT
J11-3 → LINE 9 OUTPUT
J11-12 → LINE 5 OUTPUT
J11-9 → LINE 4 OUTPUT
J8-1 → LINE 1 OUTPUT
J11-2 → LINE 8 OUTPUT
J11-11 → LINE 5 OUTPUT
J8-3 → LINE 2 OUTPUT
J11-4 → LINE 9 OUTPUT
J10-9 → LIGHT 9 OUTPUT
J10-2 → LIGHT 2 OUTPUT
J10-5 → LIGHT 5 OUTPUT
J8-6 → LINE 3 OUTPUT
J11-6 → LINE 10 OUTPUT
J8-9 → LINE 6 OUTPUT
J9-1 → MANUAL 1 INPUT
J9-8 → MANUAL 8 INPUT
J9-4 → MANUAL 4 INPUT
J9-2 → MANUAL 2 INPUT
J9-5 → MANUAL 5 INPUT
J9-9 → MANUAL 9 INPUT
J8-5 → LINE 3 OUTPUT
J8-10 → LINE 6 OUTPUT
J11-5 → LINE 10 OUTPUT
J10-6 → LIGHT 6 OUTPUT
J10-10 → LIGHT 10 OUTPUT
J10-3 → LIGHT 3 OUTPUT
J11-7 → LINE 11 OUTPUT
J11-8 → LINE 11 OUTPUT
J8-11 → LINE 7 OUTPUT
J8-12 → LINE 7 OUTPUT
J9-10 → MANUAL 10 INPUT
J9-7 → MANUAL 7 INPUT
J9-3 → MANUAL 3 INPUT
J9-11 → MANUAL 11 INPUT
J9-6 → MANUAL 6 INPUT
J10-11 → LIGHT 11 OUTPUT
J10-7 → LIGHT 7 OUTPUT
J9-12 → PTT INPUT

TB7
GROUND
+5 VOLTS
+12 VOLTS

TB6
CONTROL LINE INPUT
CONTROL LINE INPUT
+5 VOLTS
LINE 3 INPUT
LINE 2 INPUT
LINE 2 INPUT
LINE 1 INPUT
LINE 1 INPUT

TB8
AUTOMATIC 11 INPUT
LINE 7 INPUT
LINE 7 INPUT
LINE 6 INPUT
LINE 6 INPUT
LINE 5 INPUT
LINE 5 INPUT
LINE 4 INPUT
LINE 4 INPUT

TB10
LINE 11 INPUT
LINE 11 INPUT
LINE 10 INPUT
LINE 10 INPUT
LINE 9 INPUT
LINE 9 INPUT
LINE 8 INPUT
LINE 8 INPUT

TB9
AUTOMATIC 10 INPUT
AUTOMATIC 9 INPUT
AUTOMATIC 8 INPUT
AUTOMATIC 7 INPUT
AUTOMATIC 6 INPUT
AUTOMATIC 5 INPUT
AUTOMATIC 4 INPUT
AUTOMATIC 3 INPUT
AUTOMATIC 2 INPUT
AUTOMATIC 1 INPUT

PARTS LIST

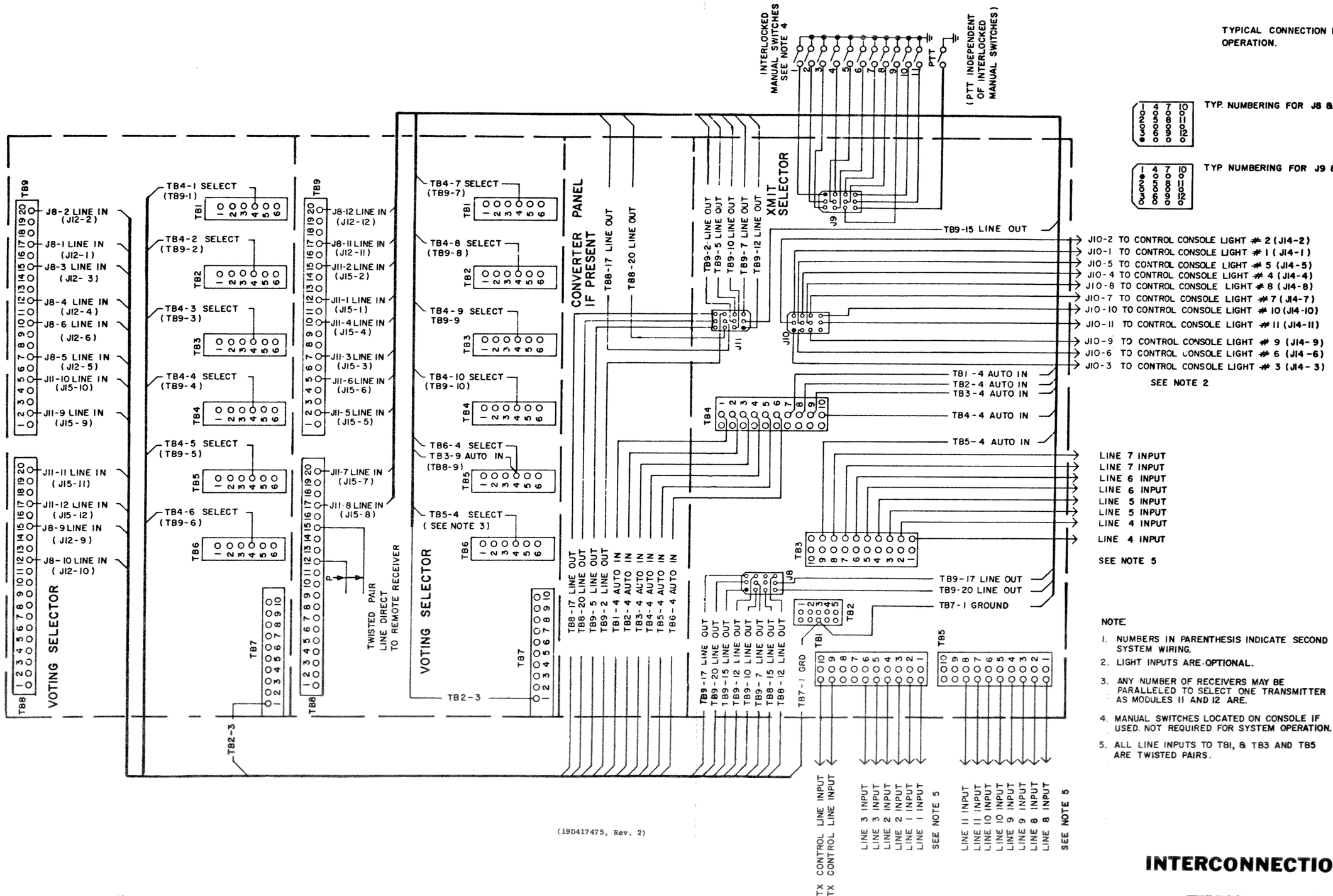
LBI-4616

TRANSMITTER SELECTION CONTROL SHELF
19D416725G3

SYMBOL	GE PART NO.	DESCRIPTION
A2401		BACK PLANE BOARD 19D417404G1
		- - - - - - - - JACKS AND RECEPTACLES - - - - - - -
J1A	19A116446P5	Connector, printed wiring: 14 contacts.
J1D	19A116446P5	Connector, printed wiring: 14 contacts.
J2A	19A116446P5	Connector, printed wiring: 14 contacts.
J2C	19A116446P5	Connector, printed wiring: 14 contacts.
J2D	19A116446P5	Connector, printed wiring: 14 contacts.
J3A	19A116446P5	Connector, printed wiring: 14 contacts.
J3C	19A116446P5	Connector, printed wiring: 14 contacts.
J3D	19A116446P5	Connector, printed wiring: 14 contacts.
J4A	19A116446P5	Connector, printed wiring: 14 contacts.
J4C	19A116446P5	Connector, printed wiring: 14 contacts.
J4D	19A116446P5	Connector, printed wiring: 14 contacts.
J5A	19A116446P5	Connector, printed wiring: 14 contacts.
J5C	19A116446P5	Connector, printed wiring: 14 contacts.
J5D	19A116446P5	Connector, printed wiring: 14 contacts.
J6A	19A116446P5	Connector, printed wiring: 14 contacts.
J6C	19A116446P5	Connector, printed wiring: 14 contacts.
J6D	19A116446P5	Connector, printed wiring: 14 contacts.
J7A	19A116446P5	Connector, printed wiring: 14 contacts.
J7C	19A116446P5	Connector, printed wiring: 14 contacts.
J7D	19A116446P5	Connector, printed wiring: 14 contacts.
J8	19A116647P6	Connector, printed wiring: 12 terminals, sim to Molex 03-04-4121.
J9	19A116647P4	Connector, printed wiring: 12 terminals, sim to Molex 03-04-4121.
J10	19A116647P6	Connector, printed wiring: 12 terminals, sim to Molex 03-04-4121.
J11	19A116647P4	Connector, printed wiring: 12 terminals, sim to Molex 03-04-4121
J12	19A116647P6	Connector, printed wiring: 12 terminals, sim to Molex 03-04-4121.
J13	19A116647P4	Connector, printed wiring: 12 terminals, sim to Molex 03-04-4121.
J14	19A116647P6	Connector, printed wiring: 12 terminals, sim to Molex 03-04-4121.
J15	19A116647P4	Connector, printed wiring: 12 terminals, sim to Molex 03-04-4121.
		- - - - - - - - TERMINAL BOARDS - - - - - - - -
TB1	19A116005P4	Phen: 10 terminal; sim to Kulka 410Y10.
TB2	19A116005P2	Phen: 5 terminal; sim to Kulka 410Y5.
TB3 thru TB6	19A116005P4	Phen: 10 terminal; sim to Kulka 410Y10.
TB7	19A116005P2	Phen: 5 terminal; sim to Kulka 410Y5.
TB8 thru TB10	19A116005P4	Phen: 10 terminal; sim to Kulka 410Y10.
		HARDWARE KIT 19A130015G2
	19B209288P20	Connector, receptacle.

SYMBOL	GE PART NO.	DESCRIPTION
	5496809P17	Contact, electrical: Female, 18-28 AWG; sim to Molex 1381-T.
	5496809P18	Contact, electrical: Male, 18-28 AWG; sim to Molex 1380-T.
	19B209260P108	Solderless terminals.
	19A115185P3	Clip loop.
	NP243580	Nameplate.
		- - - - - - - - - - MISCELLANEOUS - - - - -
	19D416674G2	Frame Assembly.
	19A129863G1	End Supports. (Connect to Frame assembly).
	19C315963P1	Card Guide.
	19A115185P4	Clip loop. (Located on 4 corners of A2401).
	19B201074P306	Tap screw, Phillips POZIDRIV: No. 6-32 x 3/

*COMPONENTS ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES



(19D417475, Rev. 2)

TYPICAL CONNECTION FOR SIMPLEX OPERATION.

TYP. NUMBERING FOR J8 & J10

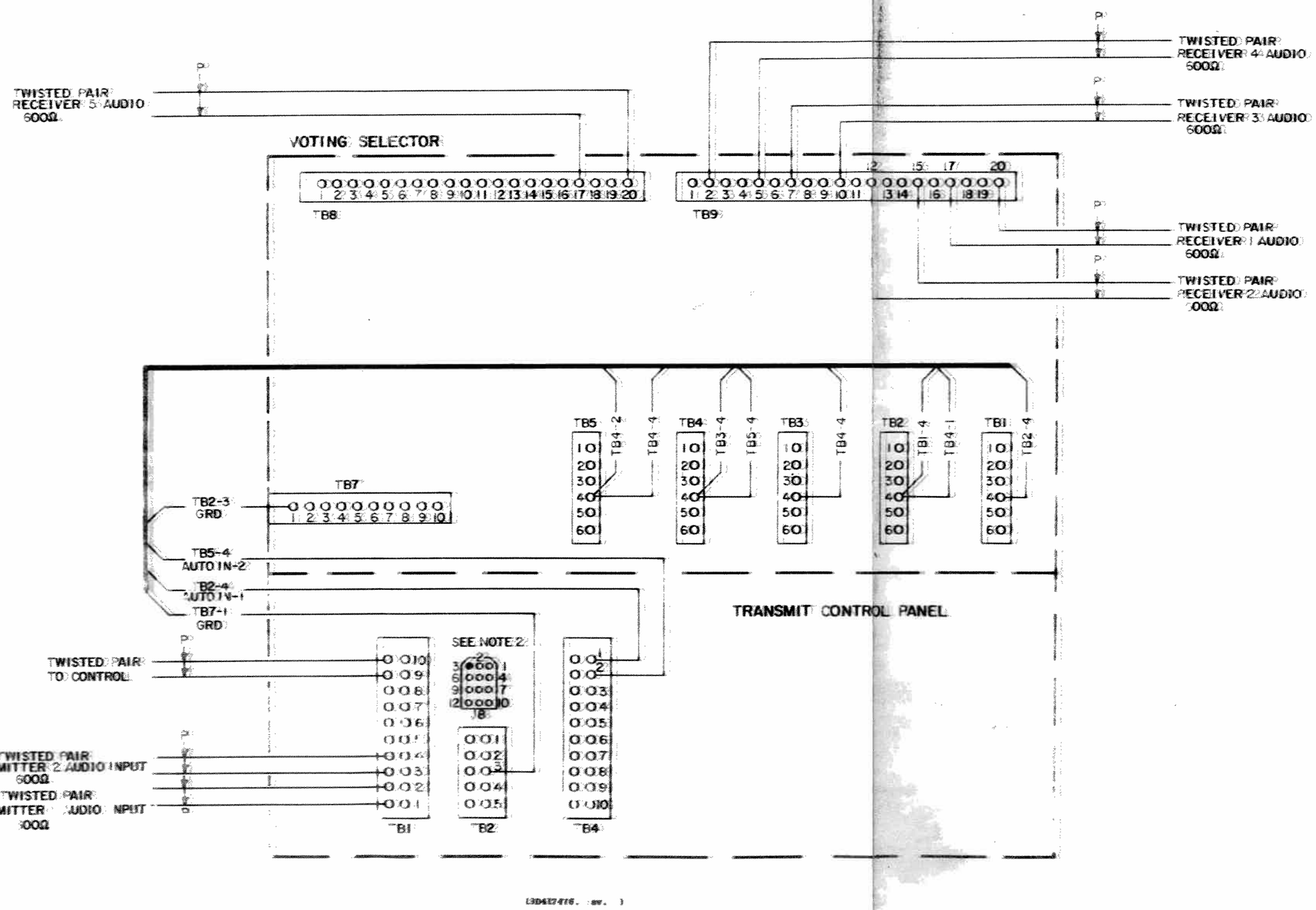
TYP. NUMBERING FOR J9 & J11

NOTE:

1. NUMBERS IN PARENTHESIS INDICATE SECOND SYSTEM WIRING.
2. LIGHT INPUTS ARE OPTIONAL.
3. ANY NUMBER OF RECEIVERS MAY BE PARALLELED TO SELECT ONE TRANSMITTER AS MODULES 11 AND 12 ARE.
4. MANUAL SWITCHES LOCATED ON CONSOLE IF USED. NOT REQUIRED FOR SYSTEM OPERATION.
5. ALL LINE INPUTS TO TB1, & TB3 AND TB5 ARE TWISTED PAIRS.

INTERCONNECTION DIAGRAM

TYPICAL SIMPLEX INSTALLATION



(3D437476, sw.)

INTERCONNECTION DIAGRAM

TYPICAL DUPLEX INSTALLATION

TYPICAL CONNECTION FOR DUPLEX OPERATION

NOTES: FOR CONNECTIONS SHOWN

1. RECEIVER 1 AND RECEIVER 2 CONTROL TRANSMITTER 1. RECEIVER 3, RECEIVER 4, AND RECEIVER 5 CONTROL TRANSMITTER 2. ALL STATIONS ARE DUPLEX.
2. NO CONNECTION TO ANY TRANSMIT CONTROL AUDIO OUTPUT PAIR. IN THIS CASE, NO CONNECTIONS TO J8-1 THROUGH J8-4.